

Appendix K: Air Quality Conformity Determination

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Adopting Resolution by Knoxville Regional TPO Executive Board for Air Quality Conformity Determination

**A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION (TPO)
FINDING THE LONG RANGE REGIONAL MOBILITY PLAN 2040 AND 2011-2014
TRANSPORTATION IMPROVEMENT PROGRAM MEET AIR QUALITY CONFORMITY
REQUIREMENTS**

WHEREAS, the Clean Air Act Amendments of 1990 (CAAA) and the Moving Ahead for Progress in the 21st Century Act (MAP-21) require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment of an air pollution standard; and,

WHEREAS, the Knoxville Region is currently designated as a Maintenance Area for the 1997 8-Hour Ozone Standard and a Nonattainment Area for the 2008 8-Hour Ozone Standard, 1997 Annual PM_{2.5} Standard and 2006 Daily PM_{2.5} Standard by the United States Environmental Protection Agency (EPA); and,

WHEREAS, the conformity determination used the latest emissions model approved by the EPA; and,

WHEREAS, conformity was demonstrated using the required emissions tests; and,

WHEREAS, the conformity determination addresses the planned transportation improvements included in the Long Range Regional Mobility Plan 2040 and covers the entire Knoxville Ozone and PM_{2.5} Maintenance/Nonattainment Areas; and,

WHEREAS, the Knoxville Regional TPO FY 2011-2014 Transportation Improvement Program is a subset of the Long Range Regional Mobility Plan 2040; and,

WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the Long Range Regional Mobility Plan 2040 and Air Quality Conformity Determination being circulated for public review, presented at more than two open public meetings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the TPO Technical Committee has recommended approval of the Conformity Determination; and,

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

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

That the Long Range Regional Mobility Plan 2040 and 2011-2014 Transportation Improvement Program have been found to conform to air quality requirements of the Tennessee SIP in accordance with the Clean Air Act as Amended.

April 24, 2013

Date



Mayor Ralph McGill
Town of Farragut
TPO Executive Board Chair



Jeffrey A. Welch
TPO Director

Adopting Resolution by East Tennessee South RPO for the 2013-2040 Knoxville Regional Mobility Plan Amendments and Air Quality Conformity Determination



A RESOLUTION BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION (RPO) ENDORSED THE 2040 KNOXVILLE LONG RANGE REGIONAL MOBILITY PLAN AND AIR QUALITY CONFORMITY DETERMINATION FOR THE KNOXVILLE OZONE AND PARTICULATE MATTER 2.5 NON-ATTAINMENT AREAS

WHEREAS, the East Tennessee South RPO, developed by the Tennessee Department of Transportation (TDOT), is responsible for ensuring that areas not included in a Metropolitan Planning Organization are involved in the state's transportation planning process; and,

WHEREAS, the 2040 Knoxville Long Range Regional Mobility Plan meets the requirements of transportation conformity found in the Clean Air Act Amendments of 1990; and,

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone and PM2.5 Non-attainment Area, including a portion of the East Tennessee South RPO planning area, which has determined that all proposed transportation projects meet the air quality conformity requirements; and,

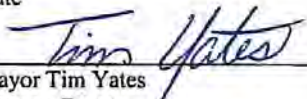
WHEREAS, the TPO's public involvement and Interagency Consultation procedures were adhered to with the 2040 Knoxville Long Range Regional Mobility Plan and Air Quality Conformity Determination being circulated for public review, presented at two public hearings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

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

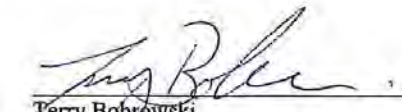
NOW, THEREFORE, BE IT RESOLVED BY THE EAST TENNESSEE SOUTH RURAL PLANNING ORGANIZATION EXECUTIVE BOARD:

That the 2040 Knoxville Long Range Regional Mobility Plan and Air Quality Conformity Determination be endorsed for transportation planning decisions in the Knoxville air quality non-attainment area including a portion of the East Tennessee South RPO planning area.

4-12, 2013
Date



Mayor Tim Yates
Monroe County
East Tennessee South RPO Chair



Terry Bobrowski
Director, East Tennessee Development District

Adopting Resolution by Lakeway Area MTPO Executive Board for Air Quality Conformity Determination

Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO)
 Morristown, TN – Jefferson City, TN – White Pine, TN – Hamblen County, TN – Jefferson County, TN

Resolution Number: 2013-008

A RESOLUTION APPROVING THE AMENDED AIR QUALITY CONFORMITY DETERMINATION REPORT AS PREPARED BY THE KNOXVILLE TPO

WHEREAS, a comprehensive, cooperative, and continuing transportation planning process is to be carried out in the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) study area; and

WHEREAS, The Executive Board of the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) serves as a forum for cooperative decision making on transportation issues in the Urbanized Area; and

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization promotes the safety, protection, and enhancement of transportation corridors within its jurisdictional boundaries, and

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization and the Knoxville TPO are within the same nonattainment area for the 8-Hour Ozone Standard and have a Memorandum of Agreement to cooperatively address transportation conformity requirements for ozone, and

WHEREAS, the Knoxville TPO has prepared a single Air Quality Conformity Determination Report for the entire Ozone Non-attainment Area, including the LAMTPO planning area within Jefferson County, which has determined that all proposed transportation projects from the LAMTPO 2040 Long Range Transportation Plan and the LAMTPO 20011-2014 Transportation Improvement Program; and

WHEREAS, the Clean Air Act Amendments of 1990 (CAAA) and the Moving Ahead for Progress in the 21st Century (MAP-21) require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment of an air pollution standard; and,

WHEREAS, the Knoxville Region is currently designated as a Maintenance Area for the 1997 8-Hour Ozone Standard and a Nonattainment Area for the 2008 8-Hour Ozone Standard, 1997 Annual PM_{2.5} Standard and 2006 Daily PM_{2.5} Standard by the United States Environmental Protection Agency (EPA); and,

WHEREAS, the conformity determination used the latest emissions model approved by the EPA; and,

WHEREAS, conformity was demonstrated using the required emissions tests; and,

WHEREAS, the conformity determination addresses the planned transportation improvements included in the 2040 Long Range Transportation Plan, and the Knoxville

Regional Mobility Plan 2040 and covers the entire Knoxville Ozone and PM2.5 Maintenance/Nonattainment Areas; and,

WHEREAS, the LAMTPO FY 2011-2014 Transportation Improvement Program is a subset of the 2040 Long Range Transportation Plan; and,

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

NOW, THEREFORE, BE IT RESOLVED BY THE LAKEWAY AREA METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION (LAMTPO) EXECUTIVE BOARD:

That the 2040 Long Range Transportation Plan and 2011-2014 Transportation Improvement Program have been found to conform to air quality requirements of the Tennessee SIP in accordance with the Clean Air Act as Amended.

This Resolution shall be effective upon its passage and approval.

ATTEST:



Bill Brittain, Chairman
LAMTPO Executive Board

April 24, 2013
Date

Conformity Approval Letter from USDOT



U.S. Department
of Transportation
**Federal Highway
Administration**

Tennessee Division

May 31, 2013

404 BNA Drive, Suite 508
Nashville, Tennessee 37217
Phone (615) 781-5770

In Reply Refer To:
HDA-TN

Ms. Tanisha Hall
Director, Long Range Planning Division
Tennessee Department of Transportation
James K. Polk Building, Suite 900
Nashville, TN 37243

Subject: Air Quality Conformity Determination for the Knoxville Region

Dear Ms. Hall:

The Tennessee Division of the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) Region IV, in coordination with the Environmental Protection Agency (EPA) Region IV, have reviewed the Air Quality Conformity Determination adopted by the Executive Boards for the Knoxville Regional Transportation Planning Organization (TPO) and the Lakeway Area Metropolitan Transportation Planning Organization (MTPO) on April 24, 2013.

The Air Quality Conformity Determination covers the entire Knoxville 8-hour ozone and fine particulate matter (PM_{2.5}) maintenance/nonattainment areas and addresses the planned transportation improvements from the Knoxville Regional TPO's Long Range Regional Mobility Plan 2040 and Fiscal Year (FY) 2011-2014 Transportation Improvement Program (TIP) and the Lakeway Area MTPO's 2040 Long Range Transportation Plan and FY 2011-2014 TIP.

Based on our review, we find the documents conform to the National Ambient Air Quality Standards (NAAQS) for the 8-hour ozone and PM_{2.5} standards.

If you have any questions regarding this determination, please contact Corbin Davis at (615) 781-5767.

Sincerely,

Pamela M. Kordenbrock
Division Administrator

Executive Summary

The Knoxville Regional Transportation Planning Organization (KRTPO) and the Lakeway Area Metropolitan Planning Organization have prepared updates to their respective Long Range Transportation Plans (LRTP) to cover the time period from 2013-2040. The purpose of this report is to document that the updated LRTPs and the 2011-2014 Transportation Improvement Programs (TIP) of both the KRTPO and LAMTPO conform to federal regulations from the latest surface transportation act known as “Moving Ahead for Progress in the 21st Century (MAP-21) and the Clean Air Act Amendments of 1990.

An Air Quality Conformity Determination for transportation plans and programs within the Knoxville Region is required since it has been designated as a “Nonattainment Area” for the 8-Hour Ozone and Particulate Matter 2.5 (PM2.5) Standards. The United States Environmental Protection Agency (EPA) sets air quality standards through the Clean Air Act in order to protect human health and the environment from unsafe levels of pollution. The air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone.

The Knoxville Region is currently designated as a Nonattainment or Maintenance Area for four separate NAAQS:

- Maintenance for **1997 8-hour Ozone Standard** – Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and part of Cocke counties
- Nonattainment for **2008 8-hour Ozone Standard** – Blount, Knox, and part of Anderson counties
- Nonattainment for **1997 Annual PM2.5 Standard** – Anderson, Blount, Knox, Loudon, and part of Roane counties
- Nonattainment for **2006 Daily PM2.5 Standard** – same area as Annual PM2.5 Standard

There are two Metropolitan Planning Organization jurisdictions within the 8-Hour Nonattainment Area – the KRTPO covers the urbanized portions of Blount, Knox, Loudon, and Sevier counties and LAMTPO covers the urbanized portion of Jefferson County. The KRTPO compiles a single overall transportation plan that encompasses the entire Nonattainment and Maintenance areas for the purposes of demonstrating conformity for the entire region.

Emissions Analysis Summary

1997 8-hour Ozone Standard

The Ozone conformity analysis consists of a Motor Vehicle Emission Budget (MVEB) Test for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx). The MVEB was established for the year 2024 as a part of the 8-Hour Ozone Redesignation Request and Maintenance Plan that was submitted to EPA by the Tennessee Department of Environment & Conservation in May 2010. The MVEB was determined to be “adequate” for purposes of transportation conformity by EPA on July 20, 2010. A notice announcing the effective date of September 30, 2010 for these budgets was published in Federal Register/ Vol. 75, No. 178 on September 15, 2010. The results of the emissions analysis using the MVEBs are summarized in Table K-1:

Table K-1: MVEB Test for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year			
	2015	2024	2034	2040
MVEB	N/A	25.19	25.19	25.19
Projected Emissions	27.20	19.90	22.20	25.12

Oxides of Nitrogen (NOx):	2015	2024	2034	
MVEB	N/A	36.32	36.32	36.32
Projected Emissions	39.08	22.63	20.30	22.50

(emissions in tons per day)

In addition, a “qualitative” test is required for analysis years prior to the budget year of 2024, which in this case involves an analysis year of 2015. The qualitative test as determined through the Interagency Consultation process was to use the interim emissions tests used in previous conformity determinations. The interim emissions tests consist of a 1-Hour Budget Test for Knox County and a No Greater than Baseline Year 2002 Test for the other counties for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx). The results are summarized in Table K-2:

Table K-2: Analysis Year 2015 Qualitative Test for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year 2015	
	Knox County	Other Counties
Maximum Allowable Emissions	22.12	25.11
Projected Emissions	13.34	13.86

Oxides of Nitrogen (NO _x):	Knox County	Other Counties
Maximum Allowable Emissions	31.71	57.94
Projected Emissions	18.52	20.56

(emissions in tons per day)

2008 Ozone Standard

The nonattainment designation for the 2008 Ozone Standard became effective on July 20, 2012 and since there has not yet been a State Implementation Plan developed for this standard the conformity analysis must rely on existing budgets developed for the 1997 Ozone Standard as described above. This Conformity Determination fulfills the requirement that conformity be demonstrated for the 2008 Ozone Standard within 1-year of its effective date, i.e. by July 20, 2013.

The emissions analysis for years 2024 and beyond is identical to the MVEB test shown in Table K-1 above. Conformity for an analysis year prior to 2024 is demonstrated by combining the emissions from the 2008 Ozone Nonattainment counties (Anderson, Blount, and Knox) and comparing that against the 2014 Knox County 1-hour Ozone MVEB shown in Table K-2. Table K-3 summarizes the 2015 analysis year emissions test:

Table K-3: Analysis Year 2015 Qualitative Test for 2008 Ozone Standard

	Analysis Year 2015
Volatile Organic Compounds (VOC):	Anderson, Blount, Knox Counties
Maximum Allowable Emissions	22.12
Projected Emissions	17.30

Oxides of Nitrogen (NO _x):	Anderson, Blount, Knox Counties
Maximum Allowable Emissions	31.71
Projected Emissions	21.97

(emissions in tons per day)

1997 Annual PM_{2.5} Standard

The PM_{2.5} Nonattainment Area includes Anderson, Blount, Knox, Loudon, and a portion of Roane County. The PM_{2.5} air quality standard consists of two different measurement timeframes – an annual level and a daily level – based on the health effects that can occur for short-term versus long-term exposures. The Knoxville Region has been designated as nonattainment for both the daily and annual measurement periods. The designation as a nonattainment area under the Annual PM_{2.5} Standard became effective on April 5, 2005 and

the designation as a nonattainment area for the Daily PM_{2.5} Standard became effective on December 14, 2009.

The Annual PM_{2.5} conformity analysis consists of an MVEB Test for the annual PM_{2.5}-related emissions from on-road mobile sources known as “Direct PM_{2.5}” and “Oxides of Nitrogen” (NO_x). The results of the emissions analysis are summarized in Table K-4:

Table K-4: MVEB Test for Annual PM_{2.5}

Direct Particulate Matter 2.5:	Analysis Year			
	2014	2024	2034	2040
MVEB	283.63	283.63	283.63	283.63
Projected Emissions	167.94	150.94	168.58	187.29

Oxides of Nitrogen (NO _x):	2014	2024	2034	2040
MVEB	18,024.9	18,024.9	18,024.9	18,024.9
Projected Emissions	10,678.49	6,094.95	5,712.70	6,307.94

(emissions in tons per year)

2006 Daily PM_{2.5} Standard

In accordance with transportation conformity requirements found in 40 CFR 93.118, the Daily PM_{2.5} conformity analysis consists of an MVEB Test against the Annual PM_{2.5} budgets shown above since an MVEB is not yet available specifically for the Daily PM_{2.5} Standard. Therefore, the results of the emissions analysis are simply identical to the above analysis for the Annual PM_{2.5} Standard and are repeated in Table K-5:

Table K-5: MVEB Test for Daily PM_{2.5} (using Annual PM_{2.5} MVEB)

Direct Particulate Matter 2.5:	Analysis Year			
	2014	2024	2034	2040
MVEB	283.63	283.63	283.63	283.63
Projected Emissions	167.94	150.94	168.58	187.29

Oxides of Nitrogen (NO _x):	2014	2024	2034	2040
MVEB	18,024.9	18,024.9	18,024.9	18,024.9
Projected Emissions	10,678.49	6,094.95	5,712.70	6,307.94

(emissions in tons per year)

In summary, the emissions analysis performed by the KRTPO demonstrates that the projected emissions from the proposed transportation system are less than the allowable amount for each of the required analysis years and thus conformity for the 8-hour Ozone, Annual PM_{2.5}, and Daily PM_{2.5} standards has been demonstrated for the affected current transportation plans.

The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation process and a 30-day public review and comment period was held. A summary of comments that were received and responses is included in the report.

Chapter K-1: Introduction and Background Information

1.0 Introduction

The primary purpose of this document is to demonstrate that the 2013-2040 Knoxville Long Range Regional Mobility Plan (KRMP), the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2011-2014 Transportation Improvement Program (TIP) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) 2011-2014 TIP meet Transportation/Air Quality Conformity requirements of the Clean Air Act and Moving Ahead for Progress in the 21st Century (MAP-21). In addition, this conformity determination is being made to satisfy the requirement that a conformity finding be made within one year of the effective date of the 2008 8-hour Ozone Standard nonattainment designation, which is due by July 20, 2013. Section 1.1 describes other requirements that are being met by this conformity determination.

1.1 Transportation Plans Covered under this Conformity Determination Report

The 2013-2040 KRMP is an update to the 2009-2034 Knoxville Regional Mobility Plan, for which the original finding of Conformity by the U.S. Department of Transportation was made on June 1, 2009 for both Ozone and PM_{2.5}. The MAP-21 legislation requires that long-range transportation plans be fully updated at a minimum of every four years in a nonattainment area; therefore, this Conformity Determination Report satisfies the requirement for an update by June 1, 2013.

The 2013-2040 KRMP represents a single overall transportation plan that is compiled by the KRTPO to encompass the entire Nonattainment and Maintenance areas for the purposes of demonstrating conformity for the entire region. Other Plans covered by this Conformity Determination Report include:

- The LAMTPO 2040 Long Range Transportation Plan
- The LAMTPO FY 2011-2014 TIP, and
- The KRTPO FY 2011-2014 TIP

The TIPs for the KRTPO and LAMTPO were adopted prior to and will remain active beyond the date of the adoption of the respective long range transportation plans. All of the projects in the TIPs are included in the updated KRMP, and a new cross-reference of projects between the TIP and KRMP is included in Appendix K-L for KRTPO and K-M for LAMTPO.

1.2 Background on the Knoxville Region Ozone and PM2.5 Nonattainment Areas

The Clean Air Act requires the United States Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six “Criteria Pollutants” – Particulate Matter, Ozone, Nitrogen Dioxide, Carbon Monoxide, Sulfur Dioxide, and Lead in order to protect human health and the environment from unsafe levels of these pollutants. These pollutants are regulated through the EPA setting maximum limits on exposure levels that must be reviewed periodically. Regions, which are found to be out of compliance with those limits, may be designated as a “Nonattainment Area”.

Most of the Knoxville Region has recently been, or is currently in non-attainment for two criteria pollutants (ground-level ozone and fine particulate matter) under federal NAAQS as shown in Exhibit K-1 with detailed history of EPA designations for Ozone and PM2.5 following below.



Exhibit K-1: Knoxville 8-Hour Ozone and PM2.5 Non-Attainment Areas

Ozone

The region's first nonattainment designation for ground-level ozone became effective in January 1992 under the "1-Hour Ozone Standard" and included only Knox County. The area was able to demonstrate attainment with that standard effective in October 1993 and was then considered a "Maintenance Area".

EPA promulgated a more stringent ozone standard in 1997 known as the "1997 8-Hour Ozone Standard" which was set at 80 parts per billion (ppb). The EPA designated the counties of Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke within the Great Smoky Mountains National Park in non-attainment of the 1997 8-hour standard for ground level ozone. This nonattainment designation became effective on June 15, 2004. The area demonstrated attainment with this standard effective in March 2011.

A large portion of the 8-Hour Ozone Non-Attainment Area was outside of the currently designated TPO Planning Area and overlapped with an adjoining Metropolitan Planning Organization – the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO). In response to this issue, meetings were held among the County Mayors of the non-attainment counties, TPO Executive Board, Tennessee Department of

Transportation (TDOT), and Tennessee Department of Environment and Conservation (TDEC) to discuss ways to address air quality and transportation planning for the entire Ozone Non-Attainment Area. After alternatives were presented, the consensus was to request the TPO prepare the Regional Long Range Transportation Plan and corresponding air quality conformity analysis for the entire Non-Attainment Area. A Memorandum of Agreement (MOA) was entered into in 2004 between the TPO, TDOT, and LAMTPO, which formalized the responsibilities of each agency to ensure all Transportation Conformity requirements would be addressed.

EPA again strengthened the ozone standard in 2008 based on an updated review of scientific and medical data to ensure that air quality standards are set at an appropriate level to protect the environment and human health. This standard is known as the “2008 8-hour Ozone Standard” and it was set at 75 ppb. A formal designation of nonattainment areas for this standard became effective on July 20, 2012 and included the counties of Blount and Knox plus a small portion of Anderson County surrounding the TVA Bull Run Fossil Plant in the Knoxville Region. A conformity determination for this standard is due within one year of the effective date, i.e. by July 20, 2013 and this conformity determination addresses that requirement. Attainment with this standard is required to be demonstrated by July 2015.

PM2.5

The EPA first promulgated air quality standards for fine particulate matter less than 2.5 microns in diameter (PM2.5) in 1997 due to evidence that these fine particles pose a significant health risk because of their ability to lodge deeply within the lungs. The EPA set standards on both a daily (65 micrograms/cubic meter) and an annual (15 micrograms/cubic meter) basis for levels of PM2.5.

On April 5, 2005, the EPA formally designated the counties of Anderson, Blount, Knox, Loudon, and a portion of Roane in non-attainment for the 1997 Annual PM2.5 Standard. As a result of the PM2.5 designation, the TPO updated the Mobility Plan in 2006, expanding the Knoxville Region to include that portion of Roane County not included in the original Plan and prepared an updated conformity determination.

EPA strengthened the PM2.5 standard in 2006 by reducing the permissible daily levels of PM2.5 from 65 to 35 micrograms per cubic meter. The same counties that were designated under the 1997 Annual PM2.5 Standard were formally designated nonattainment for the 2006 Daily PM2.5 Standard effective December 2009.

1.3 Transportation Conformity Background

Transportation Conformity is required in nonattainment and maintenance areas by federal regulations (40 CFR Parts 51 and 93) and is the mechanism through which on-road mobile source emissions are addressed in the

area's goals for cleaner air. The air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone. The CAA requires that metropolitan transportation plans, metropolitan transportation improvement programs (TIPs) and Federal projects conform to the purpose of the State Implementation Plan (SIP), which details the emissions levels from each sector including mobile sources needed to regain compliance with the air quality standard. If conformity is not demonstrated then the area may enter what is known as a conformity "lapse" period, which can trigger highway sanctions by the EPA under the authority of the Clean Air Act (CAA) meaning only very specific projects may move forward, while funding is essentially frozen for most new roadway construction or widening projects. Under section 179(b)(1) of the CAA, once EPA imposes highway sanctions the FHWA may not approve or award any grants in the sanctioned area except those that are specifically exempted such as safety and air quality improvement projects that do not encourage single occupancy vehicle capacity. The conformity regulations in 40 CFR 93.104(f) allow for a 12-month lapse grace period during which projects that were in the most recent conforming plan and TIP can continue to move forward, but new non-exempt projects cannot be added.

1.4 Nonattainment Area Jurisdictional Coordination

The Knoxville Regional TPO (KRTPO) does not encompass the entire Nonattainment Area for Ozone and PM2.5, and as such, coordination with other transportation planning organizations and the Tennessee Department of Transportation (TDOT) is required in order to ensure all of the proposed transportation projects are included in the conformity analysis. The KRTPO boundary includes the urbanized portions of Blount, Knox, Loudon, and Sevier counties while the LAMTPO boundary includes the urbanized portions of Jefferson County within the 1997 8-hour Ozone Maintenance Area. TDOT is responsible for transportation planning in the rural portions of the nonattainment areas, and TDOT has set up a Rural Planning Organization (RPO) that includes all counties within the Knoxville Nonattainment Area, known as the "East Tennessee South RPO" which was coordinated with for this conformity determination.

A Memorandum of Agreement (MOA) was entered into by KRTPO, LAMTPO, and TDOT in 2004 and subsequently revised in 2007. The MOA specifies that the KRTPO is responsible for compiling a single Conformity Determination Report for the entire Nonattainment Area and that TDOT and LAMTPO will provide the KRTPO with proposed project lists for their respective jurisdictions. Furthermore, since the KRTPO maintains the regional travel demand forecasting model it is responsible for conducting the emissions modeling and overseeing the interagency consultation process. Once the emissions modeling and conformity report have been reviewed through the interagency consultation process the KRTPO and LAMTPO conduct their public involvement process based on their own procedures leading up to formal adoption by each

organization's Executive Board. The East Tennessee South RPO Executive Board also endorses the conformity finding and regional long-range plan. A copy of the MOA is included in Appendix K-N.

1.5 Emissions Analysis Background

Transportation Conformity is demonstrated through a technical process known as an “emissions analysis”, in which future estimates of emissions from the transportation system are compared against what has been determined to be sufficient to allow the area to re-attain the air quality standard. Different types of emissions are involved in the production of Ozone and PM2.5 pollution as described below:

- **Ozone:** Ozone is not directly emitted into the atmosphere; rather it is formed through a chemical reaction between “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx) in the presence of sunlight. Mobile-sources contribute both sources of emissions – VOC are primarily formed from the evaporation of motor fuel, while NOx is formed from the internal combustion process and emitted in vehicle exhaust.
- **PM 2.5:** There are some PM2.5 emissions, known as “Direct PM2.5”, that are directly emitted from motor vehicles. Direct PM2.5 emissions consist of elements contained in vehicle exhaust as well as particles resulting from brake and tire wear. In addition, it is believed that NOx emissions can contribute to secondary formation of PM2.5 so it is included in the emissions analysis.

1.6 Emissions Analysis Procedure

The emissions analysis is performed primarily using two different models – a Travel Demand Forecasting Model (TDFM), developed by the KRTPO and the MOBILE6 emissions rate model, which was developed by the EPA and allows the user to input localized parameters. The TDFM provides outputs of the estimated Vehicle Miles of Travel (VMT) on the transportation system and associated average speeds by functional classification. The MOBILE6 model provides outputs of emission factors in grams per mile of vehicle travel, such that an overall emissions amount can be calculated by multiplying the VMT output from the TDFM with the emission factor from MOBILE6.

There is one area – the partial Cocke County Ozone Nonattainment Area that is not represented in the TDFM for which an “off-model” analysis was performed. The off-model analysis primarily consisted of using historical traffic count data to determine a growth trend with which to project future VMT and is documented in Appendix K-G.

Appendix K-D describes the Travel Demand Forecasting Model parameters in more detail and Appendix K-E of this document describes the MOBILE6 input structure that was used in the emissions analysis.

Finally, the emissions analysis must also be performed for different years throughout the life of the KRMP. Since the timeframe covered by the KRMP is from 2013-2040, 40 CFR part 93.118 requires:

- 1.) That a year within the first five years of the plan must be analyzed, i.e. by 2018;
- 2.) Attainment years within the timeframe of the Plan, i.e. 2014 is the attainment year for the 2006 Daily PM_{2.5} and 2015 is the attainment year for the 2008 Ozone Standard;
- 3.) The final year of the plan (2040), and
- 4.) A year must be chosen in between such that no more than ten years separate any analysis year.

1.7 Summary of Conformity Triggers Being Satisfied

The Conformity Rule sets out specific actions that generate triggers for when transportation conformity must be determined. As examples, conformity of the long range transportation plan must be determined no less frequently than every four years (40 CFR 93.104(b)(3)) and conformity of existing transportation plans and TIPs must be redetermined within two years of the effective date of EPA approval of a maintenance plan which establishes or revises a motor vehicle emissions budget (40 CFR 93.104(e)(2)).

The following conformity triggers are being satisfied with this particular conformity determination:

1. Requirement to determine conformity of transportation plans no less frequently than every four years – the conformity determination for the previous full long range transportation plan update was approved by US DOT on June 1, 2009, which means that another full plan update and conformity determination is due by June 1, 2013.
2. Requirement to determine conformity under the 2008 8-Hour Ozone Standard by July 20, 2013 – The nonattainment designation under the 2008 8-Hour Ozone Standard was made effective on July 20, 2012 and generated a requirement to determine transportation conformity within one year.
3. Requirement to determine conformity for the revised 1-Hour Ozone Maintenance Plan SIP motor vehicle emissions budgets for Knox County within two years – the NO_x motor vehicle emission budget included in the 1-Hour Maintenance Plan SIP for Knox County was revised from 22.49 tons per day to 31.71 tons per day effective on April 22, 2013.

Chapter K-2: Interagency Consultation

2.0 Introduction

The Transportation Conformity Rule in 40 CFR Part 93.105 requires that Interagency Consultation be a part of conformity determinations. Interagency Consultation allows for formal deliberation of any issues that arise as part of the conformity analysis and allows for input from all stakeholder agencies into the process. Specific consultation procedures are specified in the Tennessee Transportation Conformity Regulation found in 1200-3-34-.01(3) of the Tennessee State Code.

2.1 Participating Agencies

The core list of Interagency Consultation Participants included representatives from the following agencies:

- Knoxville Regional TPO
- Knox County Department of Air Quality Management
- Tennessee Department of Transportation
- Tennessee Department of Environment & Conservation
- Federal Highway Administration
- United States Environmental Protection Agency
- Federal Transit Administration
- Lakeway Area Metropolitan TPO
- Great Smoky Mountains National Park Service

A list of participant names is included in Appendix K-A.

2.2 Overview of Consultation Process

The conformity analysis process began with a presentation of background information and proposed analysis procedures to the Interagency Consultation Group on May 10, 2012 and then a more formal “Kick-off” meeting on August 23, 2012. Several subsequent meetings were held via teleconference in order to discuss modeling parameters, project lists and to receive agreement on necessary assumptions. Appendix K-B contains the minutes of each of the interagency meetings.

Chapter K-3: Mobile Source Emissions Analysis and Applicable Governing Regulations



3.0 Introduction

The Metropolitan Planning Regulations of SAFETEA-LU (23 CFR Part 450, February 14, 2007) and the USEPA Transportation Conformity Rule (40 CFR Parts 51 and 93, August 15, 1997 and amended most recently on March 14, 2012) specify certain minimum requirements that must be addressed in performing a mobile source emissions analysis in order to determine conformity of a Long Range Transportation Plan (LRTP). The following sections in this chapter discuss these requirements and how they were addressed by the KRTPO in making the determination of conformity on the amended 2013-2040 KRMP.

3.1 Regulations related to Development of LRTP and Transportation Conformity

The Metropolitan Planning Regulations found in 23 CFR Part 450 specify the content of Long Range Transportation Plans and relevant aspects related to Transportation Conformity.

- **23 CFR 450.322(a)** – The LRTP must have a minimum 20-year planning horizon. The LRTP covers the period of 2013-2040, which meets the requirement for a minimum 20-year planning horizon. The LRTP is known as the Knoxville Long Range Regional Mobility Plan.
- **23 CFR 450.322(b)(6)** – The LRTP must “include design concept and scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of the source of funding, in nonattainment and maintenance areas to permit conformity determinations under the U.S. EPA conformity regulations at 40 CFR part 51. In all areas, all proposed improvements shall be described in sufficient detail to develop cost estimates”. The project list included in the LRMP document and in Appendix K-J covers the necessary detail and project scopes to develop cost estimates as accurately as possible.
- **23 CFR 450.322(b)(11)** – The LRTP must “include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue...” The KRMP main document contains a financial analysis that demonstrates financial constraint, which can be found in Chapter 9 of the 2013-2040 KRMP document.

3.2 Regulations Governing Mobile Source Emissions Analyses

The Transportation Conformity Rule was first promulgated by EPA on November 24, 1993 (58 FR 62188). It has subsequently been amended several times to cover changes such as the implementation of the 1997 8-Hour Ozone and PM_{2.5} National Ambient Air Quality Standards on July 1, 2004. The most recent amendment to the

Transportation Conformity Rule was published in the Federal Register on March 14, 2012 (75 FR 14979), which was a restructuring of several sections such that the Conformity Rule would not need to be revised each time a new or revised NAAQS is issued by EPA. Applicable guidelines from the Transportation Conformity Rule and how they have been addressed in this conformity determination are as follows:

- **40 CFR 93.106(a)** – The transportation plan must specifically describe the transportation system envisioned for certain future years, which are called horizon years and are subject to the following restrictions:
 - The horizon years may be no more than 10 years apart;
 - The first horizon year may not be more than 10 years from the base year used to validate the transportation demand planning model.
 - If the attainment year is in the time span of the transportation plan, the attainment year must be a horizon year.
 - The last horizon year must be the last year of the transportation plan’s forecast period.

The base year for validation of the KRTPO’s transportation demand planning model is 2010 and the KRMP’s forecast period is from 2013 to 2040. Therefore the analysis years used in developing the conformity analysis are:

For Ozone (1997 and 2008 Standards):

Analysis Years

- **2015** – Required as it is the Attainment Year for 2008 Ozone Standard
- **2024** – Year such that there are no more than 10 years between analysis years
- **2034** – Year such that there are no more than 10 years between analysis years
- **2040** – Final year of KRMP

For PM2.5 (Daily and Annual Standards):

Analysis Years

- **2014** – Required as it is the Attainment Year for Daily PM2.5 Standard
- **2024** – Year such that there are no more than 10 years between analysis years
- **2034** – Year such that there are no more than 10 years between analysis years
- **2040** – Final year of KRMP

The analysis years were discussed and determined to be appropriate in the Interagency Consultation process as noted earlier.

- **40 CFR 93.106(a)(2)(i)** – The transportation plan shall quantify and document the demographic and employment factors influencing the expected transportation demand.

The summary of county-level estimates of socioeconomic data and growth projections for all study years is available upon request. The travel demand model used the following socioeconomic characteristics in order to determine estimates of travel for each analysis year:

- Total Population
- Household Population
- Group Quarters Population
- Number of Households
- Average Persons per Household
- Average Median Household Income
- Workers per Household
- Vehicles per Household
- Students per Household
- School Enrollment (K-12)
- University Student Enrollment
- Total Employment
- Basic Employment
- Industrial Employment
- Retail Trade Employment
- Services Employment

The 2010 Census provided estimates of base year values for the above socioeconomic data. The KRTPO developed regional forecasts of future year county-level control totals for the above variables and allocated the growth to appropriate Traffic Analysis Zones based on a number of factors such as the amount of vacant and developable land. More information on the socioeconomic forecasts and land use allocation process is provided in Appendix K-D.

- **40 CFR 93.106(a)(2)(i)** – The highway and transit system shall be described in terms of the regionally significant additions or modifications to the existing transportation network which the transportation plan envisions to be operational in the horizon years.

The transportation system is described in the travel demand model through a GIS-based network of links and nodes with attributes describing the character of roadway. Some of the key attributes that were used to account for the improvement projects that are being proposed include:

- FHWA Functional Classification
- Divided or Un-divided Roadway
- Level of Access Control
- Number of Lanes in each direction
- Lane Width
- Posted Speed Limit
- Area Type (Rural, Suburban, Urban or Major Employment District)

Transit mode usage is also estimated as part of the travel demand model as it relates to the fixed route transit service that is provided by Knoxville Area Transit (KAT).

- **40 CFR 93.110** – The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination. The KRTPO documented its assumptions and planning data with the Interagency Consultation Group, which is summarized in the meeting information included in the Appendix K-B. The demographic and transportation modeling assumptions are documented in Appendix K-D and K-E.
- **40 CFR 93.111** – The conformity determination must be based on the latest emission estimation model available. The EPA officially released a new emissions factor model known as “MOVES2010” for use in conformity determinations on March 2, 2010 however there was an initial 2-year grace period prior to it being actually required for use in preparing a conformity determination, i.e. March 2, 2012. The EPA subsequently extended the grace period for an additional year out to March 2, 2013. This conformity analysis was conducted using MOBILE6.2 primarily because this was the model used to develop the MVEB for the Annual PM2.5 Attainment Demonstration and Ozone Maintenance SIP. The MOBILE6.2 emissions model was able to be used since it was determined that the “start” of the conformity analysis occurred prior to March 2, 2013 as determined through the Interagency Consultation Process. Development of specific inputs used for MOBILE6.2 to describe the Knoxville Region are documented in Appendix K-E.

- **40 CFR 93.112** – The conformity determination must satisfy consultation requirements in the applicable implementation plan. Chapter 2 and documentation in the appendix relate to the interagency consultation process.
- **40 CFR 93.118 and 93.119** – Motor vehicle emissions budget and other applicable conformity tests that must be used. Chapter 4 of this report documents the emissions tests that were used to demonstrate conformity. The emissions tests were discussed in the Interagency Consultation process to determine their appropriateness.
- **40 CFR 93.122** – Procedures for determining transportation-related emissions. The TPO documented its assumptions and methodology for determining future growth in vehicle miles of travel on the regionally significant transportation system with the Interagency Consultation Group. The primary source for projecting future vehicle activity is the travel demand forecasting model, which includes all regionally significant roadways and represents all regionally significant highway projects being proposed for implementation in the KRMP by analysis year. All counties in the nonattainment area are represented in the travel demand model except for the portion of Cocke County within the Great Smoky Mountains National Park. Exhibit K-2 below shows the extents of the travel demand forecasting model's coverage area as well as the roadways that are included. Again, it should be noted that regionally significant roadways are included; however, greater coverage of lower-order roadways (collectors and locals) is also provided in the core TPO planning area of Knox and Blount counties as shown in the yellow-shaded area.

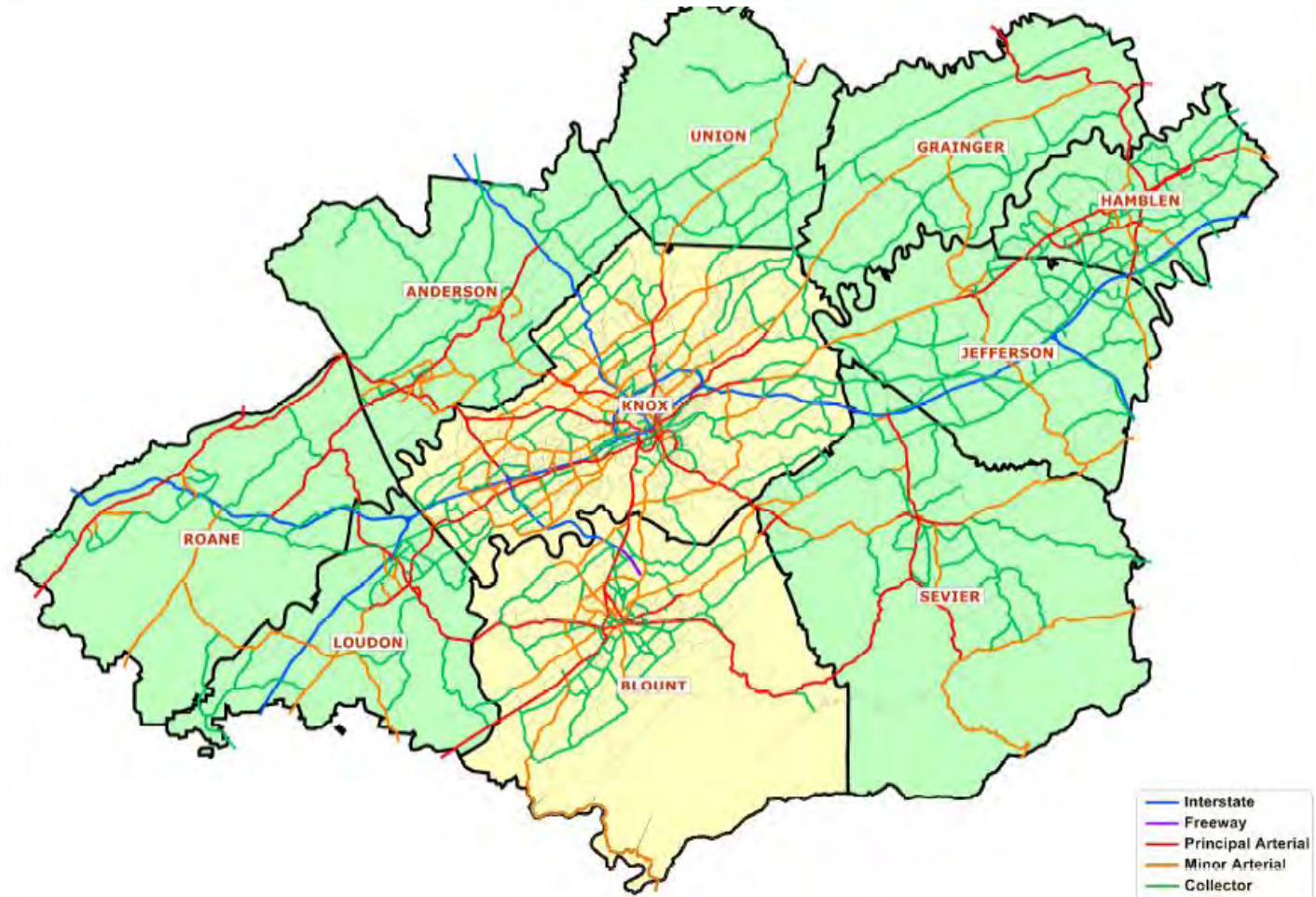


Exhibit K-2: Travel Demand Model Coverage Area

An off-model analysis was performed for Cocke County in which future growth of vehicle miles of travel was estimated using a growth trend that was based on growth of historical observed traffic counts through 2011. Since there were only three roadways that were included in the analysis for Cocke County, and none are proposed for improvement during the life of the LRTP, the off-model analysis used a very simplified approach that is documented in Appendix K-G.

Other than Cocke County, other off-model procedures were performed in order to account for the increase in VMT and change of emissions for the transportation system not included in the model, which is primarily the

local road system outside of Knox County. It was assumed that the local VMT percentage (as a proportion of the rest of the county's VMT on arterial and collector roadways) would remain constant.

- **40 CFR 93.126 and 93.127** – Projects exempt from regional emissions analysis. The highway project list included in the Appendix K-J of this document describes which projects were determined to be exempt from air quality analysis. These projects were deliberated through the Interagency Consultation process to ensure that there was full agreement on the exempt status for projects.

Examples of exempt projects include:

- Bridge Replacement Project – A project that only entails rehabilitating or replacing the existing bridge in-kind without any additional laneage being constructed.
- Pedestrian Improvement Project
- Interchange Reconfiguration Project
- Intersection Project – This could include any type of project that involves only a single intersection such as adding turn lanes (channelization) or a traffic signal.
- Street Lighting
- Pavement Resurfacing
- Reconstruction of a 2-lane roadway, which is only improving the width and geometrics of the roadway and perhaps some additional turn lanes.

3.3 Availability of Technical Information Related to Emissions Analyses

Additional information regarding specific MOBILE6.2 emissions model inputs and outputs and travel demand model assumptions is available upon request on a CD-ROM.

Chapter K-4: Statement of Conformity

4.0 Introduction

This section of the report covers the conformity requirements for the Knoxville Region under both the 8-Hour Ozone Standard as well as the PM_{2.5} Standard. The conformity report complies with all applicable requirements found in the State Implementation Plan (SIP), Clean Air Act, Tennessee Transportation Conformity Regulation and the MPO Planning Regulations from MAP-21 (23 CFR 450.322).

4.1 Statement of Conformity – 1997 8-Hour Ozone Standard

The 1997 8-Hour Ozone conformity analysis consists of a Motor Vehicle Emission Budget (MVEB) Test for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx). The MVEB was established for the year 2024 as a part of the 8-Hour Ozone Redesignation Request and Maintenance Plan that was submitted to EPA by the Tennessee Department of Environment & Conservation in May 2010. The MVEB was determined to be “adequate” for purposes of transportation conformity by EPA on July 20, 2010. A notice announcing the effective date of September 30, 2010 for these budgets was published in Federal Register / Vol. 75, No. 178 on September 15, 2010.

The Maintenance Plan MVEB established for VOC emissions and NOx emissions are as follows:

Pollutant	2024 MVEB (tons/day)
VOC	25.19
NOx	36.32

The results of the emissions analysis are summarized in Table K-6:

Table K-6: Results of the Motor Vehicle Emission Budget Test for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year		
	2024	2034	2040
MVEB	25.19	25.19	25.19
Projected Emissions	19.90	22.20	25.12

Oxides of Nitrogen (NOx):	Analysis Year		
	2024	2034	2040
MVEB	36.32	36.32	36.32
Projected Emissions	22.63	20.30	22.50

(emissions in tons per day)

Note: The above table represents the sum of emissions for the entire Ozone Nonattainment Area including Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke County. Appendix K-C contains a summary of the emissions analysis results for each individual county.

In addition, a “qualitative” test is required for analysis years prior to the budget year of 2024, which in this case involves a required analysis year of 2015. The qualitative test as determined through the Interagency Consultation process was to use the interim emissions tests that have been used in previous conformity determinations. The interim emissions tests consist of a 1-Hour Budget Test for Knox County and a No Greater

than Baseline Year 2002 Test for the other counties for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx). The results are summarized in Table K-7:

Table K-7: Results of the Qualitative Analysis Year 2015 for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year 2015	
	Knox County	Other Counties*
Maximum Allowable Emissions	22.12	25.11
Projected Emissions	13.34	13.86

Oxides of Nitrogen (NOx):	Analysis Year 2015	
	Knox County	Other Counties*
Maximum Allowable Emissions	31.71	57.94
Projected Emissions	18.52	20.56

(emissions in tons per day)

*The other counties within the 1997 Ozone Nonattainment Area include Anderson, Blount, Jefferson, Loudon, Sevier and a portion of Cocke County within the Great Smoky Mountains National Park.

4.1.1 Summary of 8-Hour Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2013-2040 Knoxville Regional Mobility Plan, the LAMPTO 2040 Long Range Transportation Plan as well as the KRTPO and LAMTPO FY 2011-2014 TIPs demonstrate conformity for the 1997 8-Hour Ozone Standard using the necessary emissions tests. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated. All Plans are financially constrained consistent with 23 CFR Part 450 Subpart C based on the projected costs and revenues as presented in the accompanying KRTPO KRMP and LAMTPO LRTP documents.

4.2 Statement of Conformity – 2008 Ozone Standard

The 2008 8-Hour Ozone conformity analysis consists of a Motor Vehicle Emission Budget (MVEB) Test for ozone-forming emissions of “Volatile Organic Compounds” (VOC) and “Oxides of Nitrogen” (NOx). Since there has not yet been a specific State Implementation Plan developed for the 2008 Ozone Standard, conformity is demonstrated using basically the same procedure as described above for the 1997 Ozone Standard. The only difference is for the first analysis year of 2015 in which the emissions from the entire 2008 Ozone Nonattainment Area (Blount, Knox and part of Anderson counties) are compared against either the 2014 1-Hour Ozone MVEB established for Knox County or against the year 2011 baseline emissions from the 2008 Ozone Nonattainment Area.

The Maintenance Plan MVEB established for VOC emissions and NOx emissions is repeated from above for the 1997 Ozone Standard as follows:

Pollutant	2024 MVEB (tons/day)
VOC	25.19
NOx	36.32

The results of the emissions analysis for analysis years 2024 and beyond is identical to the 1997 Ozone Standard and are repeated in Table K-8:

Table K-8: Results of the Motor Vehicle Emission Budget Test for 2008 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year		
	2024	2034	2040
MVEB	25.19	25.19	25.19
Projected Emissions	19.90	22.20	25.12

Oxides of Nitrogen (NOx):	2024	2034	2040
MVEB	36.32	36.32	36.32
Projected Emissions	22.63	20.30	22.50

(emissions in tons per day)

Note: The above table represents the sum of emissions for the entire 1997 Ozone Nonattainment Area including Anderson, Blount, Jefferson, Knox, Loudon, Sevier, and a portion of Cocke County. Appendix K-C contains a summary of the emissions analysis results for each individual county.

As noted above, there are two options for the emissions analysis for the first required analysis year of 2015 – either the 2014 1-Hour MVEB for Knox County compared against the 2015 emissions from the 2008 Ozone Nonattainment Area or the 2015 Emissions from the 2008 Ozone Nonattainment Area compared against the baseline year 2011 emissions from the same area. The TPO staff opted for the first option of these two since the emissions from the 2008 Ozone Nonattainment Area were calculated to be less than the 2014 1-Hour MVEB that was set for Knox County. The results are summarized in the following table (Table K-9):

Table K-9: Results of the Qualitative Analysis Year 2015 for Ozone

Volatile Organic Compounds (VOC):	Analysis Year 2015
	Anderson, Blount, Knox Counties
Maximum Allowable Emissions	22.12
Projected Emissions	17.30

Oxides of Nitrogen (NOx):	Anderson, Blount, Knox Counties
Maximum Allowable Emissions	31.71
Projected Emissions	21.97

(emissions in tons per day)

4.2.1 Summary of 2008 8-Hour Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2013-2040 Knoxville Regional Mobility Plan, the LAMPTO 2040 Long Range Transportation Plan as well as the KRTPO and LAMPTO FY 2011-2014 TIPs demonstrate conformity for the 2008 8-Hour Ozone Standard using the necessary emissions tests. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated. All Plans are financially constrained consistent with 23 CFR Part 450 Subpart C based on the projected costs and revenues as presented in the accompanying KRTPO KRMP (Chapter 9) and LAMPTO LRTP (Chapter 11) documents.

4.3 Statement of Conformity – Annual PM2.5 Standard

As part of the Attainment Demonstration for the Annual PM2.5 Standard the significance of various precursors to the formation of PM2.5 were evaluated. It was determined that the Direct PM2.5 emissions from vehicle exhaust and brake/tire wear and the PM2.5 precursor of Oxides of Nitrogen (NOx) were significant and should be included in the motor vehicle emissions budget. The other types of potential PM2.5 emissions from mobile sources have been determined to not be required until further analysis can be undertaken to determine their contribution to overall PM2.5 pollution – these include the Direct PM2.5 emissions of re-entrained road dust and construction dust, and the PM2.5 precursors of volatile organic compounds, sulfur oxides, and ammonia.

The Attainment Demonstration was submitted to EPA for the Annual PM2.5 Standard (also known as the 1997 PM2.5 Standard) in 2008 and the Motor Vehicle Emission Budgets were officially found adequate and published in the Federal Register / Vol. 75, No. 66 on April 7, 2010. The conformity rule under 40 CFR 93.118 therefore requires a conformity test against the Motor Vehicle Emissions Budgets that are set.

The MVEB established for Direct PM2.5 emissions and NOx emissions are as follows:

Pollutant	2009 MVEB (tons/year)
PM2.5	283.63
NOx	18,024.90

The following table presents the results of the emissions analysis conducted for the analysis years of 2014, 2024, 2034, and 2040 against the established Motor Vehicle Emissions Budget (MVEB) level:

Table K-10: Results of the MVEB Test for Annual PM_{2.5}

Direct Particulate Matter 2.5:	Analysis Year			
	2014	2024	2034	2040
MVEB	283.63	283.63	283.63	283.63
Projected Emissions	167.94	150.94	168.58	187.29

Oxides of Nitrogen (NO _x):	2014	2024	2034	2040
	2014	2024	2034	2040
MVEB	18,024.9	18,024.9	18,024.9	18,024.9
Projected Emissions	10,678.49	6,094.95	5,712.70	6,307.94

(emissions in tons per year)

Note: The above table represents the sum of emissions for the entire PM_{2.5} Nonattainment Area including Anderson, Blount, Knox, Loudon, and a portion of Roane County. Appendix K-C contains a summary of the emissions analysis results for each individual county.

4.3.1 Summary of Annual PM_{2.5} Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2013-2040 KRMP and the FY 2011-2014 TIP demonstrate conformity for the Annual Particulate Matter 2.5 Standard using the necessary emissions test. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated.

4.4 Statement of Conformity – Daily PM_{2.5} Standard

As noted previously in this report, the Daily PM_{2.5} Standard (also known as the 2006 PM_{2.5} Standard) and the designation of the Knoxville Region as nonattainment became effective on December 14, 2009.

Prior to a State Implementation Plan or Attainment Demonstration being available that addresses the Daily PM_{2.5} Standard an area must use budgets for the Annual PM_{2.5} Standard if available to demonstrate conformity for the Daily PM_{2.5} Standard as per 40 CFR 93.109. This case applies to the Knoxville Region since an MVEB was found adequate for the Annual PM_{2.5} Standard as noted in Section 4.2 above. In addition, the geographic area covered by the Daily and Annual PM_{2.5} Standards is identical.

The following table (Table K-11) presents the results of the emissions analysis conducted for the analysis years of 2014, 2024, 2034, and 2040 against the established Annual PM_{2.5} Standard Motor Vehicle Emissions Budget (MVEB) level:

Table K-11: Results of the MVEB Test for Daily PM_{2.5}

Direct Particulate Matter 2.5:	Analysis Year			
	2014	2024	2034	2040
MVEB	283.63	283.63	283.63	283.63
Projected Emissions	167.94	150.94	168.58	187.29

Oxides of Nitrogen (NO _x):	2014	2024	2034	2040
	2014	2024	2034	2040
MVEB	18,024.9	18,024.9	18,024.9	18,024.9
Projected Emissions	10,678.49	6,094.95	5,712.70	6,307.94

(emissions in tons per year)

Note: The above table represents the sum of emissions for the entire PM_{2.5} Nonattainment Area including Anderson, Blount, Knox, Loudon, and a portion of Roane County. Appendix K-C contains a summary of the emissions analysis results for each individual county.

4.4.1 Summary of Daily PM_{2.5} Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the 2013-2040 KRMP and the FY 2011-2014 TIP demonstrate conformity for the Daily Particulate Matter 2.5 Standard using the necessary emissions test. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated.

Chapter K-5: Conclusion and Summary of Comments

5.0 Conclusion

The analysis included in this report has demonstrated that the 2013-2040 Knoxville Regional Long Range Mobility Plan and accompanying FY 2011-2014 Transportation Improvement Programs for the entire Knoxville Nonattainment Area are in conformity with air quality regulations found in the Clean Air Act Amendments of 1990 and MAP-21.

Although Vehicle Miles of Travel are projected to increase steadily in the future, the corresponding emissions rates from vehicles are expected to decrease even more significantly according to the modeling performed by

the KRTPO. It should be noted however that the downward trend in emissions does start to slow and even start to curve back upward for some pollutants after the year 2034 (see Figure K-1 below).

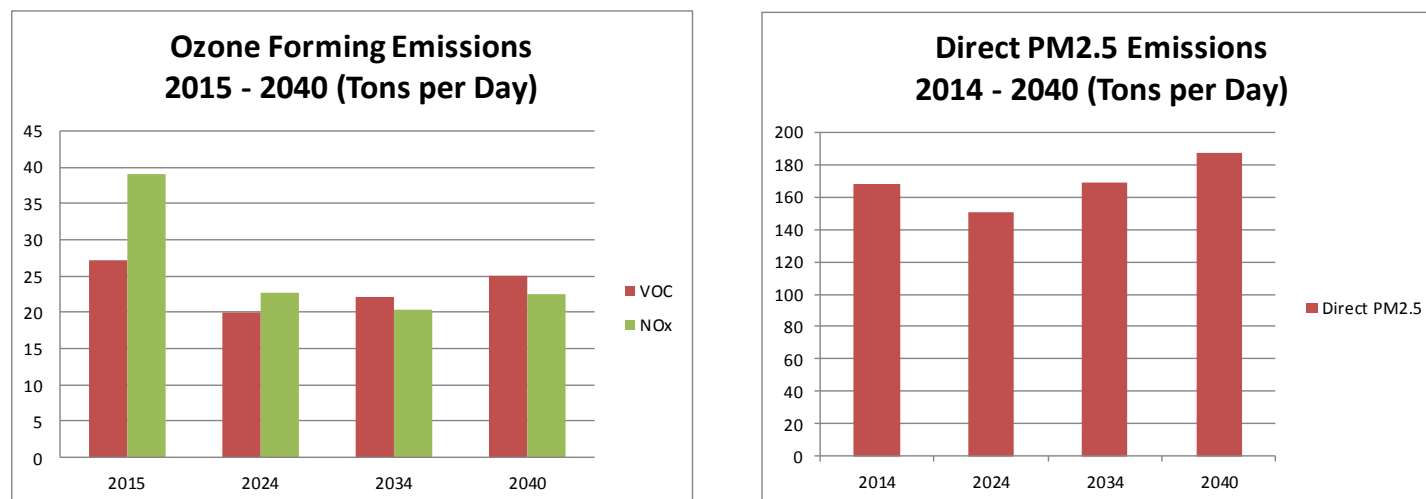


Figure K-1: Emissions Trends for Life of KRMP

The primary reason that emission rates are projected to decline is due to stricter tailpipe emission standards enacted by EPA, most notably the “Tier Two” standards that were enacted in 1999 and phased in between 2004 to 2009. The Tier Two standards represented a 77 to 86 percent reduction in nitrogen oxide emissions for cars and a 92 to 95 percent reduction for trucks from previous standards. A primary mechanism used to reduce emissions was through the reduction in fuel sulfur levels (both gasoline and diesel). The MOBILE6 model incorporates these regulations into its calculations and determines their impacts, which increase over time as the vehicle fleet turns over and includes more of the vehicles affected by the new regulations.

Below is a chart summarizing the growth in VMT for the six primary Nonattainment counties.

Table K-12: VMT Growth in Nonattainment Counties, 2010 to 2040

	2010 VMT	2015 VMT	2024 VMT	2034 VMT	2040 VMT
Anderson	2,147,996	2,176,300	2,527,056	2,890,971	3,240,732
Blount	3,005,088	3,190,928	3,867,345	4,478,448	4,954,605
Jefferson	2,462,960	2,599,888	3,083,703	3,571,290	4,266,707
Knox	14,791,379	15,976,470	18,142,215	21,240,133	23,318,767
Loudon	2,185,018	2,263,860	2,763,251	3,254,637	3,787,007
Sevier	3,566,986	3,927,247	4,780,067	5,681,476	6,341,505
Total	28,159,427	30,134,692	35,163,637	41,116,955	45,909,323

Currently there are no transportation control measures (TCMs) in the Tennessee SIP for the Knoxville 8-hour ozone and PM2.5 nonattainment areas. However, should TCMs be introduced in the area, nothing in the KRMP nor the Transportation Improvement Program will prohibit the timely implementation of any that are approved in the SIP for the Knoxville area.

5.1 Public Involvement Summary

The Knoxville Regional TPO and Lakeway Area MTPO conducted a 30-day comment period between March 1, 2013 and April 1, 2013 to allow for public review and comment on the Air Quality Conformity Determination. The Knoxville Regional TPO held two formal public hearings as part of regularly scheduled Technical Committee and Executive Board meetings that were on April 16, 2013 and April 24, 2013 respectively. The Lakeway MTPO held formal public hearings on Wednesday, March 13, 2013 at the Jefferson City City Hall, Wednesday, March 13, 2013 at the Morristown City Center Building and Thursday, March 14, 2013 at the White Pine Town Hall.

Copies of the Conformity Determination Report were provided to area libraries and made available on the KRTPO web site. Public notice and advertisements for the hearings and locations to view the draft conformity determination report were placed in newspapers by both KRTPO and LAMTPO including: The Knoxville News Sentinel, Maryville Daily Times, The Oak Ridger, The Clinton Courier, Loudon County News Herald, Citizen Tribune, Jefferson Standard Banner, Enlightener (paper targeted toward minority population), Mundo Hispano and MiVida Today (papers targeted toward Hispanic population).

5.2 Public Comment and Response

No public comments were received on the draft Conformity Determination Report.

References

- 1.) Technical Guidance on the Use of MOBILE6 for Emission Inventory Preparation, U.S. EPA Office of Transportation and Air Quality, Jan 2002.
- 2.) User's Guide to MOBILE6.1 and MOBILE6.2: Mobile Source Emission Factor Model, OTAQ, U.S. EPA, EPA420-R-02-028, Oct 2002.
- 3.) Davis, W. T., Miller, T. L., Reed, G. D., Tang, A. M. Y., Doraiswamy, P., and Sanhueza, P., Effects of Growth in VMT and New Mobile Source Emission Standards on NOx and VOC Emissions in Tennessee, Dept. of Civil and Environmental Engineering in the University of Tennessee, Mar. 14, 2002.
- 4.) Yun, Jeongran, Draft Report On-Road Mobile Source Emissions in Tennessee for 2002 an Inventory and Analysis, Dept. of Civil and Environmental Engineering in the University of Tennessee, July 2004.
- 5.) MOBILE6 website, <http://www.epa.gov/otaq/m6.htm>
- 6.) Guidance for Creating Annual On-Road Mobile Source Emission Inventories for PM2.5 Nonattainment Areas for Use in SIPs and Conformity, U.S. EPA Office of Transportation and Air Quality, August 2005.

Glossary of Terms

1-Hour Ozone Standard – A national ambient air quality standard set for ozone based on the peak 1-hour concentration of ozone measured at a monitoring site. The maximum level of ozone allowed under the standard is 124 parts per billion of ozone. The EPA implemented a revised 8-Hour Ozone Standard effective on June 15, 2004, with the 1-Hour Standard being replaced by the 8-Hour Standard one year later on June 15, 2005.

8-Hour Ozone Standard – Similar to 1-Hour Standard, but changes measurement to a maximum level of 84 parts per billion over an 8-hour average timeframe.

Arterial Roadway – A major roadway facility with the primary functions of traffic movement and connects activity centers in the region.

CAA – The U.S. Clean Air Act, referring to the Air Pollution Control Act of 1955, as amended.

Collector Roadway – A minor roadway facility primarily serving to provide access to and from local streets and adjacent land use.

Conformity – An analysis which demonstrates that a transportation plan, program, or project conforms with the State Implementation Plan purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

EPA – United States Environmental Protection Agency.

Exempt Project – Projects that are determined to be exempt from the requirement to determine conformity such as safety, maintenance, certain transit and other projects as determined through Interagency Consultation. These projects may proceed toward implementation even in absence of a conforming transportation plan and TIP.

Financial Constraint – The requirement that the proposed projects in the transportation plans for an area must not have costs, which exceed the reasonably expected revenues.

FHWA – Federal Highway Administration.

FTA – Federal Transit Administration.

Freeway – A divided highway with two or more lanes for the exclusive use of traffic in each direction, and with full control of access and egress.

HPMS – Highway Performance Monitoring System. Summary information obtained from a sample of the arterial and collector functional systems to assess highway condition, performance, air quality trends, and future investment requirements.

Interagency Consultation – The formal process used to involve stakeholder agencies into the conformity determination development.

Local Roadway – A road, usually with low traffic volume, designed solely to serve adjacent development rather than through traffic.

LRTP/LRMP – Long Range Transportation Plan / Long Range Mobility Plan. Requirement for the metropolitan transportation planning process under MAP-21, must have a minimum of 20-year horizon and be updated every four years in nonattainment and maintenance areas.

MAP-21 – Moving Ahead for Progress in the 21st Century. The federal transportation legislation governing the use of federal funds for transportation investments, it was enacted on July 6, 2012 and supersedes SAFETEA-LU.

Maintenance Area – A classification of an area, which was in nonattainment of an air quality standard at one point in time and is required to demonstrate the ability to maintain the standard.

MOBILE6 – An emissions rate model approved by EPA for estimating on-road vehicle emission factors. Most current version is MOBILE6.2.

MVEB – Motor Vehicle Emissions Budget. Established by the SIP, it sets out the maximum levels of emissions from on-road mobile sources for an area.

NAAQS – National Ambient Air Quality Standards

Nonattainment Area – An area designated by the U.S. Environmental Protection Agency as not being in attainment of the national standard for a specified pollutant.

NOx – Oxides of Nitrogen, an emission resulting from the process of fuel combustion.

Ozone – A secondary pollutant formed by the combination of VOCs and NOx in the presence of sunlight.

PM2.5 – PM2.5 particles are air pollutants with a diameter of 2.5 micrometers or less, small enough to invade even the smallest airways. These particles generally come from activities that burn fossil fuels, such as traffic, smelting, and metal processing.

Ramps – Connections to and from freeway facilities to the arterial and collector roadway system.

Regionally Significant Project – A project which is on a facility, which serves a regional transportation need and would normally be included in the modeling of an area's transportation network. These projects must be accounted for specifically in the regional air quality analysis.

SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. The federal transportation legislation governing the use of federal funds for transportation investments, superseded by MAP-21.

SIP – State Implementation Plan. Mandated by the Clean Air Act, SIPs contain details to monitor, control, maintain, and enforce compliance with National Ambient Air Quality Standards.

TAZ – Traffic Analysis Zone. A small geographic area for which socioeconomic data is estimated in the KRTPO travel demand model.

TDEC – Tennessee Department of Environment and Conservation

TDOT – Tennessee Department of Transportation

TIP – Transportation Improvement Program. The TIP is the short-range capital program of projects with some phase of work to be implemented such as design, right-of-way, or construction. The TIP shall cover a period of no less than four years, be updated at least every four years, and be approved by the MPO and the Governor. However, if the TIP covers more than four years, the FHWA and the FTA will consider the projects in the additional years as informational.

Travel Demand Forecasting Model – A computer software tool developed to estimate the travel activity of a region based on the correlation between household-level characteristics and travel behavior.

TPO – Transportation Planning Organization. Each urbanized area in the U.S. with greater than 50,000 population must have a MPO (Metropolitan Planning Organization) in order to coordinate transportation planning. In the Knoxville urbanized area the name TPO was chosen to better represent the activities that are performed.

VMT – Vehicle Miles of Travel. Is calculated from the average daily traffic volume multiplied by the length of roadway.

VOC – Volatile Organic Compounds. VOCs are emitted in the storage and use of fuel, solvents, and many industrial and consumer chemicals, as well as from vegetation.

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Air Quality Conformity Determination

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Appendix K-A: Interagency Consultation Participants

Table KA-1: Knoxville-Area Primary Interagency Consultation Participants

Agency	Representative(s)
Knoxville Regional Transportation Planning Organization (TPO) 400 Main Street, Suite 403 Knoxville, TN 37902 (865) 215-2500 FAX: (865) 215-2068	Jeff Welch, TPO Director Mike Conger, Transportation Engineer Alan Huff, Transportation Planner

Agency	Representative(s)
Knox County Department of Air Quality Management 140 Dameron Avenue Knoxville, TN 37917 (865) 215-5900 FAX: (865) 215-5902	Lynne Liddington, Director Steve McDaniel, Engineer Brian Rivera, Engineer
Tennessee Department of Transportation (TDOT) 505 Deaderick Street Nashville, TN 37243 (615) 741-2848 FAX: (615) 532-8451	Bob Rock, Transportation Manager III Angie Midgett, Transportation Specialist Alan Jones, Air Quality Policy Supervisor Deborah Fleming, MPO Program Manager
Tennessee Department of Environment and Conservation (TDEC), Air Pollution Control Division 401 Church Street, 9th floor L&C Annex Nashville, TN 37243-1531 (615) 532-0554 FAX: (615) 532-0614	Quincy Styke, Deputy Director Marc Corrigan, Environmental Specialist
Federal Highway Administration, Tennessee Division 404 BNA Drive, Building 200, Suite 508 Nashville, TN 37217 (615) 781-5767 FAX: (615) 781-5773	Corbin Davis, Planning & Air Quality Specialist
Federal Highway Administration (FHWA), Southern Resource Center 61 Forsyth Street Atlanta, GA 30303 (404) 562-3570 FAX: (404) 562-3700	Michael Roberts, Air Quality Specialist
U.S. Environmental Protection Agency (EPA), Region 4 61 Forsyth Street Atlanta, GA 30303 (404) 562-9077 FAX: (404) 562-9019	Kelly Sheckler, Environmental Planner Dianna Smith, Environmental Scientist
Federal Transit Administration (FTA), Region 4 (Atlanta) 61 Forsyth Street Atlanta, GA 30303 (404) 562-3500 FAX: (404) 562-3505	Elizabeth Martin, Community Planner
Lakeway Area Metropolitan Transportation Planning Organization (TPO) 100 W. 1st North Street Morristown, TN 37814 (423) 581-0100 FAX: (423) 585-4679	Rich DesGrosseillers, MTPO Director
Great Smoky Mountains National Park (GSMNP), Resource Management & Science Division 1314 Cherokee Orchard Road Gatlinburg, TN 37738 (865) 436-1708 FAX: (865) 430-4753	Jim Renfro, Air Quality Branch Chief Teresa Cantrell, Transportation Planner

Appendix K-B: Interagency Consultation Meeting Information and Comments on Draft CDR

B.1: Meeting 1 – Meeting Minutes (05/10/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Kelly Sheckler, EPA Region 4
- Dianna Smith, EPA Region 4
- Corbin Davis, FHWA TN Division
- Angie Midgett, TDOT
- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.

Discussion Items:

1.) Discussion of 2008 Ozone Standard Nonattainment Designation Process and Implications for Current 1997 8-Hour Ozone Nonattainment Area

Mike stated that the final nonattainment designations under the 2008 8-Hour Ozone Standard (75 ppb) were recently released by EPA and that the region designated for Knoxville is smaller than the previous 1997 8-Hour Nonattainment Area as shown on the map that was sent to the group earlier in the week. According to EPA, the designation will have an “Effective Date” as of 60 days from when the final designations are published in the Federal Register, which could occur any day now. There are a couple implications that will occur one year after the Effective Date, first is that a conformity determination for the new standard is due and second is that conformity requirements will be revoked for areas that were designated nonattainment under the 1997 Standard but are not included in the nonattainment area for the 2008 Standard. Mike noted that this has particular importance for our area because Jefferson County is one of those areas that will have conformity revoked, which means that there will no longer be an overlap with the Lakeway MTPO covering a part of the Nonattainment Area.

Angie Midgett asked for clarification about the revocation of conformity requirements and how this will affect the conformity determination for the next Plan update. Mike replied that the Plan update will be due prior to the revocation of conformity and that the current thinking is that the TPO will still address the

conformity requirements for the older Nonattainment Area with the next conformity determination.

2.) Discussion of 2013 Knoxville Long Range Transportation Plan Update and Proposed Air Quality Conformity Process using MOBILE6

Following on the discussion of the previous item, Mike noted that a Long Range Plan update was due by June 1, 2013 and that the TPO wanted to begin initial discussions today about likely analysis years and budget tests that would be needed to satisfy the various air quality standards. Mike stated that the purpose of today’s call was not to formally begin the conformity process, but that he would like to get some agreement from the IAC group as to the general approach at this time. Mike stated that due to the extension of the MOVES grace period to March 2013, it was the TPO staff’s desire to prepare the conformity determination for the next Long Range Plan using MOBILE6 and he asked if anyone on the IAC had any comments or issues about that approach. Marc Corrigan replied that he thought it would be appropriate to use MOBILE6 and that he encouraged its use due to the grace period being extended and due to the fact that the existing motor vehicle emissions budgets were developed using MOBILE6.

There was a discussion about the required analysis years and budget tests to address the 2008 Ozone Standard and Mike noted that he would update the document that he sent to the group earlier in the week, which was developed in February to reflect the latest information for the IAC group to review. Among the items discussed were the likely need to develop a 2011 model network year, which will be the new baseline year for the updated Ozone Standard and that 2015 would be a required analysis year as being the attainment year for the new Ozone Standard. It was noted that the budgets developed for the larger 1997 Ozone Nonattainment Area would be required for analysis years of 2024 and beyond but that the budget test for the larger area would also by default satisfy the requirements of the new smaller area. It was noted that it would be much simpler to perform the budget test for the larger area rather than trying to specifically separate out the emissions related to the new smaller area – especially since it involves a partial county area in Anderson County.

3. & 4.) Discussion of MOVES Model Transition Status and University of Tennessee MOVES Input File Development / Discussion of Possible Knox County 1-Hour SIP Revision to Increase Safety Margin for NOx MVEB

Mike stated that from preliminary testing done using the new EPA MOVES model there were a couple of issues that were identified with being able to meet

existing budgets that were developed using MOBILE6 as shown in the document that was sent to the IAC group. He reiterated that this was the primary motivation for choosing to use MOBILE6 for the next Long Range Plan update.

There was a discussion regarding the need to possibly pursue the addition of safety margin to the existing NOx budget in the 1-Hour Ozone Maintenance Plan for Knox County. Mike stated that the preliminary tests were done comparing a 2014 analysis year to the budget and that he wanted to run a test with a 2015 analysis year since we now know that will be our first analysis year to see how much emissions will be projected to decrease. Mike also noted that there was less urgency in getting the additional safety margin because it would not be needed for the next conformity determination that will be done using MOBILE6. It was noted however that the process should start as soon as possible if determined to be necessary given the lengthy period of time to get it through the process of IAC review, adoption of both the Knox County Air Board and the State Air Board and finally through the EPA process. Kelly Sheckler noted that the EPA review and approval portion could likely be handled as a parallel process that should expedite it somewhat.

5.) Discussion of PM2.5 SIP Development Status – Possible Redesignation Request Pursuit

Mike asked Marc Corrigan to provide an update on the status of the issues related to developing SIPs for both the Daily and Annual PM2.5 standards. Marc stated that the Division's plan for moving forward with these issues is to pursue the Clean Data Determination (CDD) for both the annual and the daily PM2.5 NAAQS. Once that determination is made, we would retract those parts of the annual PM2.5 Attainment Demonstration that EPA has in house (and has acted on the MVEB portion, only) which we could retract, including the MVEB. Following this, the Division's Plan would be to pursue a redesignation request and maintenance plan for the Knoxville area for both of the PM2.5 NAAQS.

6.) Additional Agenda Item – Discussion of TPO FY2011-2014 TIP Amendments

Unrelated to the other items on the call today there was discussion about a TIP amendment that is being processed by the TPO and its conformity status. The project is TIP Project #2011-085 and involves expansion of the existing Intelligent Transportation System deployment on Interstates in the Knoxville Region. The TPO Staff was unsure of where this project would fit in terms of the Exempt project types listed in the Conformity Regulations. Corbin Davis stated that his opinion was that it would fit under the "Safety" grouping of projects listed as being exempt from conformity in 40 CFR 93.126 as a project type of "Traffic control devices and operating assistance other than signalization projects". There

was agreement from the rest of the group on this opinion although Kelly Sheckler noted that the next regional emissions analysis should attempt to account for the effects of the project as it may relate to any network speed improvements. Mike replied that he would do that.

7.) Next Steps

Mike stated that there would be another IAC call scheduled in the near future to initiate more formal discussions about the process for the next conformity determination and to address the official beginning of conformity. There was discussion about the Tennessee State Conformity SIP becoming officially effective recently, which includes language about determining the official beginning of conformity through IAC and its importance related to fixing the agreed-on planning assumptions at that point in time so that new information becoming available at the last minute does not trigger the need to revise everything that has already been done. It was also noted that the Conformity SIP formally establishes review period lengths and that these will be included in the timeline that the TPO develops to complete the conformity determination and obtain approvals prior to the June 1, 2013 deadline.

B.2: Meeting 2 – Meeting Minutes (08/23/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Alan Huff, TPO
- Kelly Sheckler, EPA Region 4
- Dianna Smith, EPA Region 4
- Corbin Davis, FHWA TN Division
- Deborah Fleming, TDOT
- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Rich DesGrosseillers, LAMTPO

Discussion Items:

1.) Discussion of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Mike Conger described that the Knox County 1-Hour Ozone Maintenance Plan SIP was being amended due to preliminary tests showing that the motor vehicle emissions budgets (MVEB) could be exceeded using the new MOVES2010 model. It was determined that safety margin was available and this amendment would allocate all of the remaining safety margin for NOx to the NOx MVEB. Mike went

through the schedule for moving forward with this amendment process, which is the following:

- Aug. 10 – Sept. 10, 2012 - 30-day IAC review period
- Sept. 17 – Send out Public Notice for hearing at October Knox County Air Pollution Control Board
- Oct. 17 – Hearing at Knox County Air Board
- Nov. 14 – Hearing at TN State Air Board

Steve McDaniel noted that part of the justification for this amendment was the fact that all of the excess emissions available in the safety margin were attributable to reductions from the mobile source sector. Kelly Sheckler asked for clarification regarding the amount of safety margin available and what the MVEB would become if this amendment is approved. Steve replied that the NOx MVEB would increase from the previous amount of 22.49 tpd to 31.71 tpd. Marc Corrigan asked Mike if he thought this budget would be sufficient and Mike replied that it should be given that the MOVES tests indicated only about a 1 ton per day shortfall.

There was discussion regarding the timeframe for EPA acting on the final approvals for this amendment. Kelly noted that EPA would not be able to do an “adequacy” process for this SIP revision and rather it would have to be a formal approval process that would take longer. There was agreement that EPA could conduct a parallel process once the formal public comment period was initiated. It was decided that Knox County AQM would send a letter to EPA requesting a parallel process on the same date that the formal public comment period is begun, which is projected to be Sept. 17th. It was noted that EPA could attempt to do this as a direct final rule, but that it would have to be pulled if there were any comments made during the formal comment period. The goal would be to have this amendment approved and the new NOx MVEB available prior to the conformity determination for the Long Range Plan update being due.

2.) Discussion of Timeline for 2013 Knoxville Mobility Plan Update and Air Quality Conformity Process using MOBILE6

Mike explained the proposed timeline for updating the Mobility Plan and the projected schedule for the upcoming major IAC discussion items that was sent to the group previously. He noted that he would like to schedule IAC calls roughly every month from this point forward until the major effort to complete and review the Conformity Determination Report was done. Mike advised the group that the next call would be the primary beginning point for this conformity determination effort with discussion of latest planning assumptions and MOBILE6 inputs. There was some discussion regarding whether this would be the official

start of conformity or not and it was clarified that once everyone was comfortable with declaring the official start of conformity it could just be documented in the minutes of the IAC call. Mike stated that the primary importance for formally declaring the start of conformity was that in order to be able to still utilize MOBILE6 instead of MOVES that conformity needed to start prior to the end of the MOVES grace period in March 2013.

Mike discussed the concept of the “existing plus committed” project list that would be developed as part of the Mobility Plan and its relation to the conformity horizon years. Mike stated that in the past the E+C list typically meant all those projects would be included in the first horizon year, but that would not necessarily be the case this time around with the first horizon year of 2014 being so close to the Plan adoption next year. Marc said that he had seen other areas with E+C projects outside of the first horizon year and that the controlling factor has to do with when the project will be actually open to traffic. Deborah noted that one thing to look at would be with big projects that may be considered as committed, but are constructed as smaller segments of independent utility.

3.) Preliminary Discussions on Required Horizon Years and Analysis Tests for Conformity Determination

Mike described the summary horizon year and analysis test document, which he sent to the group previously. Mike noted that with multiple standards comes complexity in terms of different required analysis years and tests. Mike stated the primary required horizon years were the final year of the Mobility Plan, which is 2040, 2014 is required for Daily PM2.5 as the attainment year for that standard and 2015 is required for the 2008 Ozone Standard as its attainment year. The other years were chosen primarily to ensure that the requirement that there be no more than 10 years between horizon years is met.

Mike noted that the recent PM2.5 Clean Data Determination could have an impact on the required analysis tests in terms of the potential retraction of the 2009 Attainment Demonstration that was made for the Annual PM2.5 Standard. Once the clean data determination was completely finalized then TDEC would be able to retract the attainment demonstration, which included an approved MVEB. If this is done prior to the conformity determination for the Mobility Plan then it would change the analysis test for the 2014 horizon year from a budget test against the 2009 MVEB to a less than baseline year test. Mike stated that the TPO would prefer to maintain the 2009 MVEB for this conformity analysis as it would be simpler than developing baseline year 2002 emissions for the Annual PM2.5 Standard and baseline year 2008 emissions for the Daily PM2.5 Standard. It was decided that there would be further discussions on this topic going forward and Marc noted that he would need to determine specific implications of

delaying retraction and discuss those with his management prior to deciding when TDEC would request retraction of the Attainment Demonstration.

Finally, Mike explained that there was a potential option for determining conformity for the 2008 Ozone Standard's first horizon year of 2015 by using the 1-Hour Ozone Maintenance Plan 2014 MVEB for Knox County. He stated that if it can be shown that emissions from the entire 2008 Ozone Nonattainment Area (Knox, Blount, and part of Anderson County) are less than the 2014 Knox-only MVEB then conformity would be satisfied. He noted that this ties in to the previous discussion about amending that Maintenance Plan MVEB.

4.) **Discussion of Various Current NAAQS/Air Quality Planning Issues affecting the Knoxville Region**

- **Air Quality Monitoring Data Update** – Marc provided an update on current Ozone monitoring data and updated design values across the state based on the preliminary 2012 data that was sent to the IAC group.
- **MOVES Transition** – Mike described latest efforts to make the transition to the MOVES model, of which the primary activity has been related to reviewing a potential software tool known as PPSUITE that provides an interface between travel demand model outputs and MOVES. Mike noted that PPSUITE appears to offer a good mechanism for organizing data inputs and outputs for MOVES and that we need to again start discussions at the statewide level on appropriate inputs for MOVES.
- **List of Conformity Triggers** – Mike noted that he has not documented a current list of conformity triggers recently. He stated that this current conformity determination would be addressing the conformity triggers of the 4-year Plan update requirement and the first conformity determination due for the 2008 Ozone Standard, which is due by July 20, 2013. Marc stated that he was not aware of any others on the immediate horizon but that future triggers would likely result from efforts to develop Maintenance Plans for the PM2.5 standards.

5.) **Schedule Next IAC Call**

It was determined that the next call would be Tuesday, September 18th at 10:00 am ET (9:00 am CT).

B.3: Meeting 3 – Meeting Minutes (09/18/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO

- Kelly Sheckler, EPA Region 4
- Dianna Smith, EPA Region 4
- Corbin Davis, FHWA TN Division
- Deborah Fleming, TDOT
- Angie Midgett, TDOT
- Bob Rock, TDOT
- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.
- Rich DesGrosseillers, LAMTPO

Discussion Items:

1.) **Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment**

Steve McDaniel stated that no comments were received from the IAC on this amendment and therefore the public notice was sent out on September 11th for the hearing by the Knox County Air Pollution Control Board at their October 17th meeting. Steve asked for clarification from EPA regarding the process to request a parallel review by EPA. It was determined that a letter would first have to come from Knox County to TDEC and that TDEC would then be the agency to request a parallel review from EPA. Dianna Smith & Kelly Sheckler noted that they would follow-up with Lynorae Benjamin at EPA to make sure about the specific protocols and timing of review periods and they will then contact Steve with the additional information. Dianna asked what the timeframe was for needing the final approval of this amendment. Mike replied that the main purpose for the amendment was to have the additional emissions budget available at the time when the use of MOVES was mandatory, but that the additional budget could also be helpful for the current conformity determination as well.

2.) **Discussion of Latest Planning Assumptions for Conformity Determination for 2013 Knoxville Mobility Plan Update**

Mike reviewed the planning assumptions document that was sent to the IAC group prior to the call. He noted that the purpose of this conformity determination/regional emissions analysis was to address the 4-year Long Range Plan update requirement and also to satisfy the need to prepare a conformity determination for the 2008 Ozone Standard within 1-year of its effective date - by July 20, 2013. Mike first discussed the travel demand forecasting model development process and the validation statistics for the model, which was recently updated to a 2010 base year in order to coincide with the wealth of information that is available from the decennial census. Mike reviewed the model geography, which was expanded to a full 10 counties with this update by taking in

Hamblen County, which is part of the Lakeway MTPo. Mike also briefly discussed the results of the validation analysis that was performed to ensure that the model was accurately representing traffic conditions observed in the year 2010 based on TDOT traffic count and other information available. He noted that the model meets the validation criteria that have been established for travel demand models in Tennessee by the Tennessee Model Users Group.

Corbin Davis asked for clarification regarding the use of the HPMS correction factors. Mike replied that the HPMS correction factors were very important for the development of the air quality analysis as they are applied to the model outputs of vehicle miles of travel (VMT) to ensure that the model is accurately replicating the amount of VMT in the base year, which directly affects the amount of emissions that are predicted. Mike stated that a separate document was provided to the IAC group that shows each HPMS factor by county and functional classification of roadway in the study area. He noted that the HPMS factor was the number multiplied by the model VMT such that if the number is less than 1 it means that the model was over-predicting VMT in the base year and if it is greater than 1 it means that the model is under-predicting VMT. Mike also noted that the travel demand model does not include the entire roadway network particularly the lower-classified and local roadways such that those HPMS factors would be very high. In the case of local roadways, Mike stated that an off-model technique would be used to forecast VMT by relying on historical growth trends instead.

Corbin asked about whether factors would be developed for the other counties included in the travel demand model that were not shown in the HPMS factor table since it included 6-counties whereas the model area includes 10 counties. Mike replied that the 6-counties in the table were part of the nonattainment areas whereas the other four counties were not currently designated as nonattainment and therefore they do not need to have adjustment factors or further analysis performed on them for the purposes of air quality conformity. Mike noted that the travel that is generated outside but enters into one of the nonattainment counties does get accounted for since that traffic volume shows up on the roadway links in the model.

Mike next covered the development of the socioeconomic projections that are used as input to the model for forecasting of future traffic conditions. Mike noted that a document explaining the methodology for the forecasts was sent to the IAC group for review. He stated that in summary the methodology used was based on local characteristics with the labor force linkage cohort survival method of population forecasting. This method projects population based on change in

births, deaths, and net migration over the forecasting period with the net migration amount based on growth of the labor force.

Corbin noted that the planning assumptions document stated that these projections had been endorsed by the TPO Executive Board back in April and he asked if they had also been formally endorsed by the LAMTPO Board. Rich DesGrosseillers replied that he had reviewed the numbers and was in agreement with them but that he did not think they had been formally endorsed by his Board. Angie noted that the LAMTPO Board probably should formally review and endorse these and suggested it be done at an upcoming meeting. Rich replied that they would do so.

Mike stated that the final step involved in the socioeconomic forecasting process was to allocate the county-level control totals down to the smaller level of geography represented in the travel demand model known as Traffic Analysis Zones. He stated that the TPO was still working on documenting the methodology for that process and that it would be available for the next IAC call for discussion.

Mike continued to the next section of the planning assumptions document, which deals with the development of inputs for the MOBILE6 emissions rate model that is going to be used for this conformity analysis. He noted that this group has discussed several of these items on the previous IAC call regarding the proposed emissions tests and analysis years. He noted that there have been some additional discussions regarding the 2009 MVEB for the Annual PM2.5 Standard since it may be rescinded due to the area receiving a Clean Data Determination. Mike stated that he had asked TDEC to delay the request to rescind the 2009 Attainment Demonstration in order to leave the MVEB in place during this conformity analysis process, as it will be more straightforward to have a budget than to use separate baseline year emissions tests for the Daily and Annual PM2.5 standards. It was noted that this subject will be discussed again going forward based on further coordination between EPA and TDEC but as of right now it appears that the Attainment Demonstration can stay in place for the duration of this conformity process.

Mike next reviewed the assumptions for major inputs to MOBILE6 as documented and following are the items that were discussed in more detail:

- **Temperature** – Mike asked whether new min/max temperature inputs needed to be developed specifically for the 2008 Ozone Standard. Marc replied that since the emissions tests for the new ozone standard will still be utilizing the maintenance plan budgets developed for the 1997 standard then we should use the same temperature inputs we have

been using in the past in order to remain consistent. Dianna Smith agreed.

- **Humidity** – Same as with Temperature
- **Vehicle Age Distribution** – There was discussion about the availability of updated vehicle registration data and the fact that this should be used instead of the older data although Marc pointed out that we have not fully reviewed the new data for reasonableness as an entire group and that should be done at a future call.
- **Vehicle Activity** – Mike noted that he needed to follow-up with the National Park Service regarding data to utilize in forecasting future traffic in the partial county nonattainment area of Cocke County within the Smoky Mountains National Park.
- **VMT by vehicle classification** – Corbin asked about the note regarding the departure from the technical guidance in using the Arterial/Collector driving cycle for Rural Other Principal Arterials instead of the Freeway driving cycle and whether this was a new procedure being proposed. Mike replied that this was the same assumption that we had made in past conformity determinations based on the fact that most rural principal arterials in the Knoxville region do not function like freeways in terms of their access control.
- **Weekday and Weekend Day Activity** – Mike stated that he needed to follow-up with TDOT to obtain current seasonal adjustment factor information

3.) **Schedule Next IAC Call**

It was determined that the next call would be Monday, October 22nd at 10:00 a.m. ET (9:00 a.m. CT).

B.4: Meeting 4 - Meeting Minutes (10/22/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Kelly Sheckler, EPA Region 4
- Dianna Smith, EPA Region 4
- Corbin Davis, FHWA TN Division
- Deborah Fleming, TDOT
- Angie Midgett, TDOT
- Bob Rock, TDOT
- Marc Corrigan, TDEC

- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.
- Rich DesGrosseillers, LAMTPO

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Mike stated that the Safety Margin adjustment was approved by the Knox County Air Pollution Control Board last week on October 17th. The next step is for Knox County Air Quality Management to formally request the revision be incorporated in the SIP by the State Air Board. Marc Corrigan stated the next State Air Board meeting was scheduled for November 14th and it could be heard there. Marc stated that a parallel review request was sent to EPA and Kelly Sheckler said that EPA would be able to start the concurrency process. Dianna Smith noted that this adjustment will be posted to the “Adequacy” webpage to make the public aware of it. Kelly stated she is not aware of any issues and that these types of actions typically are not controversial using Rocky Mount as an example where they were able to do a direct final rule. Assuming that no major issues arise it is assumed that the new emission budget would be effective by the end of the calendar year.

2.) Continued Discussion of Latest Planning Assumptions for Conformity Determination for 2013 Knoxville Mobility Plan Update

Mike reviewed some items as follow-up from the previous month’s discussion –

- **Vehicle Age Distribution** – New information on age distribution was developed for TDOT by the University of Tennessee for use in the MOVES model. Angie Midgett stated that TDOT is in the process of re-evaluating that data and other information that was developed by U.T. since there were some known issues with quality of the Department of Revenue vehicle registration data. Mike asked whether the evaluation would be complete in time to be available for this conformity determination and Angie said she was unsure at this time. Marc stated that the primary issues with the data were with its use in determining the overall vehicle populations (vehicle types, counts, etc) and not as much in terms of the vehicle age distribution. Mike proposed that he work with Marc between now and the next call to further evaluate the data and present some recommendations for IAC review on how to proceed for this conformity analysis.
- **Vehicle Activity** – Mike stated that he has contacted the National Park Service to get updated traffic counts and visitation data for the areas of

the park in the partial non-attainment area of Cocke County. He has not yet received anything, but should have it for the next call.

- **Seasonal Adjustment Factor** – Mike reviewed the 2010 SAF information that he received from TDOT. He noted that the TPO's procedure in the past has been to average together the three summer months of June, July, and August. Corbin Davis asked why 2010 was used instead of a more recent year such as 2011. Mike replied that the main consideration was to be consistent with the base year of the travel demand model. Marc asked if there was an explanation for the difference between the rural categories. Mike replied that he was not sure of the exact reason but that there was a significant difference in the weekend factors for the two rural categories. Mike noted that he would try to look into the treatment of weekday versus weekend factors further but that he would like to try to stay as consistent as possible with previous methodology used to develop the SIP budgets.
- **Land Use Allocation** – Mike asked Rich DesGrosseillers if Lakeway had adopted the socio-economic control totals yet. Rich replied that their Technical Committee had approved them already and they were expected to be approved by the Executive Board this week. Mike then reviewed the land use allocation methodology document describing the general methodology that was used. Marc asked for clarification about the table on the bottom of page 6 of the document. Mike replied that these are the rates that were assumed for allocating people and employment to each grid cell of the model. The rates were developed primarily using regional trends – for example the typical average household size in the region and typical land consumption in terms of houses per acre that are normally built given zoning and other characteristics. On the employment side, the floor-area ratio of commercial buildings around the region were reviewed and new developments were assumed to follow a similar trend. National rates from the ITE Trip Generation Manual were used to determine an average number of employees per square feet of the new developments. Mike noted that the result of the allocation at grid cell level was then aggregated to the traffic analysis zones for use in the travel demand model. Mike stated he could provide a TAZ-by-TAZ table showing change although he was not sure how useful that format would be and another option would be to develop maps that show the changes in population and employment by TAZ.

3.) Preliminary Project List Review

Mike reviewed the project lists that had been sent out previously. He noted that the TPO had issued a Call for Projects that ended on September 20th where the

TPO jurisdictions re-evaluated the current project list and submitted new projects that are desired in their areas. The current project list has been updated to reflect projects that have been completed or are “committed” and also some projects have been dropped from the list. Mike stated that some projects have had a change in description or termini and these were noted by strikethroughs and the updated information. Mike next reviewed the listing of new projects and described the methodology used to determine regionally significance based on the criteria that our area has already established in consultation with the IAC. He asked if there were any questions about the new projects. Kelly asked what the timeline was for needing a determination by the IAC on regional significance of each project. Mike replied that there is still a few months before the list will be totally finalized as the TPO staff was still refining the list and determining whether additional projects would be added that result from the system deficiency analysis and congestion management process. Mike also noted that the regional significance determination was not very critical in terms of the fact that the TPO intends to include all projects in the travel demand model if possible regardless of their regional significance status.

Mike noted that additional “operations” types of projects would likely be added to the final project list and asked for clarification regarding the exempt status of these types of projects. He said that he was aware of a recent signal system upgrade project in Chattanooga that required a conformity analysis and wanted to know more about the process done for that project. Marc remembered the project and conformity analysis but said he would need to follow-up later with more information as he did not recall specific details at the moment.

Marc asked about the Lakeway Area new project list and wondered why the statement was made that all the projects were exempt. Mike responded that he inadvertently left out a statement to the effect that all of the projects were exempt based on each individual project description fitting the exempt project criteria and the intent was not to make a blanket statement that any project regardless of scope would be exempt in Jefferson County. Kelly stated that she has seen other areas add a column to their project list that describes the specific section of the regulations that applies to each project that has been declared exempt. Mike replied that he could add that information to the next version of the project list.

4.) Schedule Next IAC Call

It was determined that the next call would be Tuesday, November 27th at 2:00 p.m. ET (1:00 p.m. CT).

B.5: Meeting 5 – Meeting Minutes (11/27/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Kelly Sheckler, EPA Region 4
- Dianna Smith, EPA Region 4
- Corbin Davis, FHWA TN Division
- Angie Midgett, TDOT
- Bob Rock, TDOT
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.
- Rich DesGrosseillers, LAMTPO
- Jim Renfro, GSMNP

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Kelly Sheckler noted that the public comment period for the proposed SIP revision that is being parallel processed ended on November 26th and no comments were received. This means that an additional 30-day public comment period will not be required assuming that the final SIP submittal from the state does not have significant changes from the initial proposal. Steve McDaniel stated that the Tennessee State Air Board did not meet in November, but may be meeting in December to take action on the SIP revision and if it is approved then it would be submitted to EPA to begin the final steps in becoming an official change to the motor vehicle emissions budget. Kelly stated that she would continue doing everything possible to ensure that this item was staying on track for MVEB availability by April 2013.

2.) Continued Discussion/Finalize Latest Planning Assumptions

Mike explained that the latest planning assumptions document that has been previously sent and reviewed with the IAC has been updated with respect to a few items, which were highlighted in blue in the document. He stated that he is hoping to work through any major issues as soon as possible to avoid issues at the time of the official IAC review of the draft conformity report.

- **Vehicle Age Distribution** – Mike stated that the vehicle age distribution input was probably the main issue that is still not completely resolved at this point. As discussed on previous IAC calls, there is new information on age distribution that was developed for TDOT by the University of

Tennessee for use in the MOVES model. Mike noted that in the time since the previous IAC call he and Marc Corrigan investigated whether the new data could easily be converted from MOVES to MOBILE6 format, which is being used for this conformity analysis. Mike stated that it did not appear to be possible to backward convert the data and also it was likely not feasible to completely reformat the original vehicle registration data for use in MOBILE6 given the time and cost that would be involved.

Mike stated that another issue is that the new data itself was being currently reassessed by TDOT and U.T. due to potential quality control issues of the raw vehicle registration dataset that was received from the Tennessee Department of Revenue. Angie Midgett noted that it would likely be more than six months before any revised data would be available, which would be too late for the purposes of this conformity analysis.

Mike reviewed a comparison between the 2000 vehicle fleet age data with the new 2010 vehicle fleet data. He noted that there are some cases where the 2000 data shows a newer vehicle fleet, which would produce fewer emissions. Steve McDaniel stated that the biggest differences appeared to be in vehicle categories, which were probably less prevalent in the fleet such as motorcycles and refuse trucks thus making this not a major issue.

Dianna Smith stated that a question had been posed to the EPA's Office of Transportation and Air Quality (OTAQ) for guidance on this issue. At the minimum, it will need to be fully documented in the conformity report as to why the older dataset was still being used. Once an opinion is received from OTAQ it will be shared with the IAC.

- **Vehicle Activity** – Mike stated that he received updated traffic counts from the National Park Service for the areas of the park in the partial non-attainment area of Cocke County. He shared the historical data with the IAC and showed how it was being projected into the future for use in determining emissions in this portion of the nonattainment area that is not covered by the model.
- **Land Use Allocation** – Mike reviewed the allocation of future population and employment growth at the Traffic Analysis Zone level which was illustrated on color-coded maps. Mike noted that a large portion of the overall regional population and employment growth was projected to occur in Knox County, which is why a lot of color showed up there.

Corbin Davis noted that the planning assumptions document includes a statement about the future year population and employment projection control

totals being adopted by the TPO Executive Board and he asked if the Lakeway Executive Board had also taken action to endorse them as had been talked about on a previous call. Rich DesGrosseillers responded that the LAMTPO Board had adopted the control totals at their most recent meeting, which occurred on October 24th.

3.) Revised Long Range Plan Project List Review

Mike reviewed the most current project lists that are being considered for the Long Range Plan update. Mike noted that separate project lists have been developed for Existing plus Committed projects (E+C), Pedestrian/Greenway projects, Transit projects, ITS/Operations projects and finally Roadway projects. Mike stated that the pedestrian/greenway and transit projects should all be exempt. He noted that some of the ITS/Operations projects would need to include an off-model analysis where updated traffic signal timings were going to be involved, which he would base on the Chattanooga example of a similar project. He discussed the roadway project list in more detail and noted that a column had been added showing which category the Exempt projects fall under according to the conformity regulations. He also noted that some projects on this list have been pushed out to an “illustrative” project category as shown in the horizon year column based on the TPO’s financial constraint analysis showing that not all projects can be fiscally constrained.

Mike stated that the project list was still not completely finalized at this point but that he would like to receive comments from the IAC as soon as possible regarding the exempt and regional significance status if there are questions or issues. Corbin asked for clarification regarding some of the information used to make a determination on regional significance. He asked if there was a set threshold for Average Daily Traffic that had been established by the IAC for regional significance. Mike responded that the ADT was just included for informational purposes in terms of being another factor to be considered with the others in making a determination on regional significance and there was not specific threshold that was set for a roadway to be considered regionally significant. Corbin also asked for clarification about some of the responses to the “Connectivity to Major Activity Center” factor that refer to not being the primary access. Mike replied that he was interpreting the connections to major activity centers factor to mean that it was only the primary access point used by traffic coming from outside the region that would be considered regionally significant. Mike used an example of a regional shopping mall that has direct access from an interstate interchange as its primary access, but also has secondary access from the surface street system, which would not typically be considered regionally significant roadway facilities. Corbin stated that perhaps it would be helpful to have some maps of the specific areas in question to illustrate this aspect for

those who are not as familiar with the Knoxville regional roadway network. Mike responded that would be possible to do and noted that the functional classification of the roadway was another clue as far as primary/secondary access in terms of if a roadway has a local or collector classification it was most likely secondary. Corbin asked if the roadway functional classifications were reassessed periodically. Mike replied that the TPO would be doing a reassessment soon as part of the process to update functional classification based on the new 2010 Census urbanized area, and the TPO had also done a major classification reassessment a couple years ago as well.

Mike again reiterated that if there are any other specific comments or questions about the project list that they could also be sent to him after the call.

4.) Schedule Next IAC Call

It was determined that the next call would be Tuesday, December 18th at 2:00 p.m. ET (1:00 p.m. CT). The primary purpose for the call would be to review the expected response from EPA’s OTAQ on the vehicle age data issue to determine an appropriate course of action. Mike stated that the current schedule is still to submit the draft Conformity Determination Report for the 30-day IAC formal review period on January 11, 2013.

B.6: Meeting 6 – Meeting Minutes (12/18/12):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Kelly Sheckler, EPA Region 4
- Corbin Davis, FHWA TN Division
- Deborah Fleming, TDOT
- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.
- Jim Renfro, GSMNP

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Marc Corrigan stated that the notice of the proposed rule to revise the 1-Hour Maintenance Plan MVEBs that was published in today’s Federal Register appeared to have higher NOx and VOC MVEBs than what was intended. It was

determined that an apparent misinterpretation occurred in processing the request from TDEC/Knox County Air Quality Management which was intended to be a replacement page for the original SIP instead of a new standalone document. Kelly Sheckler stated that she would attempt to get this issue corrected as expeditiously as possible although it may be delayed due to the upcoming holidays. She stated that she would keep the IAC group apprised of the progress.

2.) Continued Discussion/Finalize Latest Planning Assumptions

Mike updated the group regarding the primary remaining issue, which deals with the Vehicle Age Distribution input to MOBILE6. As discussed on prior calls, there is updated information for this input which has been formatted for the new MOVES model and there are some challenges involved in converting the information to MOBILE6 format. Mike stated that there was an email that had been forwarded by Kelly Sheckler from Gary Dolce with the EPA OTAQ that stated we should use the most current information in order to meet the requirement for using latest planning assumptions. Mike noted that he and Marc Corrigan had been working on developing a conversion spreadsheet but that some issues came up in which further guidance was needed from Gary. Mike stated that he spoke with Gary earlier today and received the guidance he needed to move forward. Mike noted that he would coordinate further with Marc and would also send the information to Gary Dolce for his review to ensure the appropriate methodology was being used.

3.) Revised Long Range Plan Project List Review

Mike stated that he wanted to respond to the comments that were received from the last IAC call regarding the regional significance status of some of the projects. Mike went through the list of projects that Corbin Davis had commented on in an email and noted where revisions had been made in the project list in response to the comments. Mike stated that in general he was fine with changing the regional significance determinations at this point in time since these projects would all be included in the travel model and it should not really affect anything. He noted however that at some point it would probably be good to completely revisit the regional significance definition to refine it based on some of the issues that have recently been discussed such as whether any connectivity to a major activity center would be considered regionally significant or if we should consider only the direct primary access to be such.

Corbin Davis pointed out that the map that was sent to show project 09-688 indicated that Morrell Road was a minor arterial whereas the project listing has it as a collector. Mike replied that he would check into that as it could possibly be

that it was reclassified from a collector to a minor arterial as part of a regional functional classification update that was done in the last two years.

Mike noted that a project for an auxiliary lane on I-40 was added to the list of roadway projects in the 2024 horizon year. He also noted that the Lakeway MPO has several individual roadway resurfacing projects in their project list and that he was grouping all of these into a single project for the purposes of the conformity determination project list to keep things simpler. Likewise, Mike noted that there was a project grouping for the Lakeway MPO safety projects as well. Marc asked what types of projects were included in the safety grouping. Deborah Fleming responded that these were minor projects that were by definition categorical exclusions that did not involve major reconstruction or right of way acquisition. She stated that they mostly involve signage and guardrail installation.

Mike noted that he was still uncertain as to how to categorize Project 13-602, which is a citywide replacement of signal hardware for the City of Knoxville in terms of its regional significance. It was noted that the City of Chattanooga had a similar project that was specifically determined to be regionally significant however, nobody on today's call could remark on the specific situation for Chattanooga. Kelly stated that she would try to follow-up with Dianna Smith to get more information. Corbin asked about the methodology that Chattanooga used to determine emissions impacts from the project. Mike stated that he had a copy of the conformity determination but did not remember specifics at this time. He stated he would attempt to contact the Chattanooga TPO for more information and would provide that to the IAC.

Finally, Mike also noted that a project had been added to the E+C project list for Town Creek Pkwy in Lenoir City that had inadvertently been left off previously. Marc asked what the roadway classification for this was. Mike responded that he thought it was an Urban Collector and he noted that this specific project had been through a regional significance determination through the IAC in the last couple of years.

4.) Added Agenda Item – EPA Conformity Updates

Kelly provided the group with a some updates of a few pertinent conformity items such as a forthcoming patch expected for MOVES 2010b to correct an error, a new OTAQ web page, a new version of CAL3QHCR that can be downloaded and a revision to AERMOD model.

5.) Schedule Next IAC Call

It was determined that the next call would be Tuesday, January 22, 2013 at 2:00 p.m. ET (1:00 p.m. CT).

B.7: Meeting 7 – Meeting Minutes (01/22/13):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Jeff Welch, TPO
- Alan Huff, TPO
- Corbin Davis, FHWA TN Division
- Deborah Fleming, TDOT
- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

There was nothing new to report on this item at the current time.

2.) Discussion of Age Distribution Input Proposal Document

Mike provided a summary of the document that was sent to the IAC group by email last week regarding the proposed approach for the vehicle age distribution input data. Mike stated that the document outlines the two major issues with the most recent data developed by the University of Tennessee, which are possible quality issues with the vehicle registration data itself and the issue of converting it from MOVES format to MOBILE6 format. Mike stated that based on those issues along with the need to use the most recent data available where possible to meet the “latest planning assumptions” requirement that the TPO has proposed using the new data for MOBILE6 vehicle types 1-5, which are the light duty vehicle types and the defaults for vehicle types 6-16. He noted that this was consistent with the methodology used to develop the original MOBILE6 age distribution dataset that has been used in previous conformity determinations and SIP development efforts over the past several years.

Corbin Davis asked which emissions model would be used for the next conformity determination that would be required for the update to the Transportation Improvement Program – MOVES or MOBILE6? Mike replied that if a new regional emissions analysis was needed then likely MOVES would be required since the grace period for being able to still use MOBILE6 expires in March 2013. There was

a discussion about when the actual start of conformity would be since that is what determines when MOBILE6 can still be used prior to the end of the grace period. It was decided that for the purposes of this current conformity determination for the long range plan update that conformity has officially begun since the TPO has begun the emissions modeling aspect of the conformity determination and has developed a draft report already. The TIP conformity process however will likely not have reached the point of performing the modeling tasks by the time the MOBILE6 grace period expires since the TIP project application process will extend beyond March 2013. Mike stated that it was the hope of the TPO staff that since we are currently updating the long range plan that there would be no new projects that are generated for the TIP update that are not already reflected in the appropriate long range plan horizon year such that there would be a potential option to rely on a previous regional emissions analysis to determine conformity for the TIP.

Mike asked if there was a consensus among the IAC members as to the TPO’s proposed approach for using the updated age distribution data for this current conformity determination. Marc Corrigan stated that he endorses the proposed TPO approach and Steve McDaniel also indicated he was in approval of it. There were no other comments on the proposal such that it is assumed there is IAC consensus on the approach although Mike noted that since EPA was not on the call today that he would attempt to contact them separately about this matter as well.

3.) Discussion of Draft Conformity Determination Report

Mike stated that the links to the draft Conformity Determination Report (CDR) and appendices were provided to the IAC group last Wednesday, January 16th which begins the official 30-day IAC review period through Friday, February 15th. Mike provided a brief summary of the results from the emissions analysis that was performed to demonstrate conformity of the Long Range Plan update known as the 2013-2040 Knoxville Long Range Regional Mobility Plan. Mike noted that there were a few minor edits that would be needed for the final document with regard to references to the appendices in the main document and also that he had not developed the methodology to account for the emissions impacts of the traffic signal coordination projects that had been discussed previously. He stated that he would provide separate documentation of this analysis to the IAC once completed and it would be folded into the CDR as appropriate. Marc Corrigan asked for clarification regarding one of the tables in Appendix K-D involving the travel demand model validation statistics and what the columns “Mean Count” and “Mean Load” represented. Mike responded that the mean count column was the average of the actual traffic count data by functional classification category and the mean load column represented the average volumes predicted by the

travel demand model and that the comparison of these was a validation criteria that we attempt to meet within percent error ranges. Marc commented that it appeared the travel demand model was doing very well in terms of the percent errors shown in this table. Marc also asked how this related to the HPMS correction factors that were developed and shown in a subsequent table. Mike responded that the HPMS correction factors were more disaggregate in terms of being specific to each county and facility type whereas the validation criteria table represented the entire 10-county modeling region.

Mike asked the IAC group if there was a preference about how to provide all of the numerous specific MOBILE6 input and output files, which could be printed out and included in the appendices but that would generate several additional pages to the document. Marc Corrigan responded that the files should be made available to those who desire them in some manner and that perhaps one option could be to post the files for download on the website. Mike stated that he wasn't sure that would be possible but he would check with the IT person about it. Mike also noted that in the past the TPO had prepared a CD-ROM with all of the files that could be provided upon request. Marc stated that whatever option was chosen it needed to be clearly stated someplace in the documentation as to the availability of the files and their location.

Mike asked the group whether another IAC call was desired prior to the end of the comment period on Friday, February 15th or if we should wait until after the comment period and have a call where the TPO would provide a summary of the comments and proposed responses for discussion. Corbin Davis responded that his preference would be for the latter approach and it was decided to tentatively schedule the next IAC call for Friday, February 22nd.

4.) Schedule Next IAC Call

It was determined that the next call would be Friday, February 22, 2013 at 10:00 a.m. ET (9:00 a.m. CT).

B.8: Meeting 8 – Meeting Minutes (02/22/13):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Jeff Welch, TPO
- Kelly Sheckler, EPA Region 4
- Corbin Davis, FHWA TN Division
- Angie Midgett, TDOT
- Deborah Fleming, TDOT

- Marc Corrigan, TDEC
- Steve McDaniel, Knox County Air Quality Mgmt.
- Brian Rivera, Knox County Air Quality Mgmt.
- Rich DesGrosseillers, LAMTPO

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Marc Corrigan noted that both a Proposed and Direct Final Rule have been published in the Federal Register and that the revised MVEB would be effective on April 22nd unless EPA receives adverse comments. Mike Conger stated that he was still not totally clear whether the conformity report should list just the revised budget or both the revised and existing budget as the draft shows. Mike noted that the Executive Board adoption of the Long Range Plan and Conformity is set for just two days after the effective date on April 24th. Marc responded that we should know by around March 22nd whether or not EPA has received significant comments and therefore we can circle back around on that issue. Marc also noted that this conformity finding would immediately satisfy the 2-year conformity trigger requirement that comes along with new MVEBs.

Steve McDaniel stated that he wanted to point out a minor clarification with regard to how the federal register was worded. He noted that whereas the federal register states that the SIP revision was submitted to EPA by the State of Tennessee through TDECs that this action was really initiated by the Knox County Department of Air Quality Management since the Maintenance Area in question is wholly comprised of Knox County and the original Maintenance Plan and this revision being entirely developed by Knox County Air Quality Management and filtered through TDEC and State Air Board.

2.) Discussion of Draft CDR Comments and TPO Response

Mike stated that comments had been received from both FHWA and TDEC and that a summary list was prepared with TPO responses and sent out the morning of this call. He noted that several of FHWA's comments had to do with fairly minor revisions in text or need for additional clarification which can be addressed. Mike asked Corbin if there were any specific comments that he would like to discuss further on today's call. Corbin responded that he had a chance to quickly go through the responses this morning and there were a couple that he wanted to follow-up on. First was comment #25 regarding the determination of PM2.5 precursors. Mike replied that these precursors were determined as part of the 2009 PM2.5 Annual Standard Attainment Demonstration and he would add that information to the revised CDR. Corbin then verified his statement in

comment #37 regarding the update timing of Long Range Plans since Mike had asked for further clarification. Finally, Corbin noted that with regard to comment #45 he recommended that the TPO include the minutes from the May 10, 2012 meeting in the CDR since there was some relevant information that was discussed at that time.

Mike discussed the TDEC comments and noted that a couple of minor changes were identified as Marc Corrigan had identified some errors in the calculations in relation to comments #1 and #2.

Mike reviewed a list of three project changes that had been made since the release of the initial draft CDR. The first one was a change in horizon year from 2014 to 2015 for a short project on I-140 to add a lane in the northbound direction. Mike noted that this affected the emissions analysis for the 2014 Horizon Year in which this project was removed from the travel demand model; he further noted that based on the calculations that the change in estimated emissions was very minor. The second project he discussed was splitting the Cumberland Avenue project into two phases with the first phase moving into the 2014 Horizon Year. He noted that this change did not impact the emissions analysis however since the first phase of the project fell into the Exempt category since it does not affect roadway capacity and the second phase remains in the same Horizon Year as before. The last project he discussed was splitting the Chapman Hwy project into three phases with all three phases remaining in the 2024 Horizon Year, which would not affect the emissions analysis.

Mike stated that he was going through the draft CDR and noting all changes in response to the comments and the above project revisions in green highlighting. He noted that a revised version should be made available to the IAC later that afternoon. He asked if any of the IAC members had an objection to the TPO beginning the formal 30-day public comment period a week from today on March 1st. There was no objection from the IAC members based on the comments and proposed responses that were discussed today.

Corbin Davis asked Mike for an update on the current timeline leading up to the conformity approval. Mike stated that as he mentioned, the public comment period would begin around March 1st and last 30 days until around the end of March or beginning of April. He said that assuming there were no significant public comments then the TPO would move towards getting endorsement from the TPO Technical Committee in mid-April and TPO Executive Board adoption on April 24th. The Plan and Conformity Determination would then be submitted to U.S. DOT for a formal conformity finding with consultation from EPA for a period

of up to 30 days ultimately leading up to a final approval by the deadline of June 1st.

B.9: Meeting 9 – Meeting Minutes (04/02/13):

Knoxville Air Quality Interagency Consultation Conference Call

Call Participants:

- Mike Conger, TPO
- Kelly Sheckler, EPA Region 4
- Corbin Davis, FHWA TN Division
- Angie Midgett, TDOT
- Marc Corrigan, TDEC

Discussion Items:

1.) Update on Status of Knox County 1-Hour Ozone Maintenance SIP Safety Margin Amendment

Kelly Sheckler noted that EPA did not receive any public comment on the proposed direct final rule to revise the 1-Hour Ozone Maintenance SIP to include additional safety margin for the NOx MVEB. It was further noted that since this is going through a direct final rule making process and there was no public comment that the revision will become automatically effective on April 22, 2013 as per the Federal Register Notice that was published on February 20, 2013. Mike Conger stated that since the conformity determination will be adopted on April 24, 2013 the final conformity determination report will be updated to reflect the revised MVEB.

2.) Update on Status of Draft CDR for 2040 Long Range Plan – Discussion of Public Comment and Remaining Steps

Mike noted that there had been no public comment relating to the conformity determination portion of the long range plan update. He stated that he would be putting the final touches on the conformity report and drafting the adopting resolutions that would be heard by the TPO Executive Board on April 24th. Angie Midgett stated that she understood that the Lakeway MTPO was also on schedule to adopt their plan update on the same day as the TPO.

3.) Discussion of Timeline and Conformity Process for 2014-2017 Transportation Improvement Program

Mike advised the group of the upcoming process and timeline to update the Transportation Improvement Program which would be following directly on the heels of the long range plan update. He stated that it was his hope that since the TIP is coming along so close to the LRTP that there should be direct consistency in

terms of the project scopes and timeframes such that conformity for the TIP would likely be a formality in terms of verifying that conformity can be demonstrated by relying on a previous regional emissions analysis. He noted that if there were new projects being added or other significant changes then the schedule would likely have to be modified since additional time would be needed to use MOVES for the first time as it is now required to be used for conformity.

B.10: Interagency Comments on Draft Conformity Determination Report

FHWA TN Division Comments

- 1.) **Page K-6:** The last line of the second paragraph states, “The air quality conformity process is used to ensure that federal funds will not be spent on projects that delay timely attainment of these standards in a nonattainment area.” The air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone. Please expand the text.
Response: Text added
- 2.) **Page K-7:** In the first paragraph, it isn’t necessary to note the day of the week – Wednesday, September 15, 2010. The other dates did not include the day of the week. Please maintain consistency.
Response: Text deleted
- 3.) **Page K-8:** The titles for Tables K-2 and K-3 are identical even though the qualitative tests are different. Please expand the titles to better describe the differences between the two tests.
Response: Table K-3 title revised to “2008 Ozone Standard” instead of “1997 Ozone Standard”
- 4.) **Page K-9:** Is there a citation for the “EPA guidance” referenced under the “2006 Daily PM2.5 Standard” section? Or was this discussed through the IAC group?
Response: Changed “EPA guidance” to “transportation conformity requirements found in 40 CFR 93.118.
- 5.) **Page K-11:** It would be helpful to reiterate that The KRTPO compiles a single overall transportation plan that encompasses the entire Nonattainment and Maintenance areas for the purposes of demonstrating conformity for the entire region.
Response: Text added
- 6.) **Page K-11:** The second paragraph contains an incomplete Appendix reference.
Response: Reference updated
- 7.) **Page K-12:** For exhibit K-1, the legend has a red symbology for PM2.5 Nonattainment, but I don’t see any areas on the map with the red color. Am I missing something?
Response: Map replaced with corrected version showing the PM2.5 Nonattainment Area in Roane County as red.
- 8.) **Page K-13:** It would be helpful to distinguish when the MOA was signed at this point in the text (I see that it’s also covered on K-14).
Response: Added year it was signed (2004) to text
- 9.) **Page K-13:** In the last paragraph before the PM2.5 section, it would be helpful to reiterate that that a conformity finding must be made within one year of the effective date of the 2008 8-hour Ozone Standard nonattainment designation, which is July 20, 2013.
Response: Text added
- 10.) **Page K-14:** The first paragraph seems out of place. Maybe it should go before Exhibit K-1 on page K-12.
Response: Deleted this paragraph – appears to be redundant and probably a carryover from previous CDR.
- 11.) **Page K-14, Section 1.3:** Again, the air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone. Please expand the text.
Response: Text added
- 12.) **Page K-14, Section 1.3:** The CAA requires that metropolitan transportation plans, metropolitan transportation improvement programs (TIPs) and Federal projects conform to the purpose of the State Implementation Plan (SIP). Please expand the text.
Response: Text added
- 13.) **Page K-14:** Section 1.3 could be improved by expanding the details of a conformity lapse, including the 12-month grace period and highway sanctions outlined by Section 179(b)(1) of the CAA.
Response: Text added
- 14.) **Page K-14:** Section 1.4 could be improved by briefly expanding on the roles of KRTPO, LAMPTO, East Tennessee South RPO, and TDOT in terms of emissions modeling, transportation conformity analysis, interagency consultation, public involvement, and conformity adoption.

- Response:** Text added
- 15.) **Page K-15:** I wouldn't classify LAMPTO a new MPO. Thirteen years is enough time for an MPO to develop and hone a mature transportation planning process.
Response: Text deleted
- 16.) **Page K-16:** What about the attainment year(s)?
Response: Text added
- 17.) **Page K-18:** Why does the introduction paragraph for section 3.0 reference the amended 2009-2034 KRMP?
Response: Text amended to 2013-2040 – this is a carryover from previous CDR
- 18.) **Page K-18:** Please provide a reference to the page/section in the 2013-2040 KRMP that contains the fiscal constraint demonstration.
Response: Text added
- 19.) **Page K-21:** In the section on 40 CFR 93.111, the description of the 3-year grace period should be expanded to clarify the original two year grace period and the one year grace period extension.
Response: Text added
- 20.) **Page K-23:** Why isn't Cocke County part of Exhibit K-2?
Response: Cocke County is not included within the Travel Demand Model coverage area
- 21.) **Page K-23:** Please provide a reference/link to the previous conformity determination report.
Response: Expanded on the methodology discussion in Appendix K-G and removed the reference to a previous conformity determination in this section.
- 22.) **Page: K-25:** In section 4.1, it isn't necessary to note the day of the week – Wednesday, September 15, 2010. The other dates did not include the day of the week. Please maintain consistency.
Response: Text deleted
- 23.) **Page K-28:** It would be helpful if the "Note" at the top of the page directly followed Table K-8.
Response: Corrected this formatting issue
- 24.) **Page K-28:** Please provide a reference to the page/section in the 2013-2040 KRMP that contains the fiscal constraint demonstration.
Response: Text added
- 25.) **Page K-29:** For the first paragraph of Section 4.3, when was it determined that conformity determinations should address the Direct PM2.5 emissions from vehicle exhaust and brake/tire wear and the PM2.5 precursor of Oxides of Nitrogen (NOx). I didn't see this in the meeting minutes.
Response: This was determined as part of the Attainment Demonstration evaluation of significant PM2.5 precursors, will add statement in CDR to that effect.
- 26.) **Page K-30:** It would be helpful if the "Note" at the top of the page directly followed Table K-10.
Response: Corrected this formatting issue
- 27.) **Page: K-30:** Why does section 4.3.1. reference the 2009-2034 KRMP?
Response: Corrected
- 28.) **Page K-30:** In section 4.4, why does this report satisfy the requirement for a conformity determination by December 14, 2010? What about the 2014 attainment year?
Response: Text deleted – this was a carryover from the previous CDR that is no longer relevant
- 29.) **Page K-30:** The last paragraph should include the 2040 analysis year.
Response: Text added
- 30.) **Page K-31:** Why does section 4.4.1. reference the 2009-2034 KRMP?
Response: Corrected
- 31.) **Page K-32:** "Although Vehicle Miles of Travel are projected to increase steadily in the future, the corresponding emissions rates from vehicles are expected to decrease even more significantly according to the modeling performed by the KRTPO." This statement should be supported by a graph or some other visual display.
Response: Chart added
- 32.) **Page K-32:** Any other explanations for decline in emission rates? E.g. Operational efficiencies? ITS? Congestion reduction?
Response: The overwhelming factor influencing the emission rates computed by MOBILE6 has to do with the impact from federal emission standards.
- 33.) **Page K-32:** Please specify/cite the "regulations" referenced in the second paragraph.
Response: Text added regarding Tier Two standards
- 34.) **Page K-32:** Did the Knoxville Regional TPO and Lakeway Area MTPO hold two public hearings each?
Response: The public hearing dates will be included in the final CDR, the specific number of public hearings has not yet been determined.
- 35.) **Page K-33:** Does the list of newspapers include those in the Lakeway Area?

Response: I will check with LAMTPO on the appropriate newspapers to include when the public notices go out

- 36.) **Page K-35:** The “conformity” definition should be added to pages K-6 and K-14 (see comments above).

Response: Correction made

- 37.) **Page K-36:** For the definition of LRTP/LRMP, these plans must be updated every four years in nonattainment and maintenance areas. Population is not a factor. Please revise.

Response: Revision made

- 38.) **Page K-36:** Please include MAP-21.

Response: Text added.

- 39.) **Page K-37:** The TIP shall cover a period of no less than four years, be updated at least every four years, and be approved by the MPO and the Governor. However, if the TIP covers more than four years, the FHWA and the FTA will consider the projects in the additional years as informational. Please revise.

Response: Text revised

Knoxville Air Quality Conformity Determination Appendices

- 40.) **Page K-33:** The Air Quality Conformity Determination ends on page K-38, yet the appendices begin on page K-33. Please fix this discrepancy.

Response: Correction made

- 41.) **Page K-34:** The FHWA Tennessee Division is located at 404 BNA Drive, Building 200, Suite 508, Nashville, TN 37217.

Response: Correction made

- 42.) **Page K-34:** Corbin Davis’ title is Planning & Air Quality Specialist.

Response: Correction made

- 43.) **Page K-34:** Deborah Fleming from TDOT also participated.

Response: Correction made

- 44.) **Page K-34:** Brian Rivera, Knox County Air Quality Mgmt also participated.

Response: Correction made

- 45.) **Page K-35:** Why weren’t the IAC meeting minutes from May 10, 2012 included?

Response: Minutes added to appendix

- 46.) **Page K-93:** It would be helpful if the color symbology was defined in a legend.

Response: Legend added

- 47.) **Page K-106:** Please be sure to include the appropriate amendments made to the FY2011-2014 TIPs.

Response: These will be reflected

Tennessee Dept of Environment & Conservation (TDEC)

Comments:

- 1.) In looking at the Appendices, on page K-50, there were no 2015 VMT nor HPMS adjustment factor applied to the partial Anderson County table. Why is the methodology different here?

Response: The methodology is different because of the partial area effects. It is explained to some degree on page K-89 of the appendices. Basically, the adjustment factors were developed separately just for the partial area and were already applied to the model VMT before putting them into the emissions analysis table shown on K-50. The adjustment factors were developed based on 2010 traffic counts in the partial area versus what the 2010 model outputs were.

I did notice an error in that table however. It looks like I put some VMT into the Rural Ramps category whereas it should have gone into Rural Locals. It looks like it has a very small impact when I correct it, but I will be sure to get it right in the final version.

- 2.) Why in the attached spreadsheet for Blount County does it appear as if urban interstate is calculated differently than the others in Blount County?

Response: It appears I had a copy-paste error. The 147,255 number should have been put in the “2024 VMT” column instead of the HPMS Adjusted column. After the correction, it lowered the overall VOC and NOx by .02 tpd, which will be reflected in the final CDR.

- 3.) On page K-76 of the CDR, what do ‘mean count’ and ‘mean load’ in the table mean? How do they differ?

Response: The mean count column was the average of the actual traffic count data by functional classification category and the mean load column represented the average volumes predicted by the travel demand model and that the comparison of these was a validation criteria that we attempt to meet within percent error ranges.

Appendix K-C: Emissions Analysis Summary for Each County

C.1: Ozone Analysis

C.1.1. Baseline Year 2002:

Table KA-2: Ozone Analysis, Baseline 2002, Anderson County

Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.392	9.956	585,938	0.90	6.43
Rural Principal Arterial	1.769	2.116	128,009	0.25	0.30
Rural Minor Arterial	1.731	2.216	82,336	0.16	0.20
Rural Collector	1.797	1.974	415,364	0.82	0.90
Rural Local	1.797	1.974	116,956	0.23	0.25
Rural Ramps	1.850	4.611	7,718	0.02	0.04
Urban Interstate	0.000	0.000		0.00	0.00
Urban Principal Arterial	1.820	1.968	621,164	1.25	1.35
Urban Minor Arterial	1.883	1.938	248,731	0.52	0.53
Urban Collector	2.038	1.824	67,900	0.15	0.14
Urban Local	3.196	1.827	131,453	0.46	0.26
Urban Ramps	0.000	0.000		0.00	0.00
TOTAL			2,405,569	4.75	10.41

Table KA-3: Ozone Analysis, Baseline 2002, Blount County

Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	0.000	0.000	0	0.00	0.00
Rural Principal Arterial	1.718	2.348	351,198	0.67	0.91
Rural Minor Arterial	1.776	2.151	82,958	0.16	0.20
Rural Collector	1.824	1.938	384,786	0.77	0.82
Rural Local	1.824	1.938	311,300	0.63	0.67
Rural Ramps	0.000	0.000	0	0.00	0.00
Urban Interstate	1.685	2.268	72,499	0.13	0.18
Urban Principal Arterial	1.772	2.162	867,920	1.70	2.07
Urban Minor Arterial	1.866	2.056	295,955	0.61	0.67
Urban Collector	1.963	1.930	264,581	0.57	0.56
Urban Local	3.189	1.922	281,439	0.99	0.60
Urban Ramps	2.226	2.012	14,744	0.04	0.03
TOTAL			2,927,381	6.26	6.71

Table KA-4: Ozone Analysis, Baseline 2002, Jefferson County

Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.372	10.528	1,196,190	1.81	13.88
Rural Principal Arterial	0.000	0.000	0	0.00	0.00
Rural Minor Arterial	1.729	2.557	457,546	0.87	1.29
Rural Collector	1.796	2.009	318,803	0.63	0.71
Rural Local	1.796	2.009	116,648	0.23	0.26
Rural Ramps	1.824	4.796	23,168	0.05	0.12
Urban Interstate	1.372	10.528	42,651	0.06	0.49
Urban Principal Arterial	1.817	2.138	109,802	0.22	0.26
Urban Minor Arterial	1.880	2.095	19,613	0.04	0.05
Urban Collector	1.897	1.977	12,809	0.03	0.03
Urban Local	3.186	1.944	28,856	0.10	0.06
Urban Ramps	1.824	4.796	3,112	0.01	0.02
TOTAL			2,329,197	4.05	17.16

Table KA-5: Ozone Analysis, Baseline 2002, Loudon County

Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate	1.410	9.449	1,142,305	1.78	11.90
Rural Principal Arterial	1.693	2.880	166,833	0.31	0.53
Rural Minor Arterial	1.720	2.780	180,844	0.34	0.55
Rural Collector	1.813	1.977	322,713	0.64	0.70
Rural Local	1.813	1.977	107,297	0.21	0.23
Rural Ramps	1.873	4.447	26,892	0.06	0.13
Urban Interstate	1.431	8.915	19,783	0.03	0.19
Urban Principal Arterial	1.857	2.025	138,182	0.28	0.31
Urban Minor Arterial	1.903	1.955	25,580	0.05	0.06
Urban Collector	1.868	1.950	17,458	0.04	0.04
Urban Local	3.188	1.954	23,281	0.08	0.05
Urban Ramps	1.900	4.263	954	0.00	0.00
TOTAL			2,172,120	3.83	14.70

Table KA-6: Ozone Analysis, Baseline 2002, Sevier County

Facility Type	VOC Emission Factor (grams/mile)	NOx Emission Factor (grams/mile)	Factored VMT (miles/day)	VOC (tons/day)	NOx (tons/day)
Rural Interstate			0	0.00	0.00
Rural Principal Arterial	1.834	1.940	479,029	0.97	1.02
Rural Minor Arterial	1.863	1.931	475,683	0.98	1.01
Rural Collector	1.825	2.002	502,438	1.01	1.11
Rural Local	1.825	2.002	509,290	1.02	1.12
Rural Ramps			0	0.00	0.00
Urban Interstate	1.427	8.979	304,608	0.48	3.01
Urban Principal Arterial	1.894	1.903	573,268	1.20	1.20
Urban Minor Arterial	1.876	1.908	55,063	0.11	0.12
Urban Collector	1.948	1.987	44,390	0.10	0.10
Urban Local	3.184	2.034	83,741	0.29	0.19
Urban Ramps	1.895	4.292	7,490	0.02	0.04
TOTAL			3,034,999	6.18	8.92

C.1.2. Analysis Year 2015:**Table KA-7: Ozone Analysis, 2015, Anderson County**

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.82	583,750	478,675	514,704	0.617	2.366	0.35	1.34
Rural Principal Arterial	0.96	120,241	115,432	114,289	0.794	0.827	0.10	0.10
Rural Minor Arterial	0.80	88,212	70,570	69,871	0.778	0.844	0.06	0.07
Rural Major Collector	1.04	242,615	252,320	249,821	0.803	0.782	0.22	0.22
Rural Minor Collector	2.50	39,143	97,858	96,889	0.825	0.747	0.09	0.08
Rural Local			100,870	99,871	0.825	0.747	0.09	0.08
Rural Ramps	0.82	8,466	6,942	7,464	0.757	1.358	0.01	0.01
Urban Interstate			0	0			0.00	0.00
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.12	569,896	638,283	658,024	0.824	0.808	0.60	0.59
Urban Minor Arterial	1.06	204,542	216,815	223,521	0.844	0.757	0.21	0.19
Urban Collector	2.87	22,754	65,303	67,323	0.953	0.720	0.07	0.05
Urban Local			133,232	137,353	1.315	0.719	0.20	0.11
Urban Ramps			0	0			0.00	0.00
TOTAL		1,879,619	2,176,300	2,239,131			1.99	2.84

Table KA-8: Ozone Analysis, 2015, Blount County

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.07	297,367	318,182	315,032	0.813	0.895	0.28	0.31
Rural Minor Arterial	0.98	105,794	103,678	102,651	0.850	0.816	0.10	0.09
Rural Major Collector	0.99	45,212	44,760	44,317	0.861	0.763	0.04	0.04
Rural Minor Collector	1.22	86,185	105,146	104,105	0.865	0.768	0.10	0.09
Rural Local			190,822	188,933	0.865	0.768	0.18	0.16
Rural Ramps			0	0			0.00	0.00
Urban Interstate	0.80	106,478	85,182	87,817	0.800	0.900	0.08	0.09
Urban Freeway	0.70	43,714	30,600	31,546	0.806	0.877	0.03	0.03
Urban Principal Arterial	0.99	981,372	971,559	1,001,607	0.858	0.845	0.95	0.93
Urban Minor Arterial	1.09	429,396	468,041	482,517	0.893	0.795	0.47	0.42
Urban Collector	1.37	276,394	378,660	390,371	0.925	0.755	0.40	0.32
Urban Local			486,457	501,502	1.376	0.761	0.76	0.42
Urban Ramps	0.80	9,802	7,842	8,085	0.965	0.846	0.01	0.01
TOTAL		2,381,714	3,190,928	3,258,481			3.40	2.92

Table KA-9: Ozone Analysis, 2015, Jefferson County

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.02	1,444,884	1,473,782	1,584,711	0.672	2.673	1.17	4.67
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.83	409,091	339,546	336,184	0.900	0.988	0.33	0.37
Rural Major Collector	0.76	238,924	181,582	179,784	0.903	0.942	0.18	0.19
Rural Minor Collector	1.18	77,125	91,007	90,106	0.958	0.869	0.10	0.09
Rural Local			127,202	125,943	0.958	0.869	0.13	0.12
Rural Ramps	1.02	8,591	8,763	9,423	0.824	1.536	0.01	0.02
Urban Interstate	1.30	48,849	63,504	65,468	0.633	2.978	0.05	0.21
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.21	138,024	167,009	172,174	0.923	0.941	0.18	0.18
Urban Minor Arterial	0.78	64,982	50,686	52,253	0.957	0.903	0.06	0.05
Urban Collector	1.07	46,771	50,045	51,592	0.971	0.890	0.06	0.05
Urban Local			44,261	45,630	1.479	0.900	0.07	0.05
Urban Ramps	1.30	1,924	2,502	2,579	0.781	1.645	0.00	0.00
TOTAL		2,479,165	2,599,888	2,715,848			2.33	5.99

Table KA-10: Ozone Analysis, 2015, Knox County

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.03	706,050	727,231	781,969	0.542	2.232	0.47	1.92
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.99	203,483	201,448	199,454	0.614	1.102	0.13	0.24
Rural Major Collector	0.99	90,246	89,343	88,459	0.669	0.805	0.07	0.08
Rural Minor Collector	1.25	129,786	162,232	160,626	0.690	0.776	0.12	0.14
Rural Local	4.93	42,045	207,284	205,232	0.690	0.776	0.16	0.18
Rural Ramps	1.03	4,682	4,822	5,185	0.668	1.303	0.00	0.01
Urban Interstate	1.01	5,326,671	5,379,938	5,546,328	0.624	1.200	3.82	7.34
Urban Freeway	2.17	31,485	68,323	70,436	0.651	0.843	0.05	0.07
Urban Principal Arterial	1.09	2,721,579	2,966,521	3,058,269	0.639	0.928	2.15	3.13
Urban Minor Arterial	1.16	1,894,388	2,197,490	2,265,454	0.714	0.784	1.78	1.96
Urban Collector	1.14	739,570	843,110	869,185	0.724	0.746	0.69	0.71
Urban Local	5.10	551,984	2,815,120	2,902,185	1.134	0.757	3.63	2.42
Urban Ramps	1.01	310,502	313,607	323,306	0.752	0.926	0.27	0.33
TOTAL		12,752,471	15,976,470	16,476,088			13.34	18.52

Table KA-11: Ozone Analysis, 2015, Loudon County

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.93	1,224,181	1,138,488	1,224,181	0.626	2.249	0.84	3.03
Rural Principal Arterial	0.80	228,297	182,637	180,829	0.731	1.170	0.15	0.23
Rural Minor Arterial	0.94	170,632	160,394	158,806	0.764	1.036	0.13	0.18
Rural Major Collector	0.59	198,484	117,106	115,946	0.799	0.819	0.10	0.10
Rural Minor Collector	2.82	50,649	142,831	141,417	0.848	0.760	0.13	0.12
Rural Local			111,151	110,050	0.848	0.760	0.10	0.09
Rural Ramps	0.93	11,963	11,125	11,963	0.765	1.346	0.01	0.02
Urban Interstate	0.86	93,870	80,729	83,225	0.624	2.242	0.06	0.21
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.28	139,738	178,864	184,396	0.785	1.062	0.16	0.22
Urban Minor Arterial	1.54	14,866	22,893	23,601	0.853	0.847	0.02	0.02
Urban Collector	1.33	43,895	58,381	60,187	0.852	0.774	0.06	0.05
Urban Local			54,244	55,921	1.311	0.795	0.08	0.05
Urban Ramps	0.86	5,833	5,016	5,171	0.764	1.343	0.00	0.01
TOTAL		2,182,408	2,263,860	2,355,694			1.85	4.33

Table KA-12: Ozone Analysis, 2015, Sevier County

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.15	254,467	292,637	289,740	0.949	0.853	0.30	0.27
Rural Minor Arterial	0.97	519,338	503,758	498,770	0.925	0.916	0.51	0.50
Rural Major Collector	0.88	260,337	229,096	226,828	0.930	0.870	0.23	0.22
Rural Minor Collector	2.34	90,049	210,714	208,628	0.960	0.831	0.22	0.19
Rural Local			595,470	589,574	0.960	0.831	0.62	0.54
Rural Ramps			0	0			0.00	0.00
Urban Interstate	1.03	343,070	353,362	364,291	0.675	2.594	0.27	1.04
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.14	914,907	1,042,994	1,075,252	0.976	0.860	1.16	1.02
Urban Minor Arterial	1.23	193,707	238,260	245,629	0.976	0.830	0.26	0.22
Urban Collector	1.94	79,566	154,359	159,133	0.996	0.824	0.17	0.14
Urban Local			295,436	304,574	1.484	0.843	0.50	0.28
Urban Ramps	1.03	10,835	11,161	11,506	0.829	1.502	0.01	0.02
TOTAL		2,666,277	3,927,247	3,973,923			4.26	4.46

Table KA-13: Ozone Analysis, 2015, Anderson County (Partial)

Facility Type	HPMS Adj. Factor	2015 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate				0	0.617	2.366	0.00	0.00
Rural Principal Arterial				0	0.794	0.827	0.00	0.00
Rural Minor Arterial			86,389	85,534	0.778	0.844	0.07	0.08
Rural Major Collector			55,878	55,325	0.803	0.782	0.05	0.05
Rural Minor Collector			12,491	12,367	0.825	0.747	0.01	0.01
Rural Local			17,161	16,991	0.825	0.747	0.02	0.01
Rural Ramps					0.757	1.358	0.00	0.00
Urban Interstate							0.00	0.00
Urban Freeway							0.00	0.00
Urban Principal Arterial			220,930	227,763	0.824	0.808	0.21	0.20
Urban Minor Arterial			143,933	148,385	0.844	0.757	0.14	0.12
Urban Collector			13,543	13,962	0.953	0.720	0.01	0.01
Urban Local			37,814	38,983	1.315	0.719	0.06	0.03
Urban Ramps							0.00	0.00
TOTAL				599,311			0.57	0.52

C.1.3. Analysis Year 2024:**Table KA-14: Ozone Analysis, 2024, Anderson County**

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.82	679,257	556,991	598,915	0.375	0.878	0.25	0.58
Rural Principal Arterial	0.96	129,889	124,693	123,459	0.464	0.476	0.06	0.06
Rural Minor Arterial	0.80	113,071	90,457	89,561	0.454	0.486	0.04	0.05
Rural Major Collector	1.04	305,933	318,170	315,020	0.466	0.468	0.16	0.16
Rural Minor Collector	2.50	45,690	114,225	113,094	0.482	0.450	0.06	0.06
Rural Local			121,821	120,615	0.482	0.450	0.06	0.06
Rural Ramps	0.82	10,370	8,503	9,143	0.469	0.617	0.00	0.01
Urban Interstate			0	0			0.00	0.00
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.12	622,117	696,771	718,321	0.486	0.470	0.38	0.37
Urban Minor Arterial	1.06	257,127	272,555	280,984	0.493	0.459	0.15	0.14
Urban Collector	2.87	25,128	72,117	74,347	0.576	0.452	0.05	0.04
Urban Local			150,754	155,416	0.832	0.447	0.14	0.08
Urban Ramps			0	0			0.00	0.00
TOTAL		2,188,581	2,527,056	2,598,875			1.37	1.61

Table KA-15: Ozone Analysis, 2024, Blount County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.07	380,539	407,177	403,145	0.480	0.523	0.21	0.23
Rural Minor Arterial	0.98	135,247	132,542	131,230	0.505	0.491	0.07	0.07
Rural Major Collector	0.99	55,839	55,281	54,734	0.508	0.480	0.03	0.03
Rural Minor Collector	1.22	97,310	118,718	117,543	0.510	0.480	0.07	0.06
Rural Local			238,198	235,839	0.510	0.480	0.13	0.12
Rural Ramps			0	0			0.00	0.00
Urban Interstate	0.80	147,255	117,804	121,448	0.471	0.533	0.06	0.07
Urban Freeway	0.70	300,314	210,220	216,722	0.474	0.527	0.11	0.13
Urban Principal Arterial	0.99	1,060,105	1,049,504	1,081,963	0.505	0.505	0.60	0.60
Urban Minor Arterial	1.09	508,717	554,502	571,651	0.531	0.489	0.33	0.31
Urban Collector	1.37	293,434	402,004	414,438	0.549	0.476	0.25	0.22
Urban Local			536,687	553,286	0.879	0.479	0.54	0.29
Urban Ramps	0.80		15,257	15,729	0.579	0.532	0.01	0.01
TOTAL		2,978,761	3,837,894	3,917,726			2.43	2.15

Table KA-16: Ozone Analysis, 2024, Jefferson County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.02	1,663,938	1,697,217	1,824,964	0.409	1.000	0.82	2.01
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.83	499,743	414,787	410,680	0.530	0.561	0.24	0.25
Rural Major Collector	0.76	293,430	223,006	220,799	0.530	0.550	0.13	0.13
Rural Minor Collector	1.18	104,563	123,384	122,163	0.564	0.524	0.08	0.07
Rural Local			158,173	156,607	0.564	0.524	0.10	0.09
Rural Ramps	1.02	10,495	10,705	11,510	0.513	0.692	0.01	0.01
Urban Interstate	1.30	55,419	72,045	74,273	0.390	1.086	0.03	0.09
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.21	171,987	208,104	214,540	0.545	0.545	0.13	0.13
Urban Minor Arterial	0.78	80,671	62,924	64,870	0.571	0.531	0.04	0.04
Urban Collector	1.07	52,528	56,205	57,944	0.574	0.531	0.04	0.03
Urban Local			54,096	55,769	0.939	0.536	0.06	0.03
Urban Ramps	1.30	2,351	3,056	3,150	0.491	0.712	0.00	0.00
TOTAL		2,935,125	3,083,703	3,217,270			1.67	2.89

Table KA-17: Ozone Analysis, 2024, Knox County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.03	800,378	824,389	886,440	0.354	0.847	0.35	0.83
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.99	220,221	218,018	215,860	0.388	0.549	0.09	0.13
Rural Major Collector	0.99	114,163	113,021	111,902	0.423	0.462	0.05	0.06
Rural Minor Collector	1.25	180,905	226,132	223,893	0.438	0.446	0.11	0.11
Rural Local	4.93	58,815	289,957	287,086	0.438	0.446	0.14	0.14
Rural Ramps	1.03	4,583	4,720	5,075	0.444	0.598	0.00	0.00
Urban Interstate	1.01	5,586,727	5,642,594	5,817,107	0.395	0.582	2.53	3.73
Urban Freeway	2.17	34,247	74,316	76,614	0.414	0.484	0.03	0.04
Urban Principal Arterial	1.09	2,891,937	3,152,211	3,249,702	0.403	0.512	1.44	1.83
Urban Minor Arterial	1.16	2,423,133	2,810,834	2,897,767	0.448	0.458	1.43	1.46
Urban Collector	1.14	960,969	1,095,505	1,129,386	0.460	0.445	0.57	0.55
Urban Local	5.10	663,442	3,383,552	3,488,198	0.774	0.448	2.98	1.72
Urban Ramps	1.01	303,927	306,966	316,460	0.486	0.514	0.17	0.18
TOTAL		14,243,445	18,142,215	18,705,491			9.90	10.80

Table KA-18: Ozone Analysis, 2024, Loudon County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.93	1,384,914	1,287,970	1,384,914	0.389	0.858	0.59	1.31
Rural Principal Arterial	0.80	288,157	230,525	228,243	0.442	0.582	0.11	0.15
Rural Minor Arterial	0.94	224,590	211,115	209,025	0.465	0.540	0.11	0.12
Rural Major Collector	0.59	245,646	144,931	143,496	0.480	0.489	0.08	0.08
Rural Minor Collector	2.82	69,836	196,938	194,988	0.512	0.465	0.11	0.10
Rural Local			144,432	143,002	0.512	0.465	0.08	0.07
Rural Ramps	0.93	13,981	13,002	13,981	0.483	0.627	0.01	0.01
Urban Interstate	0.86	105,560	90,781	93,589	0.386	0.862	0.04	0.09
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.28	176,809	226,315	233,314	0.486	0.544	0.12	0.14
Urban Minor Arterial	1.54	22,588	34,785	35,861	0.522	0.484	0.02	0.02
Urban Collector	1.33	75,996	101,074	104,200	0.517	0.471	0.06	0.05
Urban Local			75,520	77,856	0.853	0.482	0.07	0.04
Urban Ramps	0.86	6,817	5,862	6,044	0.482	0.625	0.00	0.00
TOTAL		2,614,891	2,763,251	2,868,512			1.41	2.19

Table KA-19: Ozone Analysis, 2024, Sevier County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.15	287,367	330,472	327,200	0.562	0.521	0.20	0.19
Rural Minor Arterial	0.97	628,824	609,959	603,920	0.549	0.541	0.37	0.36
Rural Major Collector	0.88	335,023	294,821	291,901	0.549	0.521	0.18	0.17
Rural Minor Collector	2.34	113,998	266,755	264,114	0.567	0.510	0.17	0.15
Rural Local			723,504	716,340	0.567	0.510	0.45	0.40
Rural Ramps			0	0			0.00	0.00
Urban Interstate	1.03	392,333	404,103	416,601	0.411	0.979	0.19	0.45
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.14	1,032,011	1,176,493	1,212,879	0.576	0.519	0.77	0.69
Urban Minor Arterial	1.23	332,130	408,520	421,155	0.577	0.512	0.27	0.24
Urban Collector	1.94	95,673	185,605	191,345	0.592	0.508	0.12	0.11
Urban Local			364,377	375,647	0.939	0.519	0.39	0.21
Urban Ramps	1.03	15,009	15,459	15,937	0.514	0.682	0.01	0.01
TOTAL		3,232,367	4,780,067	4,837,039			3.11	2.98

C.1.4. Analysis Year 2034:

Table KA-20: Ozone Analysis, 2034, Anderson County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.82	781,895	641,153	689,412	0.356	0.515	0.27	0.39
Rural Principal Arterial	0.96	140,216	134,607	133,274	0.436	0.387	0.06	0.06
Rural Minor Arterial	0.80	124,983	99,987	98,997	0.425	0.398	0.05	0.04
Rural Major Collector	1.04	368,916	383,673	379,874	0.436	0.388	0.18	0.16
Rural Minor Collector	2.50	48,515	121,288	120,087	0.451	0.375	0.06	0.05
Rural Local			139,130	137,753	0.451	0.375	0.07	0.06
Rural Ramps	0.82	11,677	9,575	10,296	0.439	0.430	0.00	0.00
Urban Interstate			0	0			0.00	0.00
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.12	708,615	793,649	818,195	0.459	0.386	0.41	0.35
Urban Minor Arterial	1.06	296,770	314,577	324,306	0.463	0.383	0.17	0.14
Urban Collector	2.87	28,280	81,163	83,673	0.542	0.384	0.05	0.04
Urban Local			172,169	177,494	0.791	0.378	0.15	0.07
Urban Ramps			0	0			0.00	0.00
TOTAL		2,509,867	2,890,971	2,973,360			1.48	1.36

Table KA-21: Ozone Analysis, 2034, Blount County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.07	453,647	485,402	480,596	0.449	0.428	0.24	0.23
Rural Minor Arterial	0.98	156,689	153,556	152,035	0.473	0.408	0.08	0.07
Rural Major Collector	0.99	61,799	61,181	60,575	0.475	0.407	0.03	0.03
Rural Minor Collector	1.22	125,070	152,585	151,075	0.477	0.407	0.08	0.07
Rural Local			284,590	281,772	0.477	0.407	0.15	0.13
Rural Ramps			0	0			0.00	0.00
Urban Interstate	0.80	169,462	135,570	139,763	0.440	0.441	0.07	0.07
Urban Freeway	0.70	373,211	261,248	269,328	0.443	0.441	0.13	0.13
Urban Principal Arterial	0.99	1,177,805	1,166,027	1,202,090	0.476	0.419	0.63	0.56
Urban Minor Arterial	1.09	619,091	674,809	695,679	0.497	0.411	0.38	0.32
Urban Collector	1.37	342,984	469,888	484,420	0.514	0.405	0.27	0.22
Urban Local			618,210	637,330	0.835	0.408	0.59	0.29
Urban Ramps	0.80	19,229	15,383	15,859	0.541	0.453	0.01	0.01
TOTAL		3,498,987	4,478,448	4,570,521			2.66	2.10

Table KA-22: Ozone Analysis, 2034, Jefferson County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.02	1,892,174	1,930,017	2,075,288	0.386	0.597	0.88	1.37
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.83	591,526	490,966	486,105	0.500	0.461	0.27	0.25
Rural Major Collector	0.76	365,353	277,668	274,919	0.499	0.459	0.15	0.14
Rural Minor Collector	1.18	133,057	157,007	155,453	0.531	0.445	0.09	0.08
Rural Local			192,349	190,445	0.531	0.445	0.11	0.09
Rural Ramps	1.02	11,936	12,175	13,091	0.482	0.484	0.01	0.01
Urban Interstate	1.30	61,784	80,319	82,803	0.365	0.638	0.03	0.06
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.21	193,669	234,339	241,587	0.513	0.454	0.14	0.12
Urban Minor Arterial	0.78	89,881	70,107	72,275	0.541	0.445	0.04	0.04
Urban Collector	1.07	58,174	62,246	64,171	0.543	0.448	0.04	0.03
Urban Local			60,619	62,494	0.894	0.451	0.06	0.03
Urban Ramps	1.30	2,674	3,476	3,583	0.462	0.481	0.00	0.00
TOTAL		3,400,227	3,571,290	3,722,215			1.83	2.21

Table KA-23: Ozone Analysis, 2034, Knox County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.03	925,067	952,819	1,024,536	0.339	0.525	0.38	0.59
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.99	249,056	246,566	244,125	0.369	0.416	0.10	0.11
Rural Major Collector	0.99	153,728	152,190	150,684	0.404	0.387	0.07	0.06
Rural Minor Collector	1.25	282,211	352,764	349,271	0.420	0.374	0.16	0.14
Rural Local	4.93	92,056	453,837	449,344	0.420	0.374	0.21	0.19
Rural Ramps	1.03	5,144	5,298	5,697	0.423	0.432	0.00	0.00
Urban Interstate	1.01	6,205,741	6,267,798	6,461,648	0.379	0.438	2.70	3.12
Urban Freeway	2.17	44,659	96,909	99,906	0.396	0.411	0.04	0.05
Urban Principal Arterial	1.09	3,467,228	3,779,279	3,896,163	0.384	0.418	1.65	1.80
Urban Minor Arterial	1.16	2,837,355	3,291,332	3,393,126	0.426	0.391	1.59	1.46
Urban Collector	1.14	1,143,288	1,303,348	1,343,658	0.440	0.382	0.65	0.57
Urban Local	5.10	783,023	3,993,418	4,116,926	0.746	0.382	3.39	1.73
Urban Ramps	1.01	341,162	344,574	355,231	0.464	0.424	0.18	0.17
TOTAL		16,529,718	21,240,133	21,890,315			11.13	9.99

Table KA-24: Ozone Analysis, 2034, Loudon County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.93	1,546,911	1,438,627	1,546,911	0.371	0.526	0.63	0.90
Rural Principal Arterial	0.80	356,587	285,269	282,445	0.419	0.440	0.13	0.14
Rural Minor Arterial	0.94	270,707	254,464	251,945	0.441	0.421	0.12	0.12
Rural Major Collector	0.59	290,663	171,491	169,793	0.453	0.410	0.08	0.08
Rural Minor Collector	2.82	83,885	236,556	234,214	0.483	0.395	0.12	0.10
Rural Local			174,713	172,984	0.483	0.395	0.09	0.08
Rural Ramps	0.93	14,860	13,820	14,860	0.455	0.448	0.01	0.01
Urban Interstate	0.86	117,480	101,033	104,157	0.369	0.525	0.04	0.06
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.28	233,847	299,324	308,581	0.451	0.423	0.15	0.14
Urban Minor Arterial	1.54	26,171	40,304	41,550	0.494	0.398	0.02	0.02
Urban Collector	1.33	100,780	134,037	138,182	0.492	0.400	0.07	0.06
Urban Local			98,768	101,823	0.814	0.407	0.09	0.05
Urban Ramps	0.86	7,246	6,231	6,424	0.454	0.446	0.00	0.00
TOTAL		3,049,135	3,254,637	3,373,869			1.58	1.74

Table KA-25: Ozone Analysis, 2034, Sevier County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.15	310,759	357,373	353,835	0.530	0.445	0.21	0.17
Rural Minor Arterial	0.97	745,165	722,810	715,654	0.520	0.455	0.41	0.36
Rural Major Collector	0.88	414,847	365,065	361,451	0.519	0.440	0.21	0.18
Rural Minor Collector	2.34	156,614	366,477	362,849	0.538	0.437	0.22	0.17
Rural Local			872,693	864,053	0.538	0.437	0.51	0.42
Rural Ramps			0	0			0.00	0.00
Urban Interstate	1.03	448,276	461,724	476,005	0.386	0.596	0.20	0.31
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.14	1,183,950	1,349,703	1,391,446	0.547	0.441	0.84	0.68
Urban Minor Arterial	1.23	408,566	502,536	518,078	0.548	0.440	0.31	0.25
Urban Collector	1.94	121,147	235,025	242,293	0.562	0.437	0.15	0.12
Urban Local			429,540	442,825	0.894	0.444	0.44	0.22
Urban Ramps	1.03	17,989	18,529	19,102	0.483	0.481	0.01	0.01
TOTAL		3,807,314	5,681,476	5,747,590			3.50	2.88

C.1.5. Analysis Year 2040:**Table KA-26: Ozone Analysis, 2040, Anderson County**

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.82	931,658	763,960	821,462	0.424	0.500	0.38	0.45
Rural Principal Arterial	0.96	150,193	144,186	142,758	0.437	0.386	0.07	0.06
Rural Minor Arterial	0.80	138,234	110,587	109,492	0.426	0.397	0.05	0.05
Rural Major Collector	1.04	439,553	457,135	452,609	0.437	0.387	0.22	0.19
Rural Minor Collector	2.50	52,798	131,994	130,687	0.451	0.375	0.06	0.05
Rural Local			158,761	157,189	0.451	0.375	0.08	0.06
Rural Ramps	0.82	10,266	8,418	9,051	0.439	0.430	0.00	0.00
Urban Interstate			0	0			0.00	0.00
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.12	763,390	854,997	881,440	0.462	0.386	0.45	0.38
Urban Minor Arterial	1.06	319,939	339,135	349,624	0.465	0.383	0.18	0.15
Urban Collector	2.87	30,042	86,222	88,888	0.544	0.384	0.05	0.04
Urban Local			185,337	191,069	0.791	0.378	0.17	0.08
Urban Ramps			0	0			0.00	0.00
TOTAL		2,836,073	3,240,732	3,334,271			1.72	1.52

Table KA-27: Ozone Analysis, 2040, Blount County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.07	509,744	545,426	540,026	0.452	0.427	0.27	0.25
Rural Minor Arterial	0.98	175,253	171,748	170,048	0.474	0.408	0.09	0.08
Rural Major Collector	0.99	69,469	68,774	68,093	0.475	0.407	0.04	0.03
Rural Minor Collector	1.22	146,890	179,206	177,431	0.478	0.407	0.09	0.08
Rural Local			322,112	318,923	0.478	0.407	0.17	0.14
Rural Ramps			0	0			0.00	0.00
Urban Interstate	0.80	190,010	152,008	156,709	0.441	0.441	0.08	0.08
Urban Freeway	0.70	443,581	310,506	320,110	0.443	0.443	0.16	0.16
Urban Principal Arterial	0.99	1,254,804	1,242,256	1,280,676	0.480	0.419	0.68	0.59
Urban Minor Arterial	1.09	677,045	737,979	760,803	0.500	0.411	0.42	0.34
Urban Collector	1.37	390,143	534,496	551,027	0.514	0.405	0.31	0.25
Urban Local			672,790	693,598	0.835	0.408	0.64	0.31
Urban Ramps	0.80	21,631	17,304	17,840	0.541	0.453	0.01	0.01
TOTAL		3,878,568	4,954,605	5,055,283			2.95	2.32

Table KA-28: Ozone Analysis, 2040, Jefferson County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.02	2,218,354	2,262,721	2,433,033	0.418	0.562	1.12	1.51
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.83	676,855	561,789	556,227	0.503	0.460	0.31	0.28
Rural Major Collector	0.76	489,234	371,818	368,137	0.503	0.458	0.20	0.19
Rural Minor Collector	1.18	197,083	232,557	230,255	0.533	0.445	0.14	0.11
Rural Local			242,330	239,931	0.533	0.445	0.14	0.12
Rural Ramps	1.02	9,011	9,192	9,884	0.482	0.484	0.01	0.01
Urban Interstate	1.30	71,095	92,424	95,282	0.369	0.605	0.04	0.06
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.21	222,808	269,598	277,936	0.514	0.454	0.16	0.14
Urban Minor Arterial	0.78	99,889	77,913	80,323	0.543	0.445	0.05	0.04
Urban Collector	1.07	69,207	74,051	76,341	0.546	0.448	0.05	0.04
Urban Local			69,690	71,846	0.894	0.451	0.07	0.04
Urban Ramps	1.30	2,018	2,624	2,705	0.462	0.481	0.00	0.00
TOTAL		4,055,554	4,266,707	4,441,899			2.28	2.53

Table KA-29: Ozone Analysis, 2040, Knox County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	1.03	1,038,523	1,069,679	1,150,192	0.341	0.512	0.43	0.65
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.99	288,695	285,808	282,979	0.370	0.415	0.12	0.13
Rural Major Collector	0.99	190,231	188,328	186,464	0.406	0.387	0.08	0.08
Rural Minor Collector	1.25	369,142	461,428	456,859	0.424	0.374	0.21	0.19
Rural Local	4.93	125,885	620,614	614,469	0.424	0.374	0.29	0.25
Rural Ramps	1.03	5,387	5,548	5,966	0.423	0.432	0.00	0.00
Urban Interstate	1.01	6,664,570	6,731,216	6,939,398	0.380	0.435	2.91	3.33
Urban Freeway	2.17	47,585	103,260	106,453	0.397	0.410	0.05	0.05
Urban Principal Arterial	1.09	3,728,727	4,064,312	4,190,013	0.386	0.417	1.78	1.93
Urban Minor Arterial	1.16	3,118,840	3,617,854	3,729,747	0.428	0.391	1.76	1.61
Urban Collector	1.14	1,238,780	1,412,209	1,455,886	0.440	0.382	0.71	0.61
Urban Local	5.10	862,289	4,397,673	4,533,683	0.746	0.382	3.73	1.91
Urban Ramps	1.01	357,264	360,837	371,997	0.464	0.424	0.19	0.17
TOTAL		18,035,918	23,318,767	24,024,105			12.26	10.91

Table KA-30: Ozone Analysis, 2040, Loudon County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate	0.93	1,808,808	1,682,191	1,808,808	0.421	0.514	0.84	1.02
Rural Principal Arterial	0.80	408,534	326,828	323,592	0.424	0.436	0.15	0.16
Rural Minor Arterial	0.94	323,161	303,771	300,764	0.450	0.422	0.15	0.14
Rural Major Collector	0.59	323,048	190,598	188,711	0.456	0.410	0.09	0.09
Rural Minor Collector	2.82	97,641	275,347	272,621	0.484	0.395	0.15	0.12
Rural Local			202,136	200,135	0.484	0.395	0.11	0.09
Rural Ramps	0.93	12,503	11,627	12,503	0.455	0.448	0.01	0.01
Urban Interstate	0.86	132,534	113,980	117,505	0.414	0.504	0.05	0.07
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.28	280,301	358,785	369,881	0.454	0.423	0.19	0.17
Urban Minor Arterial	1.54	31,233	48,098	49,586	0.499	0.399	0.03	0.02
Urban Collector	1.33	114,202	151,888	156,586	0.495	0.400	0.09	0.07
Urban Local			116,514	120,118	0.814	0.407	0.11	0.05
Urban Ramps	0.86	6,096	5,243	5,405	0.454	0.446	0.00	0.00
TOTAL		3,538,060	3,787,007	3,926,213			1.96	2.00

Table KA-31: Ozone Analysis, 2040, Sevier County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Seasonally Adjusted VMT	VOC Emission Factor (g/mile)	NOx Emission Factor (g/mile)	VOC Emissions (tons/day)	NOx Emissions (tons/day)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.15	328,381	377,638	373,899	0.533	0.446	0.22	0.18
Rural Minor Arterial	0.97	823,717	799,005	791,094	0.522	0.456	0.46	0.40
Rural Major Collector	0.88	490,790	431,895	427,619	0.523	0.440	0.25	0.21
Rural Minor Collector	2.34	193,931	453,799	449,306	0.541	0.437	0.27	0.22
Rural Local			993,410	983,574	0.541	0.437	0.59	0.47
Rural Ramps			0	0			0.00	0.00
Urban Interstate	1.03	498,503	513,458	529,338	0.398	0.566	0.23	0.33
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.14	1,277,061	1,455,850	1,500,876	0.557	0.444	0.92	0.73
Urban Minor Arterial	1.23	454,928	559,561	576,867	0.557	0.442	0.35	0.28
Urban Collector	1.94	138,384	268,465	276,768	0.568	0.439	0.17	0.13
Urban Local			470,001	484,537	0.894	0.444	0.48	0.24
Urban Ramps	1.03	17,887	18,424	18,993	0.483	0.481	0.01	0.01
TOTAL		4,223,580	6,341,505	6,412,871			3.94	3.21

C.1.5. Cocke County Ozone Emissions Analysis:**Table KA-32: Cocke County Ozone Emissions Analysis**

	Length	2002 Summer ADT	2002 Summer VMT	2015 Summer VMT	2024 Summer VMT	2034 Summer VMT	2040 Summer VMT
Foothills Parkway	5.6 miles	1,011	5,662	11,886	16,012	20,596	23,347
Cosby Campground Road	2.4 miles	196	471	1,212	1,802	2,457	2,850
State Route 32	9.2 miles	1,233	11,344	11,739	12,668	13,700	14,319
Total			17,477	24,837	30,482	36,753	40,516
VOC Emissions Rate			1.8410	0.9390	0.5530	0.5190	0.5190
TOTAL VOC Emissions (tpd)			0.0355	0.0257	0.0186	0.0210	0.0232
NOx Emissions Rate			1.9840	0.9560	0.5300	0.4410	0.4410
TOTAL NOx Emissions (tpd)			0.0382	0.0262	0.0178	0.0179	0.0197

C.2: PM2.5 Analysis

C.2.1. Analysis Year 2014:

Table KA-33: PM2.5 Analysis, 2014, Anderson County

Facility Type	HPMS Adj. Factor	2014 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.82	586,464	480,900	175,528,675	0.0381	2.7380	7.37	529.77
Rural Principal Arterial	0.96	121,772	116,901	42,668,734	0.0164	0.9640	0.77	45.34
Rural Minor Arterial	0.80	96,163	76,930	98,684,422	0.0156	0.9870	1.70	107.37
Rural Major Collector	1.04	259,970	270,368	28,079,581	0.0148	0.9130	0.46	28.26
Rural Minor Collector	2.50	39,905	99,763	36,413,486	0.0148	0.8700	0.59	34.92
Rural Local			96,520	35,229,818	0.0148	0.8700	0.57	33.79
Rural Ramps	0.82	9,070	7,437	2,714,515	0.0381	1.5810	0.11	4.73
Urban Interstate			0	0			0.00	0.00
Urban Freeway			0	0			0.00	0.00
Urban Principal Arterial	1.12	556,939	623,771	227,676,541	0.0160	0.9390	4.02	235.66
Urban Minor Arterial	1.06	219,359	232,520	84,869,804	0.0146	0.8800	1.37	82.33
Urban Collector	2.87	22,941	69,987	25,545,286	0.0136	0.8260	0.38	23.26
Urban Local			132,068	48,204,811	0.0136	0.8050	0.72	42.78
Urban Ramps			0	0			0.00	0.00
TOTAL		1,912,581	2,207,166	805,615,671			18.07	1,168.20

Table KA-34: PM2.5 Analysis, 2014, Blount County

Facility Type	HPMS Adj. Factor	2014 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	0			0.00	0.00
Rural Principal Arterial	1.07	309,017	330,648	120,686,511	0.0156	1.0520	2.08	139.95
Rural Minor Arterial	0.98	104,756	102,661	17,171,027	0.0152	0.9550	0.29	18.08
Rural Major Collector	0.99	47,519	47,044	37,471,329	0.0136	0.8960	0.56	37.01
Rural Minor Collector	1.22	95,523	116,538	42,536,552	0.0137	0.9010	0.64	42.25
Rural Local			241,928	88,303,578	0.0137	0.9010	1.33	87.70
Rural Ramps			0	0			0.00	0.00
Urban Interstate	0.80	103,446	82,757	11,344,637	0.0145	1.0610	0.18	13.27
Urban Freeway	0.70	44,402	31,081	30,206,290	0.0140	1.0350	0.47	34.46
Urban Principal Arterial	0.99	951,252	941,740	343,734,946	0.0153	0.9900	5.80	375.12
Urban Minor Arterial	1.09	438,659	478,139	174,520,642	0.0145	0.9290	2.79	178.72
Urban Collector	1.37	270,787	370,978	135,406,889	0.0135	0.8800	2.02	131.35
Urban Local			532,816	194,477,767	0.0135	0.8570	2.89	183.72
Urban Ramps	0.80	9,999	8,000	2,919,843	0.0145	1.0000	0.05	3.22
TOTAL		2,375,361	3,284,329	1,198,780,011			19.09	1,244.84

Table KA-35: PM2.5 Analysis, 2014, Knox County

Facility Type	HPMS Adj. Factor	2014 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	1.03	688,873	709,539	258,981,798	0.0369	2.5900	10.53	739.39
Rural Principal Arterial			0	0			0.00	0.00
Rural Minor Arterial	0.99	197,595	195,619	35,963,985	0.0226	1.2860	0.90	50.98
Rural Major Collector	0.99	99,527	98,531	71,400,793	0.0169	0.9430	1.33	74.22
Rural Minor Collector	1.25	144,134	180,168	65,761,274	0.0173	0.9060	1.25	65.68
Rural Local	4.93	45,148	222,579	81,241,511	0.0173	0.9060	1.55	81.14
Rural Ramps	1.03	4,141	4,265	1,556,680	0.0369	1.5230	0.06	2.61
Urban Interstate	1.01	4,980,626	5,030,432	21,006,021	0.0213	1.4040	0.49	32.51
Urban Freeway	2.17	26,521	57,551	1,836,107,691	0.0147	0.9960	29.75	2,015.88
Urban Principal Arterial	1.09	2,488,717	2,712,701	990,135,952	0.0167	1.0910	18.23	1,190.77
Urban Minor Arterial	1.16	1,965,476	2,279,952	832,182,389	0.0159	0.9170	14.59	841.19
Urban Collector	1.14	744,749	849,014	309,890,045	0.0157	0.8710	5.36	297.53
Urban Local	5.10	549,459	2,802,241	1,022,817,985	0.0157	0.8540	17.70	962.86
Urban Ramps	1.01	274,616	277,363	101,237,320	0.0213	1.0900	2.38	121.64
TOTAL		12,209,581	15,419,955	5,628,283,444			104.13	6,476.39

Table KA-36: PM2.5 Analysis, 2014, Loudon County

Facility Type	HPMS Adj. Factor	2014 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.93	1,201,097	1,117,020	407,712,377	0.0367	2.6090	16.49	1,172.56
Rural Principal Arterial	0.80	235,874	188,699	68,875,179	0.0221	1.3660	1.68	103.71
Rural Minor Arterial	0.94	187,454	176,206	43,853,185	0.0214	1.2080	1.03	58.39
Rural Major Collector	0.59	203,637	120,146	64,315,330	0.0152	0.9620	1.08	68.20
Rural Minor Collector	2.82	54,635	154,070	56,235,692	0.0146	0.8880	0.91	55.05
Rural Local			86,116	31,432,503	0.0146	0.8880	0.51	30.77
Rural Ramps	0.93	12,332	11,469	4,186,125	0.0367	1.5720	0.17	7.25
Urban Interstate	0.86	91,675	78,840	0	0.0367	2.6000	0.00	0.00
Urban Freeway			0	28,776,751			0.00	0.00
Urban Principal Arterial	1.28	149,722	191,644	69,950,118	0.0233	1.2350	1.80	95.23
Urban Minor Arterial	1.54	17,514	26,971	9,844,507	0.0178	0.9840	0.19	10.68
Urban Collector	1.33	50,611	67,312	24,569,061	0.0148	0.9050	0.40	24.51
Urban Local			54,740	19,980,173	0.0149	0.8980	0.33	19.78
Urban Ramps	0.86	6,013	5,171	1,887,431	0.0367	1.5670	0.08	3.26
TOTAL		2,210,563	2,278,407	831,618,431			24.66	1,649.39

Table KA-37: PM2.5 Analysis, 2014, Roane County

Facility Type	HPMS Adj. Factor	2014 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			101,220	365	36,945,300	0.0397	2.9680	1.62	120.87
Rural Principal Arterial			0	365	0			0.00	0.00
Rural Minor Arterial			0	365	0			0.00	0.00
Rural Major Collector			0	365	0			0.00	0.00
Rural Minor Collector			7,835	365	2,859,775	0.0196	1.1800	0.06	3.72
Rural Local			4,743	365	1,731,195	0.0134	0.9610	0.03	1.83
Rural Ramps			2,883	365	1,052,295	0.0134	0.9610	0.02	1.11
Urban Interstate			0	365	0			0.00	0.00
Urban Freeway			0	365	0			0.00	0.00
Urban Principal Arterial			0	365	0			0.00	0.00
Urban Minor Arterial			17,228	365	6,288,220	0.0397	1.7490	0.28	12.12
Urban Collector			0	365	0			0.00	0.00
Urban Local			0	365	0			0.00	0.00
Urban Ramps			0	365	0			0.00	0.00
TOTAL		0	133,909		48,876,785			1.99	139.66

C.2.2. Analysis Year 2024:

Table KA-38: PM2.5 Analysis, 2024, Anderson County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.82	679,257	556,991	365	203,301,710	0.0217	0.9100	4.86	203.93
Rural Principal Arterial	0.96	129,889	124,693	365	45,513,000	0.0131	0.5130	0.66	25.74
Rural Minor Arterial	0.80	113,071	90,457	365	116,132,015	0.0129	0.5270	1.65	67.46
Rural Major Collector	1.04	305,933	318,170	365	33,016,644	0.0125	0.5070	0.45	18.45
Rural Minor Collector	2.50	45,690	114,225	365	41,692,052	0.0125	0.4860	0.57	22.34
Rural Local			111,263	365	40,611,172	0.0125	0.4860	0.56	21.76
Rural Ramps	0.82	10,370	8,503	365	3,103,642	0.0217	0.6500	0.07	2.22
Urban Interstate			0	365	0			0.00	0.00
Urban Freeway			0	365	0			0.00	0.00
Urban Principal Arterial	1.12	622,117	696,771	365	254,321,552	0.0130	0.5060	3.64	141.85
Urban Minor Arterial	1.06	257,127	272,555	365	99,482,552	0.0125	0.4950	1.37	54.28
Urban Collector	2.87	25,128	79,226	365	28,917,398	0.0121	0.4800	0.39	15.30
Urban Local			149,502	365	54,568,099	0.0121	0.4600	0.73	27.67
Urban Ramps			0	365	0			0.00	0.00
TOTAL		2,188,581	2,522,356		920,659,837			14.96	601.01

Table KA-39: PM2.5 Analysis, 2024, Blount County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	365	0			0.00	0.00
Rural Principal Arterial	1.07	380,539	407,177	365	148,619,428	0.0128	0.5670	2.10	92.89
Rural Minor Arterial	0.98	135,247	132,542	365	20,177,517	0.0127	0.5300	0.28	11.79
Rural Major Collector	0.99	55,839	55,281	365	48,377,995	0.0120	0.5210	0.64	27.78
Rural Minor Collector	1.22	97,310	118,718	365	43,332,219	0.0121	0.5210	0.58	24.89
Rural Local			289,279	365	105,586,808	0.0121	0.5210	1.41	60.64
Rural Ramps			0	365	0			0.00	0.00
Urban Interstate	0.80	132,845	106,276	365	76,730,253	0.0124	0.5820	1.05	49.23
Urban Freeway	0.70	300,314	210,220	365	38,790,798	0.0123	0.5760	0.53	24.63
Urban Principal Arterial	0.99	1,060,105	1,049,504	365	383,068,942	0.0127	0.5460	5.36	230.56
Urban Minor Arterial	1.09	508,717	554,502	365	202,393,059	0.0124	0.5270	2.77	117.57
Urban Collector	1.37	293,434	402,004	365	146,731,622	0.0120	0.5120	1.94	82.81
Urban Local			650,377	365	237,387,466	0.0120	0.4940	3.14	129.27
Urban Ramps	0.80	15,257	12,206	365	4,455,143	0.0124	0.5810	0.06	2.85
TOTAL		2,979,608	3,988,086		1,455,651,249			19.85	854.91

Table KA-40: PM2.5 Analysis, 2024, Knox County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	1.03	800,378	824,389	365	300,901,921	0.0212	0.8780	7.03	291.22
Rural Principal Arterial			0	365	0			0.00	0.00
Rural Minor Arterial	0.99	220,221	218,018	365	41,252,800	0.0151	0.5830	0.69	26.51
Rural Major Collector	0.99	114,163	113,021	365	79,576,714	0.0131	0.4960	1.15	43.51
Rural Minor Collector	1.25	180,905	226,132	365	82,538,043	0.0133	0.4770	1.21	43.40
Rural Local	4.93	58,815	289,957	365	105,834,166	0.0133	0.4770	1.55	55.65
Rural Ramps	1.03	4,583	4,720	365	1,722,826	0.0212	0.6300	0.04	1.20
Urban Interstate	1.01	5,586,727	5,642,594	365	27,125,297	0.0150	0.6190	0.45	18.51
Urban Freeway	2.17	34,247	74,316	365	2,059,546,909	0.0125	0.5240	28.38	1,189.62
Urban Principal Arterial	1.09	2,891,937	3,152,211	365	1,150,557,135	0.0131	0.5510	16.61	698.82
Urban Minor Arterial	1.16	2,423,133	2,810,834	365	1,025,954,512	0.0129	0.4910	14.59	555.29
Urban Collector	1.14	960,969	1,095,505	365	399,859,284	0.0127	0.4760	5.60	209.81
Urban Local	5.10	663,442	3,383,552	365	1,234,996,538	0.0127	0.4570	17.29	622.14
Urban Ramps	1.01	303,927	306,966	365	112,042,504	0.0150	0.5530	1.85	68.30
TOTAL		14,243,445	18,142,215		6,621,908,650			96.44	3,823.97

Table KA-41: PM2.5 Analysis, 2024, Loudon County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.93	1,384,914	1,287,970	365	470,109,057	0.0210	0.8920	10.88	462.24
Rural Principal Arterial	0.80	288,157	230,525	365	84,141,756	0.0153	0.6220	1.42	57.69
Rural Minor Arterial	0.94	224,590	211,115	365	52,899,758	0.0150	0.5770	0.87	33.65
Rural Major Collector	0.59	245,646	144,931	365	77,056,932	0.0126	0.5290	1.07	44.93
Rural Minor Collector	2.82	69,836	196,938	365	71,882,226	0.0124	0.5010	0.98	39.70
Rural Local			101,554	365	37,067,238	0.0124	0.5010	0.51	20.47
Rural Ramps	0.93	13,981	13,002	365	4,745,718	0.0210	0.6620	0.11	3.46
Urban Interstate	0.86	105,560	90,781	365	0	0.0209	0.8960	0.00	0.00
Urban Freeway			0	365	33,135,158			0.00	0.00
Urban Principal Arterial	1.28	176,809	226,315	365	82,604,978	0.0158	0.5770	1.44	52.54
Urban Minor Arterial	1.54	22,588	34,785	365	12,696,557	0.0136	0.5160	0.19	7.22
Urban Collector	1.33	75,996	101,074	365	36,892,127	0.0126	0.5060	0.51	20.58
Urban Local			67,892	365	24,780,446	0.0126	0.4950	0.34	13.52
Urban Ramps	0.86	6,817	5,862	365	2,139,739	0.0209	0.6600	0.05	1.56
TOTAL		2,614,891	2,712,744		990,151,691			18.38	757.56

Table KA-42: PM2.5 Analysis, 2024, Roane County

Facility Type	HPMS Adj. Factor	2024 VMT	HPMS Adjusted VMT	Days/ Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			115,832	365	42,278,680	0.0223	1.0260	1.04	47.82
Rural Principal Arterial			0	365	0			0.00	0.00
Rural Minor Arterial			0	365	0			0.00	0.00
Rural Major Collector			0	365	0			0.00	0.00
Rural Minor Collector			8,042	365	2,935,330	0.0143	0.6060	0.05	1.96
Rural Local			5,281	365	1,927,565	0.0120	0.5620	0.03	1.19
Rural Ramps			3,198	365	1,167,270	0.0120	0.5620	0.02	0.72
Urban Interstate			0	365	0			0.00	0.00
Urban Freeway			0	365	0			0.00	0.00
Urban Principal Arterial			0	365	0			0.00	0.00
Urban Minor Arterial			19,701	365	7,190,865	0.0223	0.7330	0.18	5.81
Urban Collector			0	365	0			0.00	0.00
Urban Local			0	365	0			0.00	0.00
Urban Ramps			0	365	0			0.00	0.00
TOTAL		0	152,054		55,499,710			1.30	57.50

C.2.3. Analysis Year 2034:**Table KA-43: PM2.5 Analysis, 2034, Anderson County**

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.82	781,895	641,153	365	234,021,024	0.0193	0.5410	4.98	139.56
Rural Principal Arterial	0.96	140,216	134,607	365	49,131,511	0.0127	0.4180	0.69	22.64
Rural Minor Arterial	0.80	124,983	99,987	365	140,040,476	0.0125	0.4310	1.93	66.53
Rural Major Collector	1.04	368,916	383,673	365	36,495,153	0.0122	0.4200	0.49	16.90
Rural Minor Collector	2.50	48,515	121,288	365	44,269,947	0.0121	0.4040	0.59	19.72
Rural Local			127,521	365	46,545,103	0.0121	0.4040	0.62	20.73
Rural Ramps	0.82	11,677	9,575	365	3,495,028	0.0193	0.4580	0.07	1.76
Urban Interstate			0	365	0			0.00	0.00
Urban Freeway			0	365	0			0.00	0.00
Urban Principal Arterial	1.12	708,615	793,649	365	289,681,771	0.0126	0.4140	4.02	132.20
Urban Minor Arterial	1.06	296,770	314,577	365	114,820,468	0.0121	0.4120	1.53	52.15
Urban Collector	2.87	28,280	90,578	365	33,061,098	0.0118	0.4050	0.43	14.76
Urban Local			170,924	365	62,387,400	0.0118	0.3850	0.81	26.48
Urban Ramps			0	365	0			0.00	0.00
TOTAL		2,509,867	2,887,531		1,053,948,978			16.17	513.42

Table KA-44: PM2.5 Analysis, 2034, Blount County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	365	0			0.00	0.00
Rural Principal Arterial	1.07	453,647	485,402	365	177,171,758	0.0124	0.4650	2.42	90.81
Rural Minor Arterial	0.98	156,689	153,556	365	22,331,061	0.0123	0.4410	0.30	10.86
Rural Major Collector	0.99	61,799	61,181	365	56,047,798	0.0118	0.4410	0.73	27.25
Rural Minor Collector	1.22	125,070	152,585	365	55,693,626	0.0119	0.4400	0.73	27.01
Rural Local			345,620	365	126,151,183	0.0119	0.4410	1.65	61.32
Rural Ramps			0	365	0			0.00	0.00
Urban Interstate	0.80	169,462	135,570	365	95,355,436	0.0121	0.4810	1.27	50.56
Urban Freeway	0.70	373,211	261,248	365	49,482,992	0.0120	0.4820	0.65	26.29
Urban Principal Arterial	0.99	1,177,805	1,166,027	365	425,599,837	0.0124	0.4530	5.82	212.52
Urban Minor Arterial	1.09	619,091	674,809	365	246,305,155	0.0121	0.4420	3.29	120.01
Urban Collector	1.37	342,984	469,888	365	171,509,049	0.0118	0.4350	2.23	82.24
Urban Local			758,520	365	276,859,897	0.0118	0.4170	3.60	127.26
Urban Ramps	0.80	19,229	15,383	365	5,614,862	0.0121	0.4940	0.07	3.06
TOTAL		3,498,987	4,679,788		1,708,122,655			22.77	839.19

Table KA-45: PM2.5 Analysis, 2034, Knox County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	1.03	925,067	952,819	365	347,778,901	0.0190	0.5520	7.28	211.62
Rural Principal Arterial			0	365	0			0.00	0.00
Rural Minor Arterial	0.99	249,056	246,566	365	55,549,504	0.0141	0.4460	0.86	27.31
Rural Major Collector	0.99	153,728	152,190	365	89,996,530	0.0126	0.4170	1.25	41.37
Rural Minor Collector	1.25	282,211	352,764	365	128,758,814	0.0127	0.4000	1.80	56.77
Rural Local	4.93	92,056	453,837	365	165,650,601	0.0127	0.4000	2.32	73.04
Rural Ramps	1.03	5,144	5,298	365	1,933,899	0.0190	0.4600	0.04	0.98
Urban Interstate	1.01	6,205,741	6,267,798	365	35,371,820	0.0141	0.4700	0.55	18.33
Urban Freeway	2.17	44,659	96,909	365	2,287,746,420	0.0122	0.4470	30.77	1,127.25
Urban Principal Arterial	1.09	3,467,228	3,779,279	365	1,379,436,660	0.0126	0.4530	19.16	688.82
Urban Minor Arterial	1.16	2,837,355	3,291,332	365	1,201,336,107	0.0124	0.4200	16.42	556.19
Urban Collector	1.14	1,143,288	1,303,348	365	475,722,137	0.0123	0.4090	6.45	214.48
Urban Local	5.10	783,023	3,993,418	365	1,457,597,687	0.0123	0.3880	19.76	623.41
Urban Ramps	1.01	341,162	344,574	365	125,769,408	0.0141	0.4590	1.95	63.63
TOTAL		16,529,718	21,240,133		7,752,648,488			108.62	3,703.20

Table KA-46: PM2.5 Analysis, 2034, Loudon County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.93	1,546,911	1,438,627	365	525,098,939	0.0188	0.5550	10.88	321.25
Rural Principal Arterial	0.80	356,587	285,269	365	104,123,287	0.0143	0.4730	1.64	54.29
Rural Minor Arterial	0.94	270,707	254,464	365	62,594,212	0.0141	0.4510	0.97	31.12
Rural Major Collector	0.59	290,663	171,491	365	92,879,434	0.0123	0.4440	1.26	45.46
Rural Minor Collector	2.82	83,885	236,556	365	86,342,933	0.0121	0.4250	1.15	40.45
Rural Local			116,937	365	42,682,004	0.0121	0.4250	0.57	20.00
Rural Ramps	0.93	14,860	13,820	365	5,044,325	0.0188	0.4780	0.10	2.66
Urban Interstate	0.86	117,480	101,033	365	0	0.0187	0.5540	0.00	0.00
Urban Freeway			0	365	36,876,941			0.00	0.00
Urban Principal Arterial	1.28	233,847	299,324	365	109,253,085	0.0148	0.4510	1.78	54.31
Urban Minor Arterial	1.54	26,171	40,304	365	14,710,798	0.0131	0.4240	0.21	6.88
Urban Collector	1.33	100,780	134,037	365	48,923,457	0.0122	0.4290	0.66	23.14
Urban Local			85,960	365	31,375,516	0.0123	0.4150	0.43	14.35
Urban Ramps	0.86	7,246	6,231	365	2,274,375	0.0187	0.4760	0.05	1.19
TOTAL		3,049,135	3,184,053		1,162,179,307			19.71	615.09

Table KA-47: PM2.5 Analysis, 2034, Roane County

Facility Type	HPMS Adj. Factor	2034 VMT	HPMS Adjusted VMT	Days/Year	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			131,917	365	48,149,705	0.0198	0.6400	1.05	33.97
Rural Principal Arterial			0	365	0			0.00	0.00
Rural Minor Arterial			0	365	0			0.00	0.00
Rural Major Collector			0	365	0			0.00	0.00
Rural Minor Collector			8,390	365	3,062,350	0.0136	0.4800	0.05	1.62
Rural Local			5,708	365	2,083,420	0.0118	0.4700	0.03	1.08
Rural Ramps			3,378	365	1,232,970	0.0118	0.4700	0.02	0.64
Urban Interstate			0	365	0			0.00	0.00
Urban Freeway			0	365	0			0.00	0.00
Urban Principal Arterial			0	365	0			0.00	0.00
Urban Minor Arterial			21,524	365	7,856,260	0.0198	0.5190	0.17	4.49
Urban Collector			0	365	0			0.00	0.00
Urban Local			0	365	0			0.00	0.00
Urban Ramps			0	365	0			0.00	0.00
TOTAL		0	170,917		62,384,705			1.31	41.80

C.2.3. Analysis Year 2040:

Table KA-48: PM2.5 Analysis, 2040, Anderson County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.82	931,658	763,960	278,845,239	0.0193	0.5220	5.93	160.45
Rural Principal Arterial	0.96	150,193	144,186	52,627,767	0.0127	0.4170	0.74	24.19
Rural Minor Arterial	0.80	138,234	110,587	166,854,243	0.0125	0.4310	2.30	79.27
Rural Major Collector	1.04	439,553	457,135	40,364,328	0.0122	0.4200	0.54	18.69
Rural Minor Collector	2.50	52,798	131,994	48,177,883	0.0121	0.4040	0.64	21.46
Rural Local			148,250	54,111,221	0.0121	0.4040	0.72	24.10
Rural Ramps	0.82	10,266	8,418	3,072,485	0.0193	0.4580	0.07	1.55
Urban Interstate			0	-			0.00	0.00
Urban Freeway			0	-			0.00	0.00
Urban Principal Arterial	1.12	763,390	854,997	312,073,955	0.0126	0.4150	4.33	142.76
Urban Minor Arterial	1.06	319,939	339,135	123,784,399	0.0121	0.4120	1.65	56.22
Urban Collector	2.87	30,042	97,600	35,623,921	0.0118	0.4060	0.46	15.94
Urban Local			184,174	67,223,533	0.0118	0.3850	0.87	28.53
Urban Ramps			0	-			0.00	0.00
TOTAL		2,836,073	3,240,436	1,182,758,974			18.26	573.16

Table KA-49: PM2.5 Analysis, 2040, Blount County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			0	-			0.00	0.00
Rural Principal Arterial	1.07	509,744	545,426	199,080,441	0.0124	0.4630	2.72	101.61
Rural Minor Arterial	0.98	175,253	171,748	25,102,479	0.0123	0.4410	0.34	12.20
Rural Major Collector	0.99	69,469	68,774	62,688,034	0.0118	0.4410	0.82	30.47
Rural Minor Collector	1.22	146,890	179,206	65,410,072	0.0119	0.4400	0.86	31.73
Rural Local			391,189	142,783,904	0.0119	0.4400	1.87	69.25
Rural Ramps			0	-			0.00	0.00
Urban Interstate	0.80	190,010	152,008	113,334,818	0.0121	0.4800	1.51	59.97
Urban Freeway	0.70	443,581	310,506	55,482,891	0.0120	0.4820	0.73	29.48
Urban Principal Arterial	0.99	1,254,804	1,242,256	453,423,425	0.0124	0.4530	6.20	226.42
Urban Minor Arterial	1.09	677,045	737,979	269,362,194	0.0121	0.4420	3.59	131.24
Urban Collector	1.37	390,143	534,496	195,091,107	0.0118	0.4350	2.54	93.55
Urban Local			834,186	304,478,049	0.0118	0.4170	3.96	139.96
Urban Ramps	0.80	21,631	17,304	6,316,109	0.0121	0.4940	0.08	3.44
TOTAL		3,878,568	5,185,078	1,892,553,523			25.23	929.31

Table KA-50: PM2.5 Analysis, 2040, Knox County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	1.03	1,038,523	1,069,679	390,432,722	0.0190	0.5390	8.18	231.98
Rural Principal Arterial			0	-			0.00	0.00
Rural Minor Arterial	0.99	288,695	285,808	68,739,791	0.0141	0.4460	1.07	33.79
Rural Major Collector	0.99	190,231	188,328	104,320,047	0.0126	0.4170	1.45	47.95
Rural Minor Collector	1.25	369,142	461,428	168,421,220	0.0127	0.4010	2.36	74.45
Rural Local	4.93	125,885	620,614	226,523,943	0.0127	0.4010	3.17	100.13
Rural Ramps	1.03	5,387	5,548	2,025,175	0.0190	0.4600	0.04	1.03
Urban Interstate	1.01	6,664,570	6,731,216	37,689,778	0.0141	0.4680	0.59	19.44
Urban Freeway	2.17	47,585	103,260	2,456,893,731	0.0122	0.4460	33.04	1,207.89
Urban Principal Arterial	1.09	3,728,727	4,064,312	1,483,474,037	0.0126	0.4520	20.60	739.14
Urban Minor Arterial	1.16	3,118,840	3,617,854	1,320,516,856	0.0124	0.4200	18.05	611.36
Urban Collector	1.14	1,238,780	1,412,209	515,456,358	0.0123	0.4090	6.99	232.39
Urban Local	5.10	862,289	4,397,673	1,605,150,601	0.0123	0.3880	21.76	686.52
Urban Ramps	1.01	357,264	360,837	131,705,521	0.0141	0.4590	2.05	66.64
TOTAL		18,035,918	23,318,767	8,511,349,780			119.35	4,052.71

Table KA-51: PM2.5 Analysis, 2040, Loudon County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate	0.93	1,808,808	1,682,191	613,999,876	0.0188	0.5390	12.72	364.81
Rural Principal Arterial	0.80	408,534	326,828	119,292,045	0.0143	0.4690	1.88	61.67
Rural Minor Arterial	0.94	323,161	303,771	69,568,344	0.0141	0.4510	1.08	34.59
Rural Major Collector	0.59	323,048	190,598	110,876,470	0.0123	0.4430	1.50	54.14
Rural Minor Collector	2.82	97,641	275,347	100,501,614	0.0121	0.4240	1.34	46.97
Rural Local			135,944	49,619,571	0.0121	0.4240	0.66	23.19
Rural Ramps	0.93	12,503	11,627	4,244,025	0.0188	0.4780	0.09	2.24
Urban Interstate	0.86	132,534	113,980	-	0.0187	0.5290	0.00	0.00
Urban Freeway			0	41,602,548			0.00	0.00
Urban Principal Arterial	1.28	280,301	358,785	130,956,487	0.0148	0.4510	2.14	65.10
Urban Minor Arterial	1.54	31,233	48,098	17,555,873	0.0131	0.4250	0.25	8.22
Urban Collector	1.33	114,202	151,888	55,439,167	0.0122	0.4290	0.75	26.22
Urban Local			100,323	36,617,964	0.0123	0.4150	0.50	16.75
Urban Ramps	0.86	6,096	5,243	1,913,536	0.0187	0.4760	0.04	1.00
TOTAL		3,538,060	3,704,623	1,352,187,518			22.95	704.91

Table KA-52: PM2.5 Analysis, 2040, Roane County

Facility Type	HPMS Adj. Factor	2040 VMT	HPMS Adjusted VMT	Annual VMT	PM2.5 Emission Factor (g/mile)	NOx Emission Factor (g/mile)	PM2.5 (tons/year)	NOx (tons/year)
Rural Interstate			153,190	55,914,350	0.0198	0.6400	1.22	39.45
Rural Principal Arterial			0	-			0.00	0.00
Rural Minor Arterial			0	-			0.00	0.00
Rural Major Collector			0	-			0.00	0.00
Rural Minor Collector			8,498	3,101,770	0.0136	0.4800	0.05	1.64
Rural Local			6,247	2,280,155	0.0118	0.4700	0.03	1.18
Rural Ramps			2,951	1,077,115	0.0118	0.4700	0.01	0.56
Urban Interstate			0	-			0.00	0.00
Urban Freeway			0	-			0.00	0.00
Urban Principal Arterial			0	-			0.00	0.00
Urban Minor Arterial			24,076	8,787,740	0.0198	0.5190	0.19	5.03
Urban Collector			0	-			0.00	0.00
Urban Local			0	-			0.00	0.00
Urban Ramps			0	-			0.00	0.00
TOTAL		0	194,962	71,161,130			1.50	47.85

Appendix K-D: Travel Demand Model and Land Use Allocation Model Development

D.1. Travel Demand Model Development

Background:

The following information related to the development of the Knoxville Regional Travel Demand Forecasting Model and associated planning assumptions is intended to fulfill the requirements under Section 93.105(c)(1)(i) of the Transportation Conformity Rule, which requires interagency review of the models and assumptions used in the regional emissions analysis.

Section 1 – Travel Demand Modeling Parameters:

I.) General Information

- A.) Validation Year:** 2010
- B.) Calibration Data:** Household Travel Behavior Survey and External Travel Survey conducted in year 2000 in Knox and Blount counties and year 2008 in the 9-county Knoxville Region. Data also taken from U.S. Census since it was conducted in 2010.
- C.) Model Geographic Coverage:** Ten Counties (Anderson, Blount, Grainger, Hamblen, Jefferson, Loudon, Knox, Roane, Sevier, Union). There are 1,186 traffic analysis zones consisting of 1,153 internal and 33 external zones.
- D.) Model Structure:** Based on a hybrid of the Traditional “Four-Step” Process and Activity-based models

II.) Model Components

The KRTM is made up of several sub-models. These sub-models are tied together and run in a sequential manner such that the output from one sub-model is an input into the next sub-model. **Error! Reference source not found.** displays the KRTM modeling process, and below is a summary of each component. Please refer to the separate “Knoxville Model Technical Documentation Report” included in Appendix H of the 2013-2040 KRMP for more detail about the model components.

- **Population Synthesis** – Determines the characteristics of individual households in the region based on the aggregate characteristics at the TAZ-level.
- **Vehicle Ownership Choice** – A significant factor in the number of motor vehicle trips made and the choice of mode (driving, carpooling, riding transit, walking, etc.) is the availability and number of vehicles at the household level. This sub-model estimates vehicle ownership based on the household characteristics such as income and number of workers.
- **Tour Generation** – This step is similar to “Trip Generation” in the standard 4-step model. The model predicts the number and types of tours that will be made by each household based on a number of factors. The model includes five different types of tours – Work, U.T., School, Non-Work, and Visitor (for tourist areas in Sevier County).
- **Tour Mode Choice** – Determines the predominant mode of travel for each tour. The KRTM includes four separate modes of private automobile, school bus, public bus, and walking/biking. Additionally the private automobile mode is disaggregated to number of occupants to account for carpooling.
- **Stop Location/Stop Sequence Choice** – This step is similar to “Trip Distribution” in the standard 4-step model. The model predicts the locations of trip ends for each tour. Stops are determined such that daily patterns of travel that begin and end at home are formed. Individual trips within the overall tour can use a different mode of travel than the predominant mode, e.g. a person that drives to work but can walk somewhere for lunch during the day.
- **Departure Time Choice** – This step determines when trips are made throughout the day.

- **Assignment** – The final step in the process is to assign the trips to the roadway network. The model computes the effects on travel time based on congestion and feeds this information back to the earlier sub-models, which affect travel behavior.

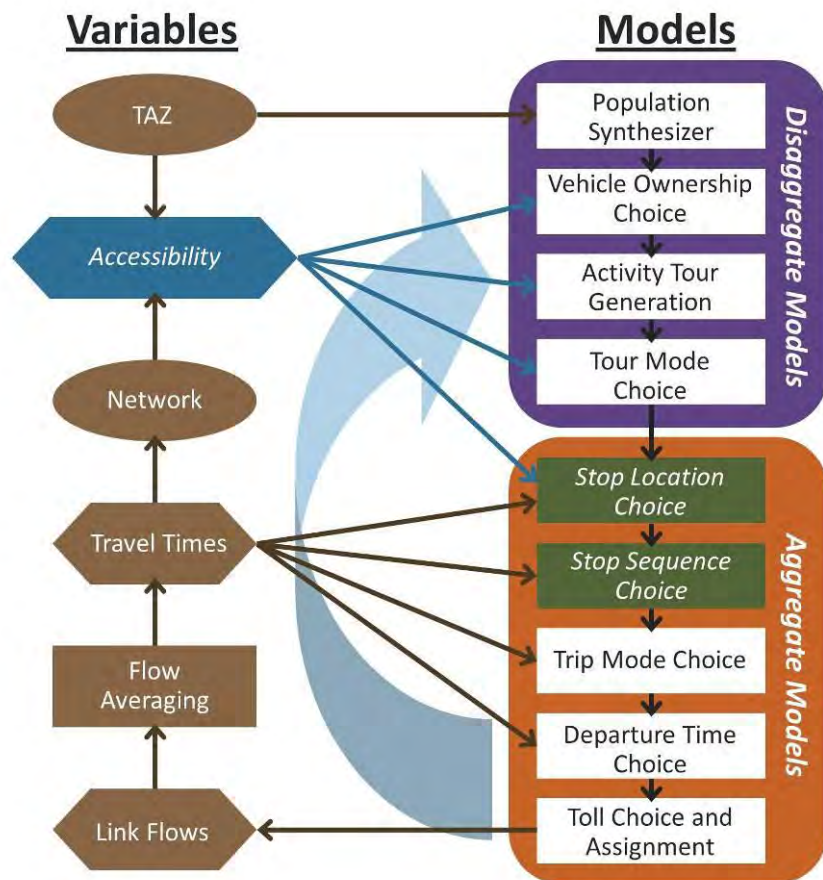


Figure KA-1: Overview of Knoxville Regional Travel Demand Model (KRTM)

The model results estimate statistics such as average speeds, delay and volume-to-capacity (V/C) ratios, and use them to determine performance and congestion on the regional roadway network under various land use and transportation network scenarios.

III.) Model Roadway Network and Traffic Analysis Zone (TAZ) Development

- A.) Roadway Network Information:** A substantial effort was undertaken to create a TransCAD-based network that included all the necessary roadways (arterials, collectors, and significant local roads) along with appropriate attributes to characterize them. A key resource was the Tennessee Roadway Information System (TRIMS), which is a comprehensive database of roadway attributes (number of lanes, pavement width, posted speed limit, etc) that is maintained by the Tennessee Department of Transportation (TDOT). It should be noted that there is significantly greater detail in terms of the number of

roadway links that are represented between the urbanized and rural portions of the model study area. Traffic signals are included in the network as well for an even greater level of precision in replicating traffic operations.

- B.) Free-Flow Speed Estimation:** A key input to the modeling of traffic on the roadway network deals with correctly estimating the free flow speed on each link. Typically, travel demand models use the posted speed limit as a surrogate for the free flow speed however, this can overstate the travel time since many times vehicles are traveling at well above the posted speed limit in when there are free flow conditions, i.e. when little or no traffic is present and weather conditions are ideal. The Knoxville model incorporates an estimation procedure borrowed from studies performed in Indiana, which relate free flow speed to roadway characteristics such as the area type, facility type, speed limit, and number of lanes. Nonlinear formulas were developed from actual field observations of speed data and then used in the model.
- C.) Capacity Estimation:** Peak hour capacities of the roadway network were estimated using Highway Capacity Manual 2000 procedures, which results in much more precise estimates of capacity verses traditional methods used in models that entail using a lookup table based on functional class and area type.
- D.) TAZ Development:** The study area of the Knoxville regional model was disaggregated into a number of traffic analysis zones (TAZ). The TAZ layer of the model consists of a total of 1,186 zones. Demographic and employment features of the Knoxville model area are reported for each of the 1,153 internal zones for use in trip generation, the remaining 33 zones are external zones. Each zone is characterized by 53 zonal attributes including population, households, vehicle ownership, mean household income, school enrollment, university enrollment, and employment by the North American Industrial Classification (NAICS) category. The 2010 Census provided much of the data for the base year model, and projection data was prepared by a consultant as documented in Appendix G of the KRMP document.

Section 2 – Model Validation:

As the travel demand model is developed, each sub-model is calibrated until results are acceptable. The process of determining acceptable results is known as “Model Validation.” The ultimate validation of a travel demand model is in comparing the daily traffic volumes computed by the model for each roadway against actual traffic counts taken in the validation year. The KRTM was calibrated and validated to the base year of 2010. There was a wealth of information available from the 2010 Decennial Census.

I. Validation Criteria

Criteria for acceptable errors between observed and estimated traffic volumes vary by facility type, according to the magnitude of traffic volume. For example, higher volume roadways have stricter calibration guidelines than those with lower volumes. Acceptable error standards have been established as guidelines for use in Tennessee through the Tennessee Model Users Group (TNMUG) and the Tennessee Department of Transportation (TDOT). These standards follow the guidelines developed by the Federal Highway Administration (FHWA) for travel demand models. Tables KA-53 and KA-54 show that the Knoxville model meets or exceeds the standards set by TNMUG for model validation for the main categories of volume to count ratios by functional class and volume group. Additional validation categories are documented in the Knoxville Model Technical Documentation Report in Appendix H of the main KRMP document.

Table KA-53: Knoxville Travel Demand Model Performance by Functional Classification

	Area	Number of Observations	Mean Count	Mean Load	% Error	TNMUG Standard	
						Acceptable	Preferable
Freeways	Urban	114	71,397	71,335	-0.1%	+/- 7%	+/- 6%
	Rural	83	42,156	44,386	5.3%		
Principal Arterials	Urban	200	24,379	24,094	-1.2%	+/- 15%	+/- 10%
	Rural	40	11,756	12,378	5.3%		
Minor Arterials	Urban	237	10,057	9,256	-8.0%	+/- 15%	+/- 10%
	Rural	80	7,733	8,014	3.6%		
Collectors	Urban	226	4,471	3,941	-11.9%	+/- 25%	+/- 20%
	Rural Major	148	3,089	3,551	14.9%		
	Rural Minor	144	1,518	1,456	-4.1%		
Locals	Urban	61	3,151	2,897	-8.1%	none	none
	Rural	22	1,576	826	-47.6%		
All	Urban	838	19,811	19,346	-2.3%	none	none
	Rural	517	10,248	10,781	5.2%		
	All	1,615	14,388	14,389	0.0%		

Table KA-54: Knoxville Travel Demand Model Performance by Volume Group

AADT	Number of Observations	Mean Count	Mean Load	% Error	TNMUG Standard	
					Acceptable	Preferable
0 – 1,000	159	613	864	41.0%	+/- 200%	+/- 60%
1,001 – 2,500	283	1,687	1,903	12.8%	+/- 100%	+/- 47%
2,501 – 5,000	297	3,714	3,740	0.7%	+/- 50%	+/- 36%
5,001 – 10,000	305	7,244	7,185	-0.8%	+/- 29%	+/- 25%
10,001 – 25,000	317	15,355	14,667	-4.5%	+/- 25%	+/- 20%
25,001 – 50,000	145	36,039	37,443	3.9%	+/- 22%	+/- 15%
> 50,000	111	83,422	82,744	-0.8%	+/- 21%	+/- 10%

II. Model Performance by Facility Type/HPMS Adjustment Factors – The model output of vehicle miles of travel (VMT) for the base year 2010 was compared against the actual highway performance monitoring system (HPMS) estimates of VMT by facility type in each county. Below is a table showing the comparison of the model to HPMS and the resulting adjustment factors that will need to be applied to the model VMT in future analysis years to ensure that all emissions will be accounted for. In general, the model appears to be performing very well as most adjustment factors require less than 20 percent adjustment. Those factors that are outside of the 20 percent range occur mostly on the lower-order Collector and Local facility types, which is not much of a concern.

Table KA-55: Vehicle Miles Travelled, 2010

	2010 Vehicle Miles Travelled											
	Rural						Urban					
County	Interstate	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Interstate	Freeway	Principal Arterial	Minor Arterial	Collector	Local
Anderson HPMS	465,825	115,524	74,128	265,086	98,041	103,993	-	-	603,157	227,780	64,800	129,662
Anderson Model	570,649	120,862	92,431	254,215	39,196	8,218	-	-	538,651	214,053	22,575	16,683
Anderson HPMS Factor	0.82	0.96	0.80	1.04	2.50	Off Model	N/A	N/A	1.12	1.06	2.87	Off Model
Blount HPMS	-	308,195	97,543	42,459	110,879	186,587	84,808	27,851	901,753	447,900	343,995	453,118
Blount Model	-	288,366	99,086	42,953	90,670	22,204	105,846	39,821	909,291	412,742	251,980	23,664
Blount HPMS Factor	N/A	1.07	0.98	0.99	1.22	Off Model	0.80	0.70	0.99	1.09	1.37	Off Model
Jefferson HPMS	1,334,100	-	337,631	186,458	110,052	131,775	60,665	-	160,163	58,435	40,799	42,882
Jefferson Model	1,311,206	-	404,883	244,251	93,169	15,280	46,828	-	132,626	74,635	38,300	193
Jefferson HPMS Factor	1.02	N/A	0.83	0.76	1.18	Off Model	1.30	N/A	1.21	0.78	1.07	Off Model
Knox HPMS	682,089	-	192,556	94,959	169,187	204,253	5,148,928	52,934	2,613,732	2,161,781	808,321	2,662,639
Knox Model	663,111	-	193,849	96,188	135,333	41,429	5,120,232	24,370	2,395,284	1,861,837	706,729	522,232
Knox HPMS Factor	1.03	N/A	0.99	0.99	1.25	4.93	1.01	2.17	1.09	1.16	1.14	5.10
Loudon HPMS	1,079,053	172,914	168,770	111,842	144,045	110,156	80,754	-	179,250	33,651	49,804	54,779
Loudon Model	1,163,736	217,325	179,566	189,535	51,059	1,839	93,380	-	139,974	21,821	37,441	395
Loudon HPMS Factor	0.93	0.80	0.94	0.59	2.82	Off Model	0.86	N/A	1.28	1.54	1.33	Off Model
Sevier HPMS	-	260,728	485,371	223,926	182,551	555,186	331,565	-	912,130	224,901	129,904	260,724
Sevier Model	-	225,822	498,939	255,603	78,090	53,972	320,988	-	800,265	183,572	66,967	17,071
Sevier HPMS Factor	N/A	1.15	0.97	0.88	2.34	Off Model	1.03	N/A	1.14	1.23	1.94	Off Model

III. Average Speed Calibration – In addition to calibrating the travel demand model so that it accurately replicates roadway traffic volumes according to validation criteria, the model was also calibrated to replicate observed average speeds for different time periods of the day. Average speed data that was collected from floating car studies in support of the regional congestion management system plan in the urbanized area was compared with outputs of post-processed speeds from the model. In general, there was very good agreement between the model speeds and the actual speeds with good root mean square errors, however there are no national validation standards for average speeds.

D.2. Land Use Allocation Process

Predicting where future growth in population and employment will occur is critical in determining future travel demand.

The Knoxville Regional TPO, Metropolitan Planning Commission (MPC), and other regional agencies have partnered together in an effort called Plan East Tennessee (PlanET). PlanET is a planning and visioning effort that covers a five-county region that includes, Anderson, Blount, Knox, Loudon, and Union Counties. PlanET includes a scenario-planning component, which shows hypothetical transportation and land use scenarios that represent distinct alternatives for how the region could develop by the year 2040.

There is a high degree of overlap and need for consistency between the PlanET scenario planning process and the Regional Mobility Plan. Thus, it was determined that the results of the PlanET scenario planning process would be used to satisfy the socioeconomic data forecasts required by the travel demand model as part of the Mobility Plan.

Trend Scenario

Scenario planning often begins with a “trend” or “business as usual” scenario that projects development based on current policies and practices. The PlanET Trend scenario will form the basis for socioeconomic data forecasts as part of the Mobility Plan. While PlanET is focused on a five-county region, the Trend scenario will include the larger ten-county region to satisfy the requirements of the travel demand model.

Allocation Tool

The Mobility Plan requires a “top-down” approach for socioeconomic data allocation, in which land use is allocated until prescribed control totals are met. Specifically, the Mobility Plan includes control totals for four attributes (population, commercial employment, service employment, and industrial employment), four forecast years (2014, 2024, 2034, and 2040), and each of the ten counties. All told, there are 80 control totals as part of the allocation.

Overview of Allocation Process

The process used to allocate socioeconomic data for the Mobility Plan is a spreadsheet-based method that allocates control totals for each attribute, county, and forecast year. It relies on three basic inputs:

- **“Supply”** – Inventories of vacant and re-developable land based on existing conditions.
- **“Demand”** – A spatial measure of demand; where growth is most likely to happen.
- **“Rates”** – The rates of consumption (dwelling units per acre, employees per acre, etc.).

Land use is allocated to polygons formed by a grid of 40-acre cells that cover all ten counties. All polygons are “nested” within a traffic analysis zone (TAZ) so that polygon data can be aggregated to the TAZ level. In cases where a TAZ is smaller than a 40-acre grid cell (such as in many downtowns), the TAZ structure is the polygon. In sum, there are 60,896 polygons in the allocation model.

TAZ Aggregation

Once the allocation is complete, data is aggregated from polygons to TAZs for use in the travel demand model. Aggregate-level data is provided for population and commercial, office, industrial, and basic employment. Figure KA-2 below shows dot-density maps that represent growth in both population (left) and employment (right) by TAZ through the year 2040.

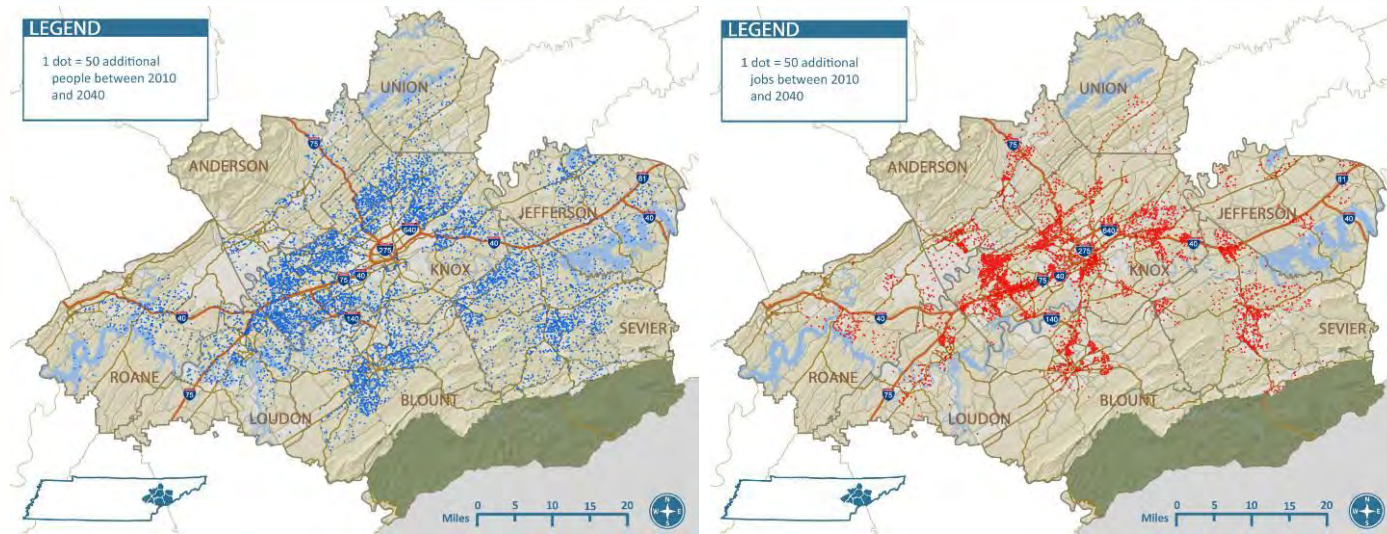


Figure KA-2: Growth in Population (left) and Employment (right) by TAZ Through 2040

Appendix K-E: MOBILE6 Input Description and Updated Planning Assumptions

Originally presented to the IAC on September 18, 2012

I. Background:

The intent of this document is to establish the planning assumptions for the conformity analysis that will be undertaken as part of the 2013 updates to the Long Range Transportation Plans for the Knoxville Regional TPO and the Lakeway Area MTPO. The Knoxville TPO compiles a single overall Long Range Plan – known as the Knoxville Regional Mobility Plan (KRMP) for the entirety of the air quality non-attainment / maintenance areas in order to ensure all planned projects meet air quality conformity requirements. The ultimate horizon year for the KRMP will be the year 2040.

The Knoxville Region is currently designated as Nonattainment for three separate NAAQS:

- **2008 8-hour Ozone Standard** – Blount, Knox and part of Anderson counties
- **1997 Annual PM_{2.5} Standard** – Anderson, Blount, Knox, Loudon and part of Roane counties
- **2006 Daily PM_{2.5} Standard** – same area as Annual PM_{2.5} Standard

It is also considered a Maintenance Area for the 1997 8-Hour Ozone Standard (Anderson, Blount, Jefferson, Knox, Loudon, Sevier and part of Cocke counties) although the conformity requirements for this NAAQS will be revoked one year after the effective date of the 2008 Ozone Standard (July 20, 2013).

An air quality conformity determination for the above pollutants is required by June 1, 2013 as part of the required 4-year update to the Long Range Transportation Plans for the Knoxville Regional TPO and the Lakeway Area MTPO. The first conformity determination addressing the 2008 8-Hour Ozone Standard is also required by July 20, 2013 for the areas designated nonattainment for that standard (Knox, Blount, and part of Anderson counties) and will be addressed by this conformity determination.

II. Planning Assumptions for developing Travel Demand Forecasts:

Technical documentation for the current travel demand forecasting model process is being provided to the IAC group in a separate document. The model is validated to a base year of 2010 to coincide with the latest decennial Census and the appropriate HPMS adjustment factors have been developed to ensure accurate replication of the amount of travel in the region. The travel demand model encompasses 10 counties with the new addition of Hamblen County to the modeling region and it covers the entire nonattainment/maintenance area with the exception of the small partial county portion of Cocke County.

Future year socioeconomic forecasts have been prepared by the same consulting firm that developed the travel demand model (Bernardin, Lochmueller & Associates). The projections and methodology are being provided to the IAC in a separate document for review. The Future Year control totals were adopted/endorsed by the TPO Executive Board at their April 25, 2012 meeting and by the LAMTPO Executive Board at their October 24, 2012 meeting.

III. Latest Emissions Model:

The EPA has officially released a new emissions factor model known as “MOVES2010” however there is a 3-year grace period prior to it being required for use in preparing a conformity determination, i.e. March 2013. This conformity analysis will therefore be conducted using MOBILE6.2 primarily because this was the model used to develop the current MVEBs for the various pollutants.

IV. Emissions Tests:

(For Annual & Daily PM_{2.5})

Use budget test against the Annual PM_{2.5} SIP MVEB (assuming adequacy finding is officially approved by EPA). Emissions are calculated based on using the “single-run approach” whereby average annual inputs are used for MOBILE6.2.

The MVEB established for Direct PM_{2.5} emissions and NO_x emissions are as follows:

Pollutant	2009 MVEB (tons/year)
PM _{2.5}	283.63
NO _x	18,024.90

(For 1997 8-Hour Ozone Standard)

There is a Maintenance Plan that has been developed for the 1997 8-Hour Ozone Standard that has established an MVEB for the year 2024. This MVEB will be used for emissions analyses for all analysis years of 2024 and beyond. For required analysis years that are prior to 2024 separate emissions tests are required for Knox County and the remaining counties. This is because there was a 2014 MVEB that was developed specifically for Knox County which was originally a Maintenance Area for the old 1-hour Ozone Standard. The remaining counties within the 1997 8-Hour Ozone Maintenance Area are subject to an emission test of “Less than Baseline Year 2002 Emissions” for NO_x and VOC. Following are the Baseline Year 2002 emissions from the most recent CDR:

All Counties except Knox – Emission Test of “Less than Baseline Year 2002 Emissions” for NO_x and VOC. Following are the Baseline Year 2002 emissions from the most recent CDR:

Pollutant	2002 Emissions (tons/day)
VOC	25.11
NO _x	57.94

Knox County – Emission Test against the 1-Hour Ozone Maintenance Plan MVEB for NO_x and VOC. Following are the MVEB established in the 1-Hour Ozone Maintenance Plan for Knox County:

Pollutant	2014 MVEB (tons/day)
VOC	22.12
NO _x	22.49*

* Note: As of the date of the preparation of this document, the 2014 MVEB for NO_x is currently in the process of being amended to allocate additional safety margin to the current total of 22.49 tons per day. The final approval date of this amendment is not certain, but could occur prior to the adoption of the 2013 KRMP update and conformity approval. The amended total allowable NO_x MVEB would become 31.71 tons per day upon final approval.

The 2024 Maintenance Plan MVEB that will be used for the entire 1997 8-Hour Standard Maintenance Area for analysis years of 2024 and beyond is as follows:

Pollutant	2014 MVEB (tons/day)
VOC	25.19
NO _x	36.32

(For 2008 8-Hour Ozone Standard)

This is a new standard for which there are no specific MVEBs that have been developed and therefore similar emissions tests as the 1997 8-Hour Standard are required. There are two options however for required analysis years prior to 2024:

- **Option 1** – Interim emissions test against year 2011 baseline emissions in the nonattainment region.
- **Option 2** – If the emissions from the nonattainment region (Blount, Knox, part of Anderson counties) is less than the 2014 Knox County 1-Hour Ozone MVEB shown above then conformity will be demonstrated.

V. MOBILE6.2 Inputs:

Following is documentation for the proposed inputs for MOBILE6.2, which is based on the “Technical Guidance on the Use of MOBILE6.2 for Emission Inventory Preparation” published by EPA in August 2004.

**1.) Calendar Year of Evaluation:
(1997 & 2008 Ozone Standards) –**

- **2015** – Required as it is the Attainment Year for 2008 Ozone Standard
- **2024** – Year such that there are no more than 10 years between analysis years
- **2034** – Year such that there are no more than 10 years between analysis years
- **2040** – Final year of KRMP

(Annual & Daily PM_{2.5} Standards) –

- **2014** – Required as it is the Attainment Year for Daily PM_{2.5} Standard
- **2024** – Year such that there are no more than 10 years between analysis years
- **2034** – Year such that there are no more than 10 years between analysis years
- **2040** – Final year of KRMP

2.) Month of Evaluation:

(Ozone) – Use “7” (July) as it is most appropriate for ozone season analysis.

(Annual & Daily PM2.5) – Use “7” (July) based on single-run approach used in Annual PM2.5 SIP.

3.) Temperature:

(Ozone) – The IAC group has previously agreed to use 66/96 as the MIN/MAX temperature input for the ozone analysis. This is based on the requirement to remain consistent with the temperature input that was used in the Knox County 1-Hour Maintenance Plan.

(Annual & Daily PM2.5) – The Annual PM2.5 SIP established the average annual MIN/MAX temperature of 50.1/70.0.

4.) Absolute Humidity:

(Ozone) – Use the MOBILE6.2 default value of 75 grains/lb primarily in order to remain consistent with the 1-hour Ozone Maintenance Plan, which also used the default value for humidity.

(Annual & Daily PM2.5) – The Annual PM2.5 SIP established the absolute humidity value of 52 grains/lb.

5.) Vehicle Age Distribution:

(Ozone and Annual & Daily PM2.5) – Data originally developed for use in the new MOVES model based on year 2010 vehicle registration data obtained from the Tennessee Department of Revenue and processed by the University of Tennessee on behalf of TDOT was acquired and converted to MOBILE6 format for this conformity analysis. Due to issues described in Appendix K-F, it was determined that the 2010 age distribution data for light duty vehicle types only would be used.

6.) Vehicle Activity:

(Ozone) – The TPO forecasts future vehicle activity using a travel demand forecasting model in the entire Ozone nonattainment area except for the portion in Cocke County.

The VMT on local roadways is projected using an off-model technique due to the small number included in the travel demand model in all counties outside of Knox County. The methodology involves using the assumption that the base year (2010) local road VMT as a percent of the

collector and arterial VMT by county remains constant into the future. For example, if the collector and arterial VMT increase by 2% in Blount County then the Local road VMT is assumed to also increase by 2%. This methodology is consistent with previous conformity analyses.

The TPO has previously used historical traffic volume and visitation data to determine a growth factor to apply to existing VMT estimates for Cocke County roadways within the partial-county nonattainment area and will continue this methodology for the update.

For ramp facilities, the methodology recommended by the technical guidance is to assume that the HPMS data for Freeway facilities can be broken out as 92 percent VMT on the actual freeway and the other 8 percent on ramps. Since the model network was expanded to include all ramps in the study area, the actual model output values will be used rather than the default percentage breakdown.

(Annual & Daily PM2.5) – Basically the same as above with the ozone analysis for a slightly different study area, which does not include any portions of Cocke, Jefferson, or Sevier counties but adds a small portion of Roane County. All of the PM2.5 Nonattainment Area is covered by the TPO’s travel demand forecasting model.

7.) VMT by vehicle classification:

(Ozone and Annual & Daily PM2.5) – The VMT by vehicle classification is available from TDOT vehicle classification data. The TDOT data has to be further disaggregated to the several vehicle types recognized by MOBILE6.2 from the three major classifications that TDOT uses. Classification data from the year 2006 will be used for this analysis. The VMT by vehicle classification for future years accounts for the potential of increasing heavy-duty truck utilization based on various projections.

8.) VMT by functional classification:

(Ozone and Annual & Daily PM2.5) – The TPO model allocates estimates of VMT into the appropriate functional classification as defined by TDOT. There are four driving cycles used by MOBILE6.2, the following table shows the Driving Cycle proposed for each FHWA functional classification category:

FHWA Highway Functional System	MOBILE6.2 Driving Cycle
Rural Interstate	Freeway and Freeway Ramp
Rural Other Principal Arterial	Arterial/Collector*
Rural Minor Arterial	Arterial/Collector
Rural Major Collector	Arterial/Collector
Rural Minor Collector	Arterial/Collector
Rural Local	Arterial/Collector
Urban Interstate	Freeway and Freeway Ramp
Urban Other Freeways	Freeway and Freeway Ramp
Urban Other Principal Arterial	Arterial/Collector
Urban Minor Arterial	Arterial/Collector
Urban Collector	Arterial/Collector
Urban Local	Local Roadway

* The technical guidance recommends the Freeway and Freeway Ramp driving cycle for the Rural Other Principal Arterial class; however the arterial/collector cycle seems to be more appropriate in this region due to the lack of access control on these types of facilities.

9.) VMT Fraction by Average Speed by Hour of the Day:

(Ozone and Annual & Daily PM2.5) – The TPO travel demand model has three time periods - AM Peak (6 - 9 am), PM Peak (3 - 6 pm) and the rest of the day. Therefore, an average speed can be developed for each of these time periods, by direction of travel in order to capture the peaking effect on speed. The command has a single VMT distribution for the AM peak three-hour period, a single VMT distribution for the PM peak three-hour period and one for the other 18 hours of the day. Separate scenarios will be run for Interstates, Arterials, and Collectors, which would be handled with setting the appropriate field in the VMT BY FACILITY command to 1.0.

10.) Weekday and Weekend Day Activity:

(Ozone) – The technical guidance states, “for most purposes, EPA will not expect States to develop local estimates that vary by day of the week”. There is no mention of season variation factors although it is fairly standard practice to apply a seasonal adjustment factor (SAF) to account for differences in travel during the summer months since the HPMS data and travel demand model VMT estimates are normalized to an average annual daily traffic volume. There are seasonal variation factors available from TDOT, which will be used to develop an appropriate SAF, and will be documented in the conformity report.

(Annual & Daily PM2.5) – Since the PM2.5 analysis is based on computing annual emissions and the travel demand model was calibrated to match the HPMS estimates of daily vehicle miles of travel the emissions were calculated first at the daily level and then converted to an annual amount by multiplying by 365.

11.) Gasoline Volatility:

(Ozone) – A Reid Vapor Pressure (RVP) value of 9.0 will be used since that is the type of fuel that is distributed in the Knoxville region during the ozone season months.

(Annual & Daily PM2.5) – As established by the Annual PM2.5 SIP, the annual average RVP value is 11.98.

12.) Diesel Sulfur Content:

(Ozone) – The diesel sulfur content is only applicable to Particulate Matter modeling and will not be used.

(Annual & Daily PM2.5) – The technical guidance states that in the absence of survey data EPA recommends that past data be taken from an EPA spreadsheet called “Diesel Sulfur Levels by County” located at <http://www.epa.gov/otaq/m6.htm>. This spreadsheet was reviewed for the counties located in the Knoxville PM2.5 nonattainment area for the 2002 Analysis Year – the Annual Diesel Sulfur Level Average was the same for each county and was calculated to be 358 ppm based on the information in the spreadsheet.

Beginning in the 2006 calendar year more stringent sulfur levels are phased in going from the current level of 500 ppm to 15 ppm. The technical guidance recommends using the value of 11 ppm for any analysis year after May 2010.

Appendix K-F: Age Distribution Data Discussion

A number of MOVES data elements were developed by the University of Tennessee (UT) for the Tennessee Department of Transportation (TDOT). Included in this preliminary MOVES dataset is county-specific age distribution for the various MOVES sourceTypes. The age distribution data are the fractions of the vehicle fleet in a county that are 1 year old, 2 years old, and so on up to 30 years of age and older.

UT developed this information from data received from the Department of Revenue on vehicle registrations for 2010. One of the largest challenges presented in developing the age distributions is the allocation of vehicles into the MOVES sourceTypes. The Department of Revenues vehicle classification does not match that of MOVES. This created a significant challenge for UT Researchers in placing the vehicles into the appropriate MOVES sourceType categories. This proved to be very difficult, and as a result, UT Researchers lack confidence in the information developed from the registration data (both sourceType population and Age distributions were developed with this data).

In UT's documentation (*The Methodology for Developing For Input Datasets for the MOVES Model: Road Type Distribution, Source Type Population, Vehicle Type VMT, and Age Distribution*, University of Tennessee, Department of Civil & Environmental Engineering, April 2012) of the data developed for MOVES, UT Researchers state on page 5 "confidence in vehicle registration data was not very high". This vehicle registration data was used to develop both the sourceType population and the age distribution data. Both of these data sets need to be carefully evaluated for each county before being considered for use.

Further in UT's documentation, as well as on the notes tab of each county file UT Researchers state: "The motor vehicle registration data for the state were of highly questionable quality..." This indicates that even if the underlying data appear reasonable, caution must be taken in using this data because it might not reflect reality.

A couple sample age distributions that appear to show erroneous distributions are illustrated below.

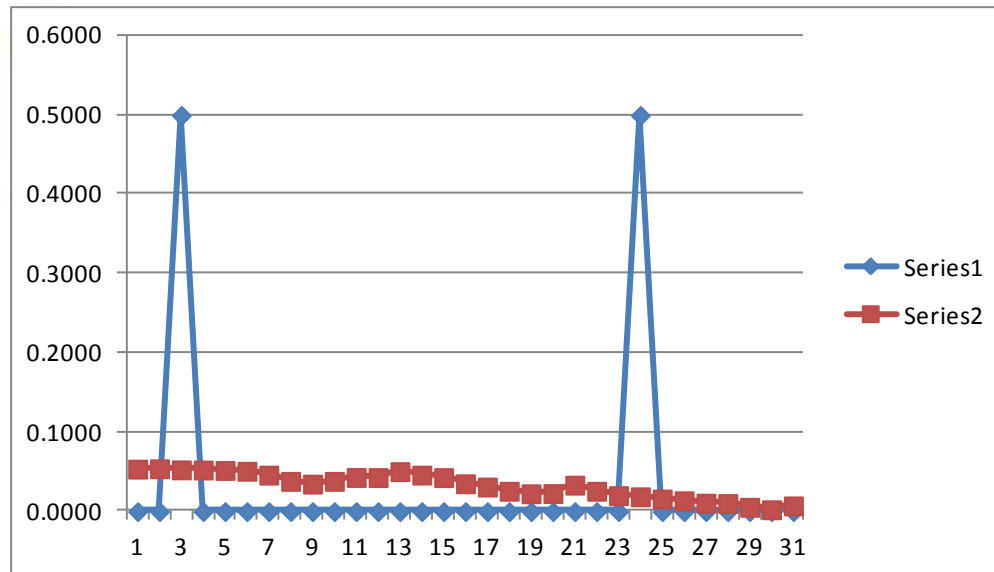


Figure KA-3. Age Distributions for Transit Buses in Cocke County (Series1 is UT data, Series2 is default data)

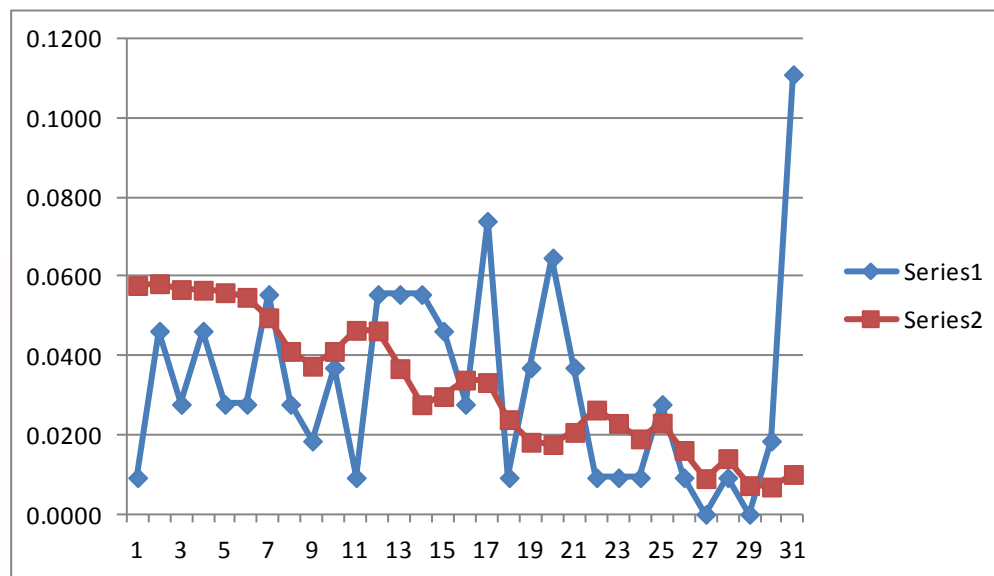


Figure KA-4. Age Distributions for Single Unit Short Haul Trucks in Cocke County (Series1 is UT data, Series2 is default data)

In addition to the concerns about data quality, an additional issue with the 2010 age distribution data is that it was formatted for use in the new MOVES2010 emissions model whereas the Knoxville TPO is using the previous emissions model known as MOBILE6. The EPA does not have a standard process to convert from MOVES format to MOBILE6 and the TPO was forced to develop its own conversion method for the 2010 age data.

The difference between MOVES and MOBILE6 vehicle type definitions cause challenges in trying to convert data between the two models. Below is a table that shows the format of vehicle types for the two different models:

MOVES Vehicle Type Definitions 13 Source Types	MOBILE6 Vehicle Type Definitions 16 Vehicle Types
11 = Motorcycle	1 = Passenger Cars
21 = Passenger Car	2 = Light-Duty Trucks 1
31 = Passenger Truck	3 = Light-Duty Trucks 2
32 = Light Commercial Truck	4 = Light-Duty Trucks 3
41 = Intercity Bus	5 = Light-Duty Trucks 4
42 = Transit Bus	6 = Class 2b Heavy-Duty Vehicles
43 = School Bus	7 = Class 3 Heavy-Duty Vehicles
51 = Refuse Truck	8 = Class 4 Heavy-Duty Vehicles
52 = Single Unit Short Haul Truck	9 = Class 5 Heavy-Duty Vehicles
53 = Single Unit Long Haul Truck	10 = Class 6 Heavy-Duty Vehicles
54 = Motor Home	11 = Class 7 Heavy-Duty Vehicles
61 = Combination Short Haul Truck	12 = Class 8a Heavy-Duty Vehicles
62 = Combination Long Haul Truck	13 = Class 8b Heavy-Duty Vehicles
	14 = School Buses
	15 = Transit and Urban Buses
	16 = Motorcycles (All)

There is a direct translation between a few of the vehicle types such as passenger cars and motorcycles between the two models, however some of the MOVES vehicle types are comprised of several of the MOBILE6 categories such as the Refuse Truck which is comprised of MOBILE6 vehicle types 10, 11, 12, and 13.

Using the MOVES Technical Guidance document the TPO staff was able to apply factors to attempt to convert the MOVES formatted vehicle age distributions to MOBILE6 format. As a test of this converter, the TPO staff input MOBILE6 default age distribution data into the EPA MOBILE6 to MOVES converter to develop a MOVES age distribution and then input the results into the TPO's converter. This "back-conversion" resulted in an inexact match of the original MOBILE6 defaults. Some vehicle types matched exactly; however, there were significant differences for MOBILE6 vehicle types 6 – 9 in particular.

Conclusion

In discussion with EPA on the matter of the use of this information, EPA maintains that the most recent data should be used. Due to the questionable nature of some of the data elements, it is being proposed for the 2013-2040 Knoxville Regional Mobility Plan Update to use the new light-duty vehicle information and rely on MOBILE6 default information for the remaining Vehicle Types.

This approach is consistent with the methodology used to develop the original MOBILE6 age distribution data in year 2000 that has been used in recent SIP development and conformity determinations in the Knoxville Region. The original age distribution data used vehicle registration data to develop ages only for MOBILE6 Vehicle Types 1 – 5, i.e. Passenger Cars and Light-Duty Trucks and relied on defaults for the remaining Vehicle Types 6 – 16.

This approach is being proposed to take advantage of those components of the newer data developed by UT that appear more reasonable, while defaulting to the previously used data for the remaining vehicle types. Additional time is needed to fully review the entire UT dataset that has been developed for MOVES and discuss its reasonableness through the IAC process.

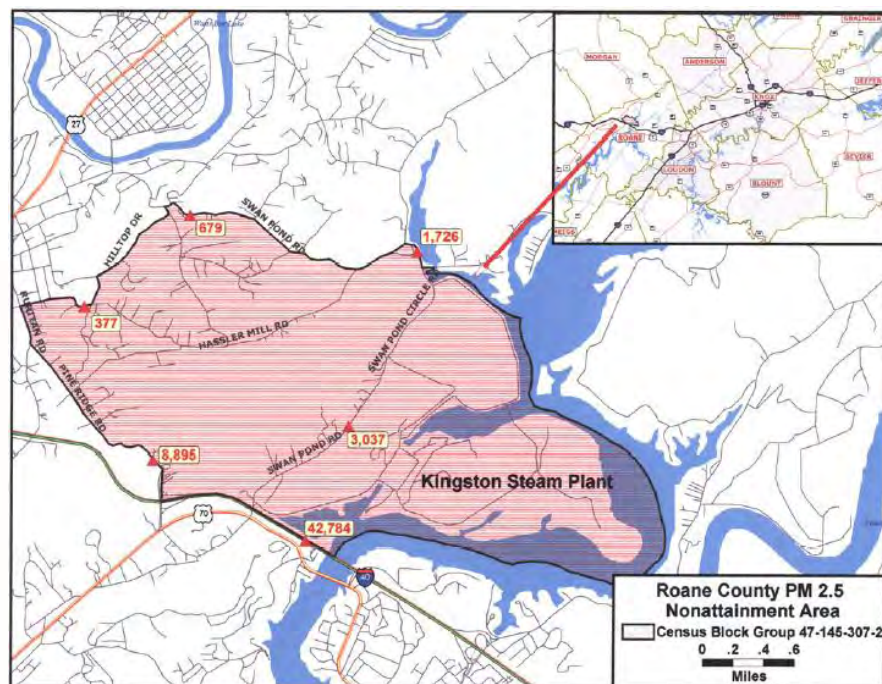
Appendix K-G: Anderson, Roane & Cocke County Partial County Emissions Analysis Methodology

Background:

Following is a brief summary of the methodology used to calculate emissions from the partial county Ozone areas in Anderson and Cocke counties as well as the partial PM_{2.5} nonattainment area located in Roane County.

Roane County Methodology:

The PM_{2.5} partial nonattainment area in Roane County consists of one Census Block group around the TVA Kingston Steam Plant and is shown in the map below:



There are five facility types represented within this area: Rural Freeway, Rural Ramp, Urban Minor Arterial, Rural Collector, and Rural Local. The total VMT was calculated for the base year 2010 based on actual TDOT traffic counts also shown in the above map. The 2010 model VMT by facility type within the area was compared to the actual VMT in order to obtain correction factors. The local VMT was calculated based on the length of local roads versus the total length of rural local roads in Roane County. The correction factors and local VMT percentage were assumed to remain constant and were applied to the travel demand model VMT.

Cocke County Methodology:

The Ozone partial nonattainment area in Cocke County consists of only the portion of Cocke County within the confines of the Great Smoky Mountains National Park. Three roadways were determined to be included in the partial nonattainment area as agreed upon through the IAC process, which are SR 32, Cosby Campground Road and the Foothills Parkway. The emissions analysis methodology for this area consists of an off-model analysis of future traffic growth on these three roadways since they are not represented in the TPO travel demand model.

In order to project future traffic updated traffic counts were received from TDOT and the National Park Service and input into a spreadsheet. The traffic counts were converted to an average summer day using the appropriate seasonal adjustment factors and then multiplied by the length of the roadway segment to obtain an estimate of daily vehicle miles of travel (VMT). Using Excel growth trend computation procedures the counts for each of the three roadways within the Ozone Nonattainment Area were extrapolated to year 2040 as shown in the following table. The final step in the emissions analysis process is to multiply the VMT by the emission factors that were developed using MOBILE6.2.

Cocke County Partial Ozone Nonattainment Area VMT Projections for 2013 KRMP Conformity Determination

	VMT Trendline		
	Cosby Campground	Foothills Pkwy East	SR 32
2000	452	6,919	6,707
2001	341	5,570	7,259
2002	471	5,662	8,170
2003	425	6,257	7,884
2004	351	6,513	7,397
2005	274	6,026	8,271
2006	435	7,224	7,434
2007	414	7,125	7,792
2008	849	7,205	7,636
2009	1,040	10,282	8,712
2010	986	10,487	7,544
2011	1,005	10,696	8,142
2012	1,046	10,910	8,229
2013	1,081	10,969	8,303
2014	1,146	11,427	8,378
2015	1,212	11,886	8,452
2016	1,277	12,344	8,526
2017	1,343	12,803	8,601
2018	1,408	13,261	8,675
2019	1,474	13,720	8,749
2020	1,539	14,178	8,824
2021	1,605	14,636	8,898
2022	1,670	15,095	8,972
2023	1,736	15,553	9,047
2024	1,802	16,012	9,121
2025	1,867	16,470	9,195
2026	1,933	16,929	9,270
2027	1,998	17,387	9,344
2028	2,064	17,846	9,418
2029	2,129	18,304	9,493
2030	2,195	18,763	9,567
2031	2,260	19,221	9,641
2032	2,326	19,679	9,716
2033	2,391	20,138	9,790
2034	2,457	20,596	9,864
2035	2,522	21,055	9,939
2036	2,588	21,513	10,013
2037	2,653	21,972	10,087
2038	2,719	22,430	10,162
2039	2,784	22,889	10,236
2040	2,850	23,347	10,310

Count Source: NPS, Public Use Statistics Office & TDOT

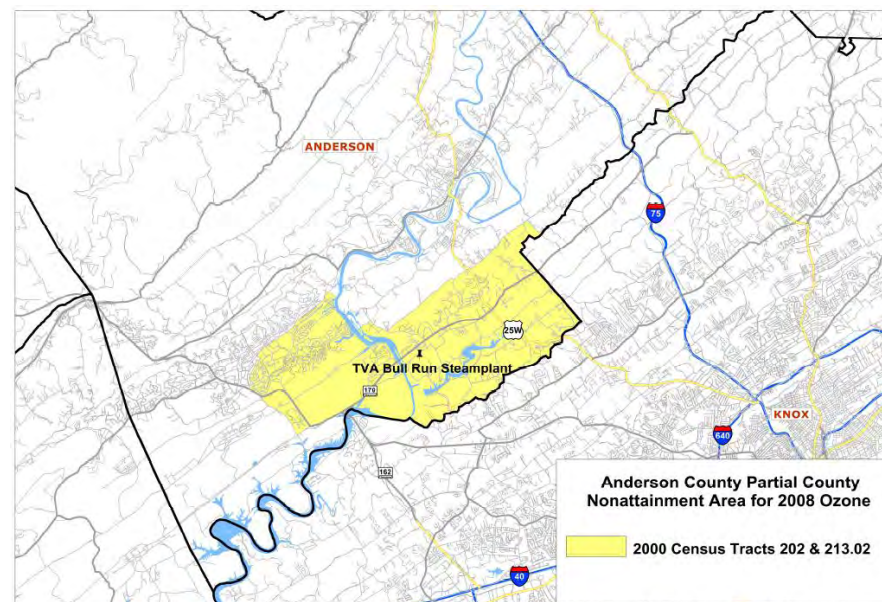
Cosby Campground/picnic area access road is 2.4 miles in length

Foothills Parkway East is 5.6 miles in length.

SR 32 is 9.2 miles in length

Anderson County Methodology:

The 2008 Ozone Nonattainment Area includes a partial county area in Anderson County that surrounds the TVA Bull Run Steam Plant similar to the partial PM2.5 area in Roane County and is shown in the map below:



There are eight facility types represented within this area: Urban Principal Arterial, Urban Minor Arterial, Rural Minor Arterial, Rural Major Collector, Rural Minor Collector, Urban Collector, Urban Local, and Rural Local. The total VMT was calculated for the base year 2010 based on actual TDOT traffic counts. The 2010 model VMT by facility type within the area was compared to the actual VMT in order to obtain correction factors. The local VMT was calculated based on the length of local roads versus the total length of urban and rural local roads in Anderson County. Since the local roadway type and urban collectors were not represented in the travel demand model, it was assumed that the base year percentage of VMT relative to the other roadway types would remain constant into the future. The correction factors and urban collector/local VMT percentage were assumed to remain constant and were applied to the travel demand model VMT.

The analysis for the partial Anderson County Nonattainment area was conducted for year 2015 only as it was only used for the 2015 Analysis Test against the 2014 1-Hour MVEB for Knox County. The chart below shows the correction factors and resulting 2015 VMT by facility type:

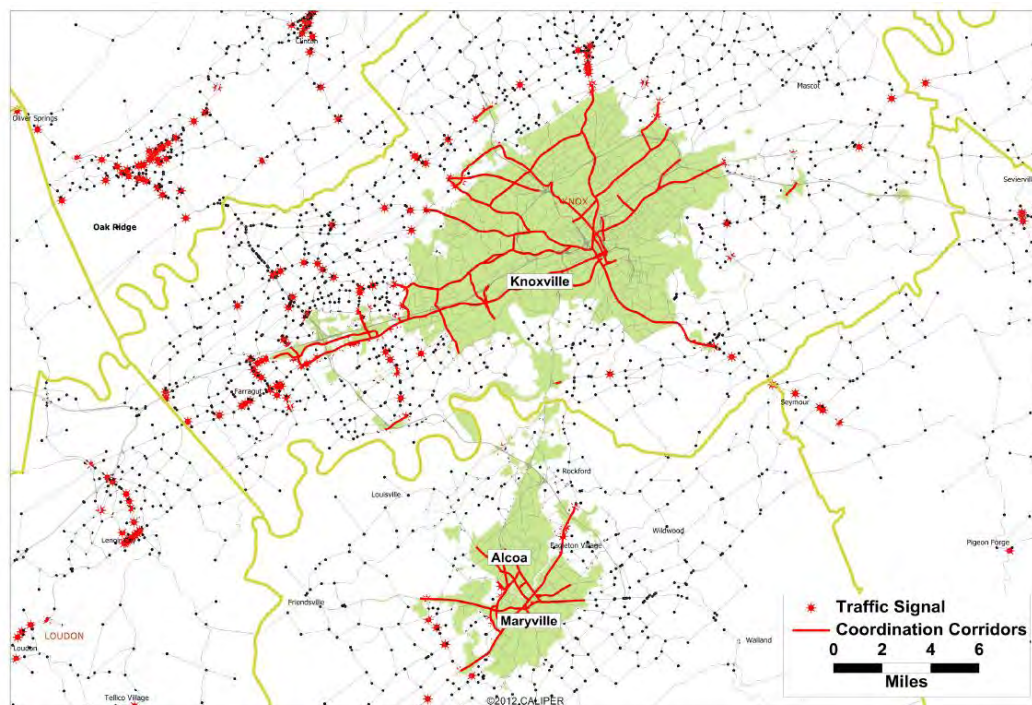
Year 2010 VMT				
Facility Type	Actual	Model	Correction Factor	% of Other VMT
Urban Principal Arterial	184,282	177,156	1.04	
Urban Minor Arterial	160,694	145,080	1.11	
Rural Minor Arterial	67,979	87,721	0.77	
Rural Major Collector	58,364	50,530	1.16	
Rural Minor Collector	15,242	15,325	0.99	
Urban Collector	12,681	N/A		0.03
Urban Local	35,408	N/A		0.07
Rural Local	16,069	N/A		0.03
Total	550,719			
Model Year 2015 VMT				
		Correction Factor	Final VMT	
Urban Principal Arterial	83,048	1.04	86,389	
Urban Minor Arterial	50,449	1.11	55,878	
Rural Minor Arterial	16,118	0.77	12,491	
Rural Major Collector	191,275	1.16	220,930	
Rural Minor Collector	144,717	0.99	143,933	
Urban Collector			13,543	
Urban Local			37,814	
Rural Local			17,161	
Total			588,140	

Appendix K-H: Signal Coordination – Off Model Analysis

An off-model analysis was conducted to determine the amount of emissions impacts from any regionally significant traffic signal coordination projects in the Knoxville Regional Mobility Plan or ones that have been completed since the previous Mobility Plan update in 2009. The conformity regulations in 40 CFR 93.128 require that all subsequent regional emissions analyses must include regionally significant traffic signal synchronization projects.

Project 13-602 in the 2024 Horizon Year of the Knoxville Regional Mobility Plan involves updating all of the signal hardware infrastructure within the City of Knoxville and improving signal timing along major corridors as a result. In addition, there was a similar project that was recently completed in the cities of Alcoa and Maryville in Blount County that improved signal timing along their primary corridors. The Blount County project affects all Horizon Years, while the Knox County project only affects horizon years 2024, 2034, and 2040.

An assumption was made that the improved signal coordination would only impact the peak direction of flow for each of the AM and PM peak periods. The travel demand model network was used for each horizon year to determine the amount of peak period VMT and average speed along each affected corridor by functional classification. It was then assumed that the average speed would be increased by 12% based on the typical improvements for signal coordination noted in the publication *"A Toolbox for Alleviating Traffic Congestion and Enhancing Mobility"* from the Institute of Transportation Engineers (ITE). Emission factors for VOC and NO_x were determined by running MOBILE6 with the "before" and "after" average speeds. The net change in emissions were calculated and added to the overall emissions for each horizon year. It should be noted that VOC decreased while NO_x increased in some cases due to the fact that emission rates for NO_x tend to increase when speeds are increased beyond approximately 35 mph. The emission rates for PM_{2.5} are not sensitive to speed in MOBILE6 and were therefore not analyzed. The table on the following page shows the emissions analysis for each horizon year and the map below shows the location of the affected corridors.



Off-Model Signal Coordination Analysis

Year 2014

Peak Period	County & Functional Class	VMT	Avg Spd Before	Avg Spd After	NOx Em Factor (g/mi) Before	NOx Em Factor (g/mi) After	Change in NOx Emissions
AM Peak	Blount Principal Arterials	51,887.90	39.8	44.6	0.925	0.945	1,037.76
PM Peak	Blount Principal Arterials	55,085.85	35.5	39.8	0.914	0.925	605.94
AM Peak	Blount Minor Arterials	16,695.82	30.7	34.3	0.892	0.886	(100.17)
PM Peak	Blount Minor Arterials	16,684.88	28.9	32.4	0.899	0.889	(166.85)
TOTALS		140,354.45					1,376.68
Tons per Day							0.0015

Year 2015

Peak Period	County & Functional Class	VMT	Avg Spd Before	Avg Spd After	VOC Em Factor (g/mi) Before	VOC Em Factor (g/mi) After	Change in VOC Emissions	NOx Em Factor (g/mi) Before	NOx Em Factor (g/mi) After	Change in NOx Emissions
AM Peak	Blount Principal Arterials	66,144.55	39.8	44.6	0.884	0.862	(1,455.18)	0.793	0.808	992.17
PM Peak	Blount Principal Arterials	58,947.62	35.4	39.7	0.907	0.884	(1,355.80)	0.785	0.793	471.58
AM Peak	Blount Minor Arterials	19,903.84	29.9	33.5	0.958	0.926	(636.92)	0.772	0.763	(179.13)
PM Peak	Blount Minor Arterials	17,278.26	28.5	32.0	0.972	0.939	(570.18)	0.778	0.766	(207.34)
TOTALS		162,274.27					(4,018.08)			1,077.28
Tons per Day							(0.0044)			0.0012

Year 2024

Peak Period	County & Functional Class	VMT	Avg Spd Before	Avg Spd After	VOC Em Factor (g/mi) Before	VOC Em Factor (g/mi) After	Change in VOC Emissions	NOx Em Factor (g/mi) Before	NOx Em Factor (g/mi) After	Change in NOx Emissions
AM Peak	Blount Principal Arterials	56,815.51	41.7	46.7	0.516	0.501	(852.23)	0.477	0.486	511.34
PM Peak	Blount Principal Arterials	59,937.43	35.8	40.1	0.538	0.522	(959.00)	0.47	0.474	239.75
AM Peak	Blount Minor Arterials	18,232.41	31.0	34.7	0.566	0.545	(382.88)	0.47	0.464	(109.39)
PM Peak	Blount Minor Arterials	17,720.76	29.2	32.7	0.578	0.556	(389.86)	0.474	0.467	(124.05)
AM Peak	Knox Principal Arterials	148,035.22	37.4	41.9	0.459	0.445	(2,072.49)	0.435	0.441	888.21
PM Peak	Knox Principal Arterials	153,433.24	35.2	39.4	0.467	0.452	(2,301.50)	0.432	0.436	613.73
AM Peak	Knox Minor Arterials	115,109.52	35.8	40.1	0.467	0.453	(1,611.53)	0.429	0.433	460.44
PM Peak	Knox Minor Arterials	119,094.35	33.9	37.9	0.476	0.46	(1,905.51)	0.429	0.431	238.19
TOTALS		535,672.32					(7,891.03)			2,200.57
Tons per Day							(0.0087)			0.0024

Year 2034

Peak Period	County & Functional Class	VMT	Avg Spd Before	Avg Spd After	VOC Em Factor (g/mi) Before	VOC Em Factor (g/mi) After	Change in VOC Emissions	NOx Em Factor (g/mi) Before	NOx Em Factor (g/mi) After	Change in NOx Emissions
AM Peak	Blount Principal Arterials	62,607.98	39.9	44.7	0.489	0.475	(876.51)	0.395	0.401	375.65
PM Peak	Blount Principal Arterials	65,259.32	33.7	37.7	0.514	0.497	(1,109.41)	0.393	0.393	-
AM Peak	Blount Minor Arterials	21,129.75	31.3	35.0	0.53	0.504	(549.37)	0.395	0.39	(105.65)
PM Peak	Blount Minor Arterials	20,383.81	29.3	32.8	0.542	0.521	(428.06)	0.399	0.393	(122.30)
AM Peak	Knox Principal Arterials	154,007.18	37.1	41.5	0.439	0.425	(2,156.10)	0.369	0.373	616.03
PM Peak	Knox Principal Arterials	157,578.33	35.1	39.3	0.446	0.432	(2,206.10)	0.367	0.37	472.73
AM Peak	Knox Minor Arterials	129,685.30	35.0	39.2	0.449	0.435	(1,815.59)	0.367	0.37	389.06
PM Peak	Knox Minor Arterials	130,290.48	32.9	36.8	0.459	0.443	(2,084.65)	0.37	0.368	(260.58)
TOTALS		571,561.29					(8,262.44)			1,217.24
							Tons per Day			(0.0091)
										0.0013

Year 2040

Peak Period	County & Functional Class	VMT	Avg Spd Before	Avg Spd After	VOC Em Factor (g/mi) Before	VOC Em Factor (g/mi) After	Change in VOC Emissions	NOx Em Factor (g/mi) Before	NOx Em Factor (g/mi) After	Change in NOx Emissions
AM Peak	Blount Principal Arterials	65,762.32	38.5	43.1	0.494	0.479	(986.43)	0.394	0.399	328.81
PM Peak	Blount Principal Arterials	67,769.17	32.3	36.2	0.522	0.502	(1,355.38)	0.395	0.392	(203.31)
AM Peak	Blount Minor Arterials	22,129.14	30.7	34.4	0.533	0.512	(464.71)	0.396	0.391	(110.65)
PM Peak	Blount Minor Arterials	21,231.63	28.7	32.2	0.546	0.524	(467.10)	0.401	0.394	(148.62)
AM Peak	Knox Principal Arterials	161,747.84	36.7	41.1	0.44	0.427	(2,102.72)	0.368	0.372	646.99
PM Peak	Knox Principal Arterials	163,485.54	34.6	38.7	0.448	0.434	(2,288.80)	0.367	0.37	490.46
AM Peak	Knox Minor Arterials	137,018.13	34.8	38.9	0.45	0.436	(1,918.25)	0.367	0.37	411.05
PM Peak	Knox Minor Arterials	136,385.93	32.4	36.3	0.462	0.445	(2,318.56)	0.37	0.368	(272.77)
TOTALS		598,637.44					(8,628.33)			1,275.73
							Tons per Day			(0.0095)
										0.0014

Appendix K-I: Regional Significance Screening Criteria

Background:

This document is intended to serve as a tool for assisting with determining whether a roadway facility in the Knoxville Region is “Regionally Significant” with respect to the air quality conformity requirements found in the Transportation Conformity Rule (40 CFR Part 93). The purpose is to provide pertinent information to the Interagency Consultation (IAC) group on the characteristics that would normally be used to consider the regional significance of a transportation project and in particular, one that is on a roadway facility classified as a Minor Arterial or lower. The IAC will make the final determination of regional significance on a case-by-case basis as needed, and additional criteria beyond what is being presented in this document may be used at the IACs discretion.

Federal Conformity Rule Definition of Regional Significance:

Regionally significant project means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs (such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals themselves) and would normally be included in the modeling of a metropolitan area’s transportation network, including at a minimum all principal arterial highways and all fixed guide way transit facilities that offer an alternative to regional highway travel.

Proposed Regional Significance Screening Criteria Interrogatories:

1.) What are the Exempt status and Functional Classification of the roadway project?

- A non-exempt project on a roadway facility classified as a Principal Arterial or higher will generally be considered Regionally Significant.
- A project determined to be Exempt under 40 CFR 93.126 or 93.127 will generally be considered Non-Regionally Significant unless the IAC group determines that it will have regional impacts for any reason.

2.) Is the facility either included in the Regional Travel Demand Forecasting Model, or would it be if it does not currently exist?

- It is the practice of the Knoxville TPO to include most “major” roadways (most major collectors and above) in order to improve model performance so if a roadway is not modeled it can generally be considered to be Non-Regionally Significant.

3.) Does the facility provide direct connection between two roadways classified as a Principal Arterial or higher?

- Direct connections between major principal arterials and in particular, connections to the Interstate can generally be considered Regionally Significant.

4.) Does the facility provide the primary regional connectivity to a “Major Activity Center”?

- This is a criterion listed in the federal Regional Significance definition; however, there can be different interpretations as to what constitutes a major activity center. In the Knoxville Region the following are suggested as general types of major activity centers, with specific locations to be determined on a case-by-case basis:
 - Major Hospitals and Regional Medical Centers
 - Central Business Districts of cities with greater than 5,000 population
 - Major Regional Retail Centers and Malls (greater than 1,000,000 square feet)
 - Major Colleges and Universities
 - Tourist Destinations
 - Airports
 - Freight Terminals and Intermodal Transfer Centers
 - Sports Complexes

5.) Does the project add significant vehicular capacity?

- A project adding general purpose through lanes will typically be more significant than one that is adding “auxiliary” lanes or a continuous center turn lane or other projects that do not add significant roadway capacity.

6.) What is the length of the roadway segment being improved and what is the overall corridor length?

- Projects extending (or completing) long sections (typically greater than one mile) will tend to be more regionally significant.
- If the corridor is lengthy and there is an absence of other principal arterials in the vicinity then the roadway will tend to be more regionally significant.

7.) What is the current Average Daily Traffic of the roadway segment?

- This is less important in determining Regional Significance although it will provide additional information to be considered along with the above criteria. Obviously high traffic segments will tend to be more correlated with the increased regional significance of a roadway.

Appendix K-J: Highway Project List

K-J.1. List of Primary Project Types and Exempt Status:

- 1.) **Construct new roadway (any number of lanes)** – Non-exempt Project, Entails constructing a roadway on new location.
- 2.) **Modify Interchange** – Exempt Project, Entails ramp modifications such as realignment, relocation, etc...
- 3.) **Widen roadway from x lanes to y lanes** – Non-exempt Project, Entails addition of capacity through construction of additional through travel lanes on an existing roadway. Multilane facilities will generally include either a non-traversable median or a center turn lane. The final design will usually determine the median configuration, and a project calling for a center turn lane in the project list may end up with a non-traversable median or vice versa, however there is no difference between the two in terms of air quality impacts or treatment in the travel demand forecasting model.
- 4.) **Install traffic signal** – Exempt Project, Entails addition of traffic signal at a single intersection, may also involve additional improvements at the intersection such as realignment of approaches or additional turn lanes to maximize efficiency of the traffic signal.
- 5.) **Reconstruct 2-lane road** – Exempt Project, Entails the improvement of an existing 2-lane roadway to bring it up to modern standards in terms of lane widths and geometric design chiefly to enhance the safety of the roadway, it may also involve the construction of turn lanes at major intersections. There are numerous roadways in the region that were not designed to accommodate the type an amount of suburban development that is occurring, which leads to unsafe operating conditions.
- 6.) **Replace Bridge** – Exempt Project, Entails the replacement of an existing bridge that has been determined to be structurally deficient. The new bridge may include safety enhancements such as wider lanes and shoulders, but will not have more through lanes than the previous structure had.
- 7.) **Install Street Lighting** – Exempt Project, Entails the addition of overhead lighting to enhance nighttime visibility and improve safety.
- 8.) **Intersection improvements** – Exempt Project, Entails the modification of a single intersection to include the addition of separate turn lanes or realignment of approaches to improve safety.
- 9.) **Signal Coordination** – Can be either exempt or non-exempt depending on scope, Entails retiming traffic signals to optimize traffic flow.
- 10.) **Add Center Turn Lane** – Entails addition of a two way left turn lane on an undivided roadway of two or more lanes, also usually involves reconstructing the roadway to modern design standards for lane width and geometric design. In previous conformity analyses this type of project has been determined to be “Exempt”, however it has since been determined that these projects will be considered “Non-Exempt” if they involve turn lanes at more than one intersection or greater than one quarter mile in length.

K-J.2. Regional Highway Projects

The Air Quality Conformity required the use of five horizon years (2014, 2015, 2024, 2034, and 2040). The project list for the Mobility Plan (Chapter 8) included two additional years to subdivide ten-year periods into more manageable periods (2019 and 2029). This list is based on the conformity work, thus projects within 2019 will display as 2024 and 2029 as 2034.

Legend for Following Tables:

Horizon Year Colors	Horizon Year	Description
	2014	Project to be complete by 12/31/2014
	2015	Project to be completed between 1/1/15 - 12/31/2015
	2024	Project to be completed between 1/1/16 - 12/31/2024
	2034	Project to be completed between 1/1/25 - 12/31/2034
	2040	Project to be completed between 1/1/35 - 12/31/2040

Exempt Status & Regional Significance

Exempt Project that is automatically Non-Regionally Significant

Non-Exempt Project that is automatically Regionally Significant because of being a Principal Arterial or higher

Table KA-56: Regional Highway Projects

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Anderson County Projects								
09-101a	Edgemoor Rd (SR 170)	Oak Ridge Hwy (SR 62) to Melton Lake Dr	Oak Ridge/Anderson County	2.6	Widen 2-lane to 5-lane with bike lanes	2024	Non-Exempt	Yes
09-101b	Edgemoor Rd (SR 170)	Melton Lake Dr to Clinton Hwy (SR 9) (US 25W)	Oak Ridge/Anderson County	3.6	Widen 2-lane to 5-lane with bike lanes and a bridge	2024	Non-Exempt	Yes
13-101	Emory Valley Rd	Intersection at Melton Lake Dr	Oak Ridge	0	Construct roundabout	2024	Exempt	No
13-102	Tulane Ave	Intersection at Pennsylvania Ave	Oak Ridge	0	Construct roundabout	2024	Exempt	No
13-103	Lafayette Dr	Half way between Midway Rd and Midland Rd	Oak Ridge	0	Signalize Intersection	2024	Exempt	No
Blount County Projects								
10-259	McCammon Avenue Relocation	Intersection with Bessemer Street in Alcoa	Maryville	0.1	Re-align McCammon Avenue with Hamilton Crossing entrance to create signalized, 4-way intersection	2014	Exempt	No
13-201	W Plant Redevelopment	Hall Rd (SR 35) / Associates Blvd to Mill St (Future Hunt Rd Interchange)	Alcoa	1.4	Construct 4-lane road with center median	2014	Non-Exempt	No
13-202	Wrights Ferry Rd	Topside Rd to 500' past Base Point Way	Alcoa	1.1	Widening, Intersection relocation, roadway realignment, addition of left turn lanes, pavement overlay	2014	Exempt	No
09-202	Robert C. Jackson Dr Extension	Middle settlements Rd to Louisville Rd (SR 334)	Alcoa	0.7	New 4-lane road w/ center turn lane and/or median	2024	Non-Exempt	Yes
09-204	Pellissippi Place Access Road	Connect Old Knoxville Hwy (SR 33) to Wildwood Rd through Pellissippi Place Research Park	Alcoa	1.2	Extend 2-lane and 4-lane road w/ center median lane	2024	Non-Exempt	Yes
09-208	Improve Streetscapes & Pavement	Locations throughout Blount County	Alcoa/ Maryville/ Blount County	N/A	Street-scaping and "Complete Street" types of projects throughout Maryville	2024	Exempt	No
09-209	Ellejoy Road	River Ford Rd to Jeffries Hollow Rd	Blount County	3.7	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-211	Morganion Road Phase 1	Foothills Mall Dr to William Blount Dr (SR 335)	Blount County	2.2	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-212	E. Broadway Avenue/Old Knoxville Hwy (SR 33)	Wildwood Rd to McArthur Rd	Blount County	1.2	Reconstruct 2-lane section with shoulders	2024	Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-213	Old Niles Ferry Road	Maryville City Limit to Calderwood Hwy (SR 115) (US 129)	Blount County	3.3	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-214	Sevierville Rd (SR 35) (US 411)	Washington St (SR 35) to Walnut St	Maryville	0.4	Widen 2-lane to 3-lane (add center turn lane)	2024	Non-Exempt	Yes
09-216	Alcoa Highway (SR 115) (US 129)	Pellissippi Pkwy (SR 162) to Knox/Blount County Line	Blount County/ Alcoa	2.4	Widen 4-lane to 6-lane with 2 auxiliary lanes between Singleton Station Rd and Topside Rd (SR 333)	2024	Non-Exempt	Yes
09-217	Alcoa Highway (SR 115) (US 129)	Singleton Station Rd to Hunt Rd (SR 335)	Alcoa	3.6	Improve intersections including signals and turn lanes where warranted (upon completion of proposed Bypass)	2024	Exempt	No
09-218	Alcoa Highway Bypass (SR 115) (US 129)	From Hall Rd (SR 35)/Alcoa Hwy (SR 115) Interchange to Proposed Interchange serving McGhee Tyson Airport	Alcoa	1.3	Construct 8-lane freeway on existing and new alignment	2024	Non-Exempt	Yes
09-221	Burnett Station Road	Sevierville Rd (SR 35) (US 411) to Chapman Hwy (SR 71) (US 441)	Blount County	4.4	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-223	Carpenters Grade Road	Kirkland Blvd to Raulston Rd	Maryville	0.7	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-224	Foothills Parkway	Lamar Alexander Pkwy (SR 73) (US 321) to Sevier County Line	Blount County	11.3	Construct new 2-lane road	2024	Non-Exempt	Yes
09-229	Morganton Road Phase 2	William Blount Dr (SR 335) to Walker Rd	Blount County	3.3	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-232	Pellissippi Parkway (SR 162)	Old Knoxville Hwy (SR 33) to Lamar Alexander Pkwy (SR 73) (US 321)	Blount County	4.4	Construct new 4-lane freeway	2024	Non-Exempt	Yes
09-237	E. Broadway Avenue (SR 33)	Intersection with Brown School Rd	Maryville	0.0	Realign and install traffic signal	2024	Exempt	No
09-240	Sandy Springs Rd	Intersection w/ Montgomery Ln	Maryville	0.0	Intersection Improvements	2024	Exempt	No
09-245	Sevierville Rd (SR 35) (US 411)	Everett High Rd to Swannee Dr	Maryville	2.0	Widen 2-lane to 3-lane (add center turn lane)	2024	Non-Exempt	Yes
09-250	Sevierville Road (SR 35) (US 411)	Swannee Dr (Maryville C.L.) to Chapman Hwy (SR 71) (US 441)	Blount County	11.9	Reconstruct 2-lane section with shoulders	2024	Exempt	No
09-257	Alcoa Highway Bypass (SR 115) (US 129)	From Proposed Interchange serving McGhee Tyson Airport to Pellissippi Pkwy (SR 162)	Alcoa	2.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2024	Non-Exempt	Yes
09-258	Alcoa Highway Bypass (SR 115) (US 129)	From Pellissippi Pkwy (SR 162) to Near Singleton Station Rd	Alcoa	1.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2024	Non-Exempt	Yes

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-262	Montvale Rd (SR 336)	Montvale Station Rd to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	0.6	Widen 2-lane to 3-lane (add center turn lane)	2024	Non-Exempt	No
10-260	McCammon Avenue Extension	Foch Street to existing McCammon Ave	Maryville	0.7	Reconstruct existing 2-lane road to 2-3 lanes and extend on new alignment to tie-in with Watkins Road	2024	Non-Exempt	No
13-203	Robert C. Jackson Extension	Louisville Rd to US 129 Bypass	Alcoa	0.5	Extension of Robert C. Jackson, Phase 1. Construct new 4-lane section and grade separated interchange connecting US 129 and Associates Blvd	2024	Non-Exempt	Yes
13-207	Louisville Rd (SR 334)	W Hunt Rd to Alcoa city limits	Alcoa	1.3	Reconstruct existing 2-lane facility with shoulders	2024	Exempt	No
13-208	Harvest Ln	Harvest Ln (cul-de-sac) to Louisville Rd	Alcoa	0.2	Extend existing 2-lane road to connect to Louisville Rd	2024	Non-Exempt	No
13-211	Foothills Mall Dr	US 129 Bypass (SR 115) to Foch St	Maryville	0.5	Extend Foothills Mall Dr across US 129 Bypass on new alignment to Foch St	2024	Non-Exempt	No
13-213	Court St	Intersection at Boardman Ave	Maryville	0	Widen Court St to accommodate left-turn lane onto Boardman Ave and install signal	2024	Exempt	No
13-214	Old Lowes Ferry Rd	Intersection at Louisville Rd (SR 333)	Louisville	0	Realignment of intersection	2024	Exempt	No
13-218	Middlesettlements Rd	Intersection at Miser Station Rd	Blount Co	0	Realignment of intersection	2024	Exempt	No
09-215	Airport Access Road to I-140	Airport Terminus to Pellissippi Pkwy (I-140) (SR 162)	Alcoa	0.0	Add new interchange ramps for direct access to future terminal and cargo area	2034	Non-Exempt	Yes
09-231	Old Knoxville Highway (SR 33)	Pellissippi Pkwy (SR 162) to Knox County Line (Co Op Rd)	Blount County	4.6	Reconstruct 2-lane section with shoulders, including 2 bridges	2034	Exempt	No
09-234	Wildwood Road	Maryville City Limit (Brown School Rd) to Sevierville Rd (SR 35) (US 411)	Blount County	6.1	Reconstruct 2-lane section with shoulders	2034	Exempt	No
09-238	Robert C. Jackson Dr Extension	Lamar Alexander Pkwy (SR 73) (US 321) to Morganton Rd	Maryville	0.9	Construct new 2-lane road	2034	Non-Exempt	Yes
09-239	Montvale Road (SR 336)	Maryville South City Limits to Montvale Station Rd	Maryville	2.4	Add center turn lane	2034	Non-Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-241	Tuckaleechee Pk	Lamar Alexander Pkwy (SR 73) (US 321) to Grandview Dr	Maryville	1.1	Reconstruct 2-lane section with shoulders	2034	Exempt	No
09-242	W. Broadway Avenue (SR 33) (US 411)	Old Niles Ferry Rd to Lamar Alexander Pkwy (SR 73) (US 321)	Maryville	0.8	Widen 2-lane to 3-lane (add center turn lane)	2034	Non-Exempt	Yes
09-246	William Blount Dr Extension (SR 335)	US 411 (SR 33) @ Wm. Blount Dr to Old Niles Ferry Rd	Maryville/ Blount County	0.6	Construct new 2-lane road	2034	Non-Exempt	Yes
09-248	Topside Road (SR 333)	Alcoa Hwy (US 129) (SR 115) to Wrights Ferry Rd	Alcoa	1.2	Reconstruct 2-lane to 5-lane	2034	Non-Exempt	Yes
09-249	Montvale Rd (SR 336)	Maryville City Limits (near Hill Ct) to Six Mile Rd	Blount County	2.7	Reconstruct 2-lane section with shoulders	2034	Exempt	No
13-204	Bessemer Blvd	Hall Rd (SR 35) to N Wright Rd	Alcoa	1.4	Widen 2-lane to 4-lane with raised median	2034	Non-Exempt	Yes
13-205	Bessemer Blvd	Hamilton Crossing Dr / McCammon Ave to Hall Rd (SR 35)	Alcoa	0.5	Widen 2-lane to 4-lane with raised median or center turn lane	2034	Non-Exempt	Yes
13-206	Associates Blvd	Associates LIC Project to Springbrook Rd	Alcoa	0.8	4-lane section with median	2034	Non-Exempt	Yes
13-210	N Park Blvd	Intersection at Airbase Rd	Alcoa	0.3	Realign N Park Blvd to Airbase Rd	2034	Exempt	No
13-212	Merritt Rd	E Lamar Alexander Pkwy (US 321) to Fielding Dr	Maryville	0.5	Reconstruct existing 2-lane facility with shoulders	2034	Exempt	No
13-215	Louisville Rd (SR 334)	Alcoa city limits to Topside Rd (SR 333)	Louisville	1.2	Reconstruction of 2-lane with shoulders	2034	Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
13-216	Louisville Rd (SR 334)	Topside Rd (SR 333) to Old Lowes Ferry Rd	Louisville	2.9	Reconstruction of 2-lane with shoulders	2034	Exempt	No
09-220	Home Ave Extension	Home Ave to Calderwood St	Alcoa/ Maryville	0.2	Extend 3-lane Home Ave through existing shopping center to line up with Lindsay St at Calderwood St.	2040	Non-Exempt	No
09-225	Hinkle Road	Sevierville Rd (SR 35) (US 411) to Burnett Station Rd	Blount County	1.9	Reconstruct 2-lane section with shoulders	2040	Exempt	No
09-243	Wilkinson Pk	Court St to Maryville City Limits	Maryville	0.9	Widen 2-lane to 3-lane (add center turn lane)	2040	Non-Exempt	No
09-247	Sam Houston School Road	Old Knoxville Hwy (SR 33) to Wildwood Rd	Alcoa/ Blount County	2.7	Widen 2-lane to 3-lane (add center turn lane)	2040	Non-Exempt	No
13-209	Bessemer Blvd	N Wright Rd to E Hunt Rd (SR 335)	Alcoa	1.1	Widen 2-lane to 4-lane with raised median or center turn lane (0.22 mi), Extension with raised median or center turn lane (0.87 mi)	2040	Non-Exempt	Yes
13-217	Louisville Rd (SR 333)	Lackey Creek Bridge	Louisville	0	Reconstruction of Lackey Creek Bridge	2040	Exempt	No
Jefferson County Projects								
09-309	Old AJ Hwy and SR 92 w/Mountcastle St	Intersection at Mountcastle St	Jefferson City	0.0	Realign, Add turn lanes and Signalize Intersection	2014	Exempt	No
09-317	US 11E (SR 34)	Intersection w/ George Ave	Jefferson City	0.0	Intersection improvements	2014	Exempt	No
09-318	US 11E (SR 34)	Intersection w/ Russell Ave	Jefferson City	0.0	Intersection improvements	2014	Exempt	No
09-302	E. Main SVN, Chucky Pk	Intersections at Old AJ Hwy	Jefferson City	0.0	Realign Intersection	2024	Exempt	No
09-303	Municipal Dr	Intersection at Old AJ Hwy	Jefferson City	0.0	Add left and right turn lanes	2024	Exempt	No
09-304	Old AJ Highway	Intersection at Chucky Pk	Jefferson City	0.0	Add left and right turn lanes	2024	Exempt	No
09-307	Old AJ Highway	Mossy Creek E. of Branner Ave	Jefferson City	0.0	Replace bridge	2024	Exempt	No
09-314	SR 92	Bridge in Dandridge	Dandridge	0.6	Replace Bridge	2024	Exempt	No
09-321	US 11E (SR 34)	SR 92S to Hicks Rd	Jefferson City	1.7	Install Pedestrian Signals and Pushbutton Activation	2024	Exempt	No
09-323	US 11E (SR 34)	Intersection at Pearl Ave and at Harrington St	Jefferson City	0.0	Intersection improvement- add left turn lanes	2024	Exempt	No
13-303	US 11E at E. Old AJ Hwy	Intersection at E. Old AJ Hwy	Jefferson City	0	Signalize Intersection	2024	Exempt	No
13-304	Overlook Ave Extension	Universal St to US 11E	Jefferson City	0.1	Extension of Overlook Ave to US 11E	2024	Non-Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
13-305	Jefferson City Pedestrian	Various	Jefferson City	various	Pedestrian Improvements	2024	Exempt	No
13-306	ITS w/Railroad Intersections	Various	Jefferson County	0	ITS w/railroad intersections	2024	Exempt	No
13-307	SR 341	Intersection with SR 113	White Pine	0	Signalize Intersection	2024	Exempt	No
13-308	Signal Pre-emption	Various	White Pine	0	Emergency Vehicle Signal Pre-emption	2034	Exempt	No
13-301	LAMTPO Area	All Classified Roadways	Jefferson County	various	Road Resurfacing	ALL	Exempt	No
13-302	LAMTPO Area	Various	Jefferson County	various	Safety Projects	ALL	Exempt	No
Loudon County Projects								
13-403	SR 72	Intersection with Tellico Pkwy	Loudon Co	0	Install street lighting	2014	Exempt	No
09-401	Improve RR Crossing	South C Street in Lenoir City	Lenoir City	N/A	Improve at-grade RR crossing	2015	Exempt	No
13-402	Queener Rd	SR 72 to River Rd	Loudon	0.7	Widen from 15.8' to 26', drainage, reduce curves	2015	Exempt	No
09-403	Improve Streetscapes and Pavement	Various locations in Greenback	Greenback	N/A	Improve streetscapes and repair pavement	2024	Exempt	No
09-406	US 11 (SR 2)	Intersection w/ US 70 (SR 1) (Dixie Lee Junction)	Loudon County	0.2	Intersection improvements	2024	Exempt	No
09-407	US 11 (SR 2)	Intersection w/ Loudon H.S. Entr.	Loudon	0.5	Improve alignment of roadway at School	2024	Exempt	No
09-410	US 321 (SR 73)	Intersection w/ US 11 (SR 2)	Lenoir City	0.0	Intersection Improvements	2024	Exempt	No
09-414	US 11 (SR 2)	D St to Hill Ave	Lenoir City	0.8	Streetscape improvements and reduction of travel lanes in downtown area to improve pedestrian use	2024	Non-Exempt	Yes
09-415	US 11 (SR 2)	Blair Bend Rd to Lenoir City Limit (Browder Hollow Rd)	Loudon County	3.8	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-423	US 321 (SR 73)	Simpson Rd to US 11 (SR 2)	Lenoir City	1.1	Widen 4-lane to 6-lane	2024	Non-Exempt	Yes
13-401	Simpson Rd	US 321 to Shaw Ferry Rd	Lenoir City	0.7	Widen from 18' to 26', sidewalks, and left turn lanes at select locations	2024	Exempt	No
09-416	US 11 (SR 2)	Lenoir City corporate limits (Hall St) to US 70 (Dixie Lee Junction)	Lenoir City	5.1	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-420	Sugar Limb Road	US 11 (SR 2) to I-75	Loudon	2.3	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-422	US 321 (SR 73)	I-75 to Simpson Rd	Lenoir City	1.6	Widen 4-lane to 6-lane	2034	Non-Exempt	Yes
Sevier County Projects								
13-501	Dumplin Creek Pkwy	SR 66 to Bryan Rd	Sevierville	1.5	Construct new 4-lane road	2015	Non-Exempt	Yes
09-502	Dolly Parton Pkwy (US 411) (SR 35)	Intersection w/ Veterans Blvd (SR 449)	Sevierville	0.0	Improve Intersection	2024	Exempt	No
09-503	Old Knoxville Highway	Boyd's Creek Hwy (SR 338) to US 411/441 (SR 71)	Sevierville	4.2	Widen 2-lane to various 3 and 4 lane divided cross sections	2024	Non-Exempt	No
09-504	Veterans Blvd (SR 449) Extension	US 411 (SR 35) to SR 66	Sevierville	3.5	Construct new 4-lane road	2024	Non-Exempt	Yes
09-508	Chapman Hwy (SR 71) (US 441)	Boyd's Creek Hwy (SR 338) to Macon Ln	Sevier County/Seymour	1.2	Add center turn lane	2024	Non-Exempt	Yes
09-509	Thomas Road Connector	Teaster Lane to Veterans Blvd (SR 449) at McCarter Hollow Rd	Pigeon Forge	1.6	Construct new 4-lane road	2024	Non-Exempt	Yes
09-510	US 411 (SR 35)	Sims Rd to Grapevine Hollow Rd	Sevier County/Jefferson County	6.2	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-511	Foothills Parkway	Blount County Line to US 321 (SR 73) in Wears Valley	Sevier County	2.5	Construct new 2-lane road	2024	Non-Exempt	Yes
09-512	I-40/ SR 66 Interchange	Interchange at SR 66	Sevierville	0.3	Modify Interchange to a Diverging Diamond	2024	Non-Exempt	Yes
09-513	US 321 (SR 73)	Buckhorn Rd (SR 454) to east of Pittman Center Rd (SR 416)	Sevier County	1.4	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-515	SR 139	SR 66 to Bryan Rd	Sevierville/TDOT	0.2	Widen 2-lane to 4-lane	2024	Non-Exempt	No
09-516	Bryan Road	E. Dumplin Valley Rd. to SR 139	Sevierville/Sevier County	2.1	Widen 2-lanes to 4-lanes	2024	Non-Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-517	I-40 (mile 408)	New Interchange Proposed near Mile Marker 408	Sevierville/Sevier County	N/A	Construct new interchange	2024	Non-Exempt	Yes
Knox County Projects								
10-696	Downtown Knoxville Wayfinding Project	Downtown Knoxville	Knoxville	0.0	Create a consistent signage system to include gateway signs, pedestrian directionals, trolley signs, etc...	2014	Exempt	No
09-613a	Cumberland Avenue (SR 1) (US 11/70)	Alcoa Hwy to 22nd St	Knoxville	0.2	Operational and Pedestrian improvements including intersection realignment, turn lanes and wider sidewalks.	2014	Exempt	No
09-623	I-140 (Pellissippi Pkwy)	I-40 to Dutchtown Rd	Knoxville	0.4	Restripe to add one lane on northbound I-140 and remove one lane from the ramp from I-40	2015	Non-Exempt	Yes
09-605	Schaad Road Extension	Middlebrook Pike (SR 169) to west of Oak Ridge Hwy (SR 62)	Knox County	4.6	Construct new 4-lane road	2024	Non-Exempt	Yes
09-607	Halls Connector	Norris Fwy (SR 71) (US 441), Emory Rd (SR 131), Maynardville Hwy (SR 33)	Knox County	0.4	Reconfigure intersections and add SB thru lane on Norris Fwy from Emory Rd to Maynardville Hwy	2024	Non-Exempt	No
09-610	Western Avenue (SR 62)	Texas Ave to Major Ave	Knoxville	0.8	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-611	I-640/ Broadway (SR 33) (US 441) Interchange Phase II	I-640/ Broadway (SR 33) (US 441) Interchange	Knoxville	0.0	Construct additional ramps and access improvements	2024	Non-Exempt	Yes
09-613b	Cumberland Avenue (SR 1) (US 11/70)	22nd St to 16th St	Knoxville	0.6	Pedestrian Improvements and Reduce from 4 lanes to 2 lanes with center turn lane	2024	Non-Exempt	Yes
09-615	Washington Pike	I-640 to Murphy Rd	Knoxville	1.6	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-616	Pleasant Ridge Rd/Merchant Dr Phase II	Knoxville City Limits (Country Brook Ln) to Merchant Dr/ Pleasant Ridge Rd to Wilkerson Rd	Knoxville	1.6	Add center turn lane	2024	Non-Exempt	No
09-617	South Knoxville Waterfront Roadway Improvements	Sevier Ave / Blount Ave from Scottish Pk to James White Pkwy (SR 71)	Knoxville	1.9	Add turn lanes where needed and pedestrian and bicycle accommodations where feasible	2024	Non-Exempt	Yes
09-618	I-275 Industrial Park Access Improvements	I-275 Corridor (Blackstock Ave, Marion St, and University Ave)	Knoxville	0.5	Extend Blackstock Ave from Fifth Ave to Bernard Ave and realign Marion Street. Improve intersections of University Ave with W Fifth Ave and Bernard Ave.	2024	Non-Exempt	Yes
09-619	Various Railroad Crossings	Various Railroad Crossing Locations	Knoxville	N/A	Improve circuitry on vehicle protection devices of at-grade RR crossings throughout Knoxville	2024	Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-620	Cessna Road RR Crossing	Cesna Rd RR crossing	Knoxville	0.0	Improve the at-grade RR crossing at Cessna Rd	2024	Exempt	No
09-624	Cedar Bluff Road	Cross Park Dr to Peters Rd	Knoxville	0.4	Intersection and Operational Improvements	2024	Exempt	No
09-625	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	Knoxville/ Knox County	1.5	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
NEW 09-626a	Chapman Highway (SR 71) (US 441)	Blount Ave to Gov John Sevier Hwy	Knoxville/ Knox County	5.9	Operational and Safety Improvements including center-turn lanes at various locations	2024	Non-Exempt	No
NEW 09-626b	Chapman Highway (SR 71) (US 441)	Evans Rd to Burnett Ln	Knox County/Blount County	0.9	Add Center-Turn Lane	2024	Non-Exempt	No
NEW 09-626c	Chapman Highway (SR 71) (US 441)	Gov John Sevier Hwy to Macon Ln	Knox County/Blount County/Sevier County	4.4	Operational and Safety Improvements including center-turn lanes at various locations	2024	Non-Exempt	No
09-627	Alcoa Highway (SR 115) (US 129)	North of Maloney Rd to Woodson Dr	Knoxville	1.4	Widen 4-lane to 6-lane	2024	Non-Exempt	Yes
09-628	Alcoa Highway (SR 115) (US 129)	Maloney Rd to Blount/Knox County Line	Knoxville	2.3	Widen 4-lane to 6-lane	2024	Non-Exempt	Yes
09-629	I-40/75 / Campbell Station Road Interchange	Interchange w/ Campbell Station Rd	Farragut	0.0	Reconfigure existing interchange to improve safety and operations	2024	Exempt	No
09-632	Concord Road (SR 332)	Turkey Creek Rd to Northshore Dr (SR 332)	Farragut/ Knox County	0.8	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-633	Parkside Drive	Mabry Hood Rd to Hayfield Rd	Knox County	1.1	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-634	Pellissippi Pkwy (SR 162)/ Hardin Valley Road Interchange	Hardin Valley Rd Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024	Exempt	No
09-635	Karns Connector	Westcott Blvd to Oak Ridge Hwy (SR 62)	Knox County	0.8	Construct New 2-lane road	2024	Non-Exempt	No
09-637	Lovell Road (SR 131)	Cedardale Ln to Middlebrook Pike (SR 169)	Knox County	1.7	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-638	Oak Ridge Highway (SR 62)	Schaad Rd to Byington-Beaver Ridge Rd (SR 131)	Knox County	4.2	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-641	Tazewell Pike (SR 131)	Emory Rd (SR 131) to Barker Rd	Knox County	1.2	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-642	Westland Drive	Morrell Rd to Ebenezer Rd	Knox County	2.7	Reconstruct 2-lane section	2024	Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-644	Gov John Sevier Highway (SR 168)	Alcoa Hwy (SR 115) (US 129) to Chapman Hwy (SR 71) (US 441)	Knox County	6.5	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
09-645	Northshore Drive (SR 332)	Morrell Rd to Ebenezer Rd	Knox County	3.5	Reconstruct 2-lane section	2024	Exempt	No
09-646	Northshore Drive (SR 332)	Pellissippi Pkwy (I-140) to Concord Rd (SR 332)	Knox County	4.5	Reconstruct 2-lane section	2024	Exempt	No
09-648	Pellissippi Parkway (SR 162) Lovell Rd (SR 131) Interchange	Lovell Rd (SR 131) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024	Exempt	No
09-649	Pellissippi Parkway (SR 162) Oak Ridge Highway (SR 62) Interchange	Oak Ridge Hwy (SR 62) Interchange at Pellissippi Pkwy (SR 162)	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2024	Exempt	No
09-650	Byington-Beaver Ridge Road (SR 131)	At One-Lane Railroad Underpass	Knox County	0.2	Construct new road or widen railroad underpass	2024	Non-Exempt	No
09-653	Alcoa Highway (SR 115) (US 129)	Woodson Dr to Cherokee Trail	Knoxville	1.3	Widen 4-lane to 6-lane	2024	Non-Exempt	Yes
09-656	Millertown Pike	I-640 to Mill Rd	Knoxville	0.6	Widen 2-lane and 4-lane sections to 4-lane and 6-lane sections	2024	Non-Exempt	Yes
09-662	I-75/ Merchant Dr Interchange	Merchant Dr Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2024	Exempt	No
10-697	Central Street	Woodland Ave to Depot St	Knoxville	1.2	Road Diet and Streetscape Project, reduce from 4 lanes to 2 lanes with center turn lane	2024	Non-Exempt	No
10-699	Kingston Pike (SR 1) (US 11/70)	Intersection w/Campbell Station Rd	Farragut	0.0	Intersection improvement to add additional eastbound left turn lane	2024	Exempt	No
10-700	Campbell Station Road	Snyder Road to Yarnell Road	Farragut/Knox County	1.8	Add center turn lane	2024	Non-Exempt	No
13-601	Union Rd	Saddle Bridge Rd to Brochardt Blvd	Farragut	0.7	Reconstruct existing 2-lane facility	2024	Exempt	No
13-602	Citywide	Citywide	Knoxville	0	Upgrade signal hardware, communications, and central operating system	2024	Exempt	Yes
13-603	I-40/75	Lovell Rd (SR 131) Interchange to Campbell Station Rd Interchange	Knoxville	1.8	Add Full WB Auxiliary Lane	2024	Non-Exempt	Yes
09-630	Virtue Road	Boyd Station Rd to Kingston Pike (SR 1) (US 11/70)	Farragut	1.4	Reconstruct 2-lane section	2024	Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-631	Turkey Creek Road	Brixworth Blvd to Boyd Station Rd	Farragut	0.4	Construct new 2-lane bridge and approaches to connect roads	2034	Non-Exempt	No
09-636	Emory Road (SR 131)	Oak Ridge Hwy (SR 62) to Clinton Hwy (SR 9) (US 25W)	Knox County	5.0	Add center turn lane	2034	Non-Exempt	Yes
09-639	Strawberry Plains Pike	Gov. John Sevier Hwy (SR 168) to Moshina Rd	Knox County	1.6	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-640	Tazewell Pike (SR 331)	Murphy Rd to Emory Rd (SR 131)	Knox County	4.7	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-643	Emory Road (SR 131)	Maynardville Hwy (SR 33) to Tazewell Pike (SR 331)	Knox County	4.9	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-647	Pellissippi Parkway (SR 162)/Oak Ridge Highway (SR 62)	Edgemoor Rd (SR 170) to Dutchtown Rd	Knox County	6.0	Widen from 4-lane to 6-lane	2034	Non-Exempt	Yes
09-651	I-40/75/ Watt Road Interchange	Watt Rd Interchange at I-40/75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2034	Exempt	No
09-652	I-75/ Emory Road (SR 131) Interchange	Emory Rd (SR 131) Interchange at I-75	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2034	Exempt	No
09-654	I-640/ I-275/ I-75 Interchange	Interchange at I-640 & I-75/I-275	Knoxville	1.4	Interchange improvements to include additional through lanes on I-75 north and southbound ramps	2034	Non-Exempt	Yes
09-655	Millertown Pike	Washington Pike to I-640	Knoxville	0.6	Reconstruct 2-lane section	2034	Exempt	No
09-657	Washington Pike	Millertown Pike to I-640	Knoxville	0.6	Add center turn lane	2034	Non-Exempt	No
09-658	Northshore Drive (SR 332)	Intersection w/ Kingston Pike (SR 1) (US 11/70)	Knoxville	0.0	Intersection improvement	2034	Exempt	No
09-659	Tazewell Pike (SR 331)	Intersection w/ Old Broadway & Greenway Dr	Knoxville	0.0	Intersection improvement	2034	Exempt	No
09-660	Gleason Drive	Montvue Rd to Gallaher View Rd	Knoxville	1.0	Reconstruct 2-lane section	2034	Exempt	No
09-663	Northshore Drive (SR 332)	Lyons View Pk to Morrell Rd	Knoxville	2.2	Reconstruct 2-lane section	2034	Exempt	No
09-664	Broadway (SR 33) (US 441)	Intersection with Hall of Fame Dr	Knoxville	0.0	Intersection improvement	2034	Exempt	No
09-666	James White Pkwy Extension (SR 71)	Moody Ave to Chapman Hwy (SR 71) (US 441)	Knoxville/ Knox County	5.3	Construct new 4-lane road	2034	Non-Exempt	Yes

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-667	Strawberry Plains Pike	Moshina Rd to south of I-40	Knoxville/ Knox County	2.3	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-668	Kingston Pike (SR 1) (US 11/70)	Smith Rd to Campbell Station Rd	Farragut	1.4	Widen 4-lane to 6-lane	2034	Non-Exempt	Yes
09-671	Central Avenue Pike	Beaver Creek Dr to Emory Rd (SR 131)	Knox County	2.3	Reconstruct 2-lane section	2034	Exempt	No
09-672	Dante Road	Central Avenue Pike to Dry Gap Pk	Knox County	2.1	Reconstruct 2-lane section	2034	Exempt	No
09-673	Oak Ridge Highway (SR 62)	Byington-Beaver Ridge Rd (SR 131) to Pellissippi Pkwy (SR 162)	Knox County	4.2	Widen 2-lane to 4-lane	2034	Non-Exempt	Yes
09-674	Westland Drive	Northshore Dr (SR 332) to Pellissippi Pkwy (I-140)	Knox County	1.7	Reconstruct 2-lane section	2034	Exempt	No
09-675	Maryville Pike (SR 33)	Gov. John Sevier Hwy (SR 168) to Blount County Line	Knox County	1.2	Reconstruct 2-lane section	2034	Exempt	No
09-676	Emory Road (SR 331)	Tazewell Pike (SR 131) to Grainger County Line	Knox County	7.8	Reconstruct 2-lane section	2034	Exempt	No
09-678	Gleason Drive	Gallaher View Rd to Ebenezer Rd	Knox County	1.1	Add center turn lane	2034	Non-Exempt	No
09-661	I-75/ Callahan Rd Interchange	Callahan Rd Interchange	Knoxville	0.0	Reconfigure existing interchange to improve safety and operations	2040	Exempt	No
09-669	Everett Road	Proposed Synder Rd Extension to Kingston Pk (SR 1) (US 11/70)	Farragut	2.1	Reconstruct 2-lane section	2040	Exempt	No
09-677	Gov John Sevier Highway (SR 168)	Chapman Hwy (SR 71) (US 441) to Asheville Hwy	Knox County	9.2	Widen 2-lane to 4-lane	2040	Non-Exempt	Yes
09-679	I-75/ Raccoon Valley Rd Interchange	Raccoon Valley Rd Interchange at I-75	Knox County	0.0	Reconfigure existing interchange to improve safety and operations	2040	Exempt	No
09-681	Raccoon Valley Road (SR 170)	Norris Frwy (SR 71) (US 441) to I-75	Knox County	2.0	Reconstruct 2-lane section	2040	Exempt	No
09-682	Tazewell Pike (SR 131)	Barker Rd to Union County Line	Knox County	3.1	Reconstruct 2-lane section	2040	Exempt	No
09-683	McFee Road/ Harvey Road	McFee Rd to Harvey Rd over railroad	Knox County/ Farragut	0.6	Construct new road or widen railroad underpass	2040	Non-Exempt	Yes
09-685	Vanosdale Road	Buckingham Rd to Middlebrook Pike (SR 169)	Knoxville	0.9	Add center turn lane	2040	Non-Exempt	No
09-686	Cedar Lane	East of Central Avenue Pike to Inskip Rd	Knoxville	1.0	Add center turn lane	2040	Non-Exempt	No

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-687	Moody Avenue	Chapman Hwy (SR 71) (US 441) to Maryville Pike (SR 33)	Knoxville	0.4	Construct new 2-lane road w/ center turn lane	2040	Non-Exempt	No
09-688	Morrell Road	Westland Dr to Northshore Dr (SR 332)	Knoxville	0.9	Add center turn lane	2040	Non-Exempt	Yes
09-689	Papermill Road	Kingston Pike (SR 1) (US 11/70) to Weisgarber Rd	Knoxville	0.6	Add center turn lane	2040	Non-Exempt	Yes
09-690	Woodland Avenue	Central St to Huron St	Knoxville	0.6	Add center turn lane	2040	Non-Exempt	Yes
09-691	I-40/75	I-40/I-75 Interchange to Lovell Rd (SR 131) Interchange	Knoxville/ Farragut/ Knox County	6.7	Widen 6-lane to 8-lane	2040	Non-Exempt	Yes
09-692	I-75	Emory Rd (SR 131) to Raccoon Valley Rd (SR 170) Interchange	Knoxville/ Knox County	4.8	Widen 4-lane to 6-lane	2040	Non-Exempt	Yes
09-693	I-40	I-40 at Gov. John Sevier Hwy (SR 168) Interchange	Knox County	0.0	New Interchange	2040	Non-Exempt	Yes

Appendix K-K: Existing Plus Committed Project List

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Comments	Regionally Significant
N/A	Town Creek Pkwy	U.S. 321 to Kingston St	Lenoir City	1.3	New 4-lane median divided roadway	2014	Local & State Funded, Under construction Spring 2013	No
09-102	SR 29	Pine Ridge Rd to SR 61	Harriman/Roane County	0.8	Widen 2-lane to 4-lane	2014	E+C, Totally Funded	Yes
09-201	East Bessemer Street	Intersection w/ E Watt St	Alcoa	0.0	Realign intersection	2014	E+C, Complete	No
09-203	Old Knoxville Hwy (SR 33)	Hunt Rd (SR 335) to Pellissippi Pkwy (SR 162)	Alcoa	0.5	Widen 2-lane to 4-lane w/center turn lane	2014	E+C, Under Construction	Yes
09-206	US 129 Bypass (SR 115)	Intersection with Louisville Rd (SR 334)	Alcoa	0.0	Intersection improvements	2014	E+C, Funded through Safety	No
09-261	Hall Road (SR 35)	Intersection with Alcoa South Plant Entrance	Alcoa	0.0	Add southbound left turn lane	2014	E+C	No
09-301	Chucky Pike	Intersection at US 11E (SR 34)	Jefferson City	0.0	Intersection improvement- add turn lanes and modify signal	2014	E+C, Under contract	No
09-305	Odyssey Rd	Intersection at US 11E (SR 34)	Jefferson City	0.0	Add left and right turn lanes	2014	E+C, Under contract	No
09-306	Odyssey Rd	US 11E (SR 34) to Bridge over RR	Jefferson City	0.9	Add center turn lane, Provide a 3-lane section	2014	E+C, Under contract	No
09-313	SR 66 Relocation	North of I-81 at SR 341 to SR 160	Jefferson County	3.1	Construct new 4-lane road	2015	E+C	Yes
09-315	SR 92	US 11E to Hinchey Hollow Rd	Jefferson City	2.3	Install street lighting	2014	E+C, Complete	No
09-319	US 11E (SR 34)	SR 92 to Morristown City Limit	Jefferson City	4.8	Install street lighting	2014	E+C, Complete	No
09-320	US 11E (SR 34)	All signalized intersections	Jefferson City	0.0	LED signal head replacements	2014	E+C, Under contract	No
09-322	US 11E (SR 34)	SR 92S to Odyssey Rd	Jefferson City	0.5	Signal Coordination	2014	E+C, Under contract	No
09-324	US 411/ US 25W (SR 35)	Grapevine Hollow Rd to 4-lane section of SR 9	Jefferson County	5.6	Widen 2-lane to 4-lane	2014	E+C, Under contract	Yes
09-325	I-40/ I-81 Interchange	I-40/ I-81 Interchange	Jefferson County	0.1	Safety Improvements to increase length of acceleration ramps	2014	E+C, Under contract	No
09-326	Old AJ Highway	Railroad Crossing	Jefferson City	0.0	Bridge replacement	2014	E+C, Under contract	No
09-400	Harrison Road	From Kingston St to Glenfield Dr (approx. 2,000 ft.)	Lenoir City	4.3-0.4	Intersection improvements and reconstruct 2-lane section	2014	E+C, Spring 2013 Construction	No
09-402	Improve Streetscapes and Pavement	Various locations in Loudon County	Loudon County	N/A	Improve streetscapes and repair pavement	2014	E+C	No
09-404	Unitia Rd	Unitia Rd Bridge	Loudon County	0.0	Replace Bridge	2014	E+C, Complete	No
09-405	US 11 (SR 2)	Intersection w/ Shaw Ferry Rd	Loudon County	0.0	Intersection improvements	2014	E+C, Complete	No
09-408	US 321 (SR 73)	I-75 Interchange to Simpson Rd	Lenoir City	1.6	Intersection Improvements from Corridor Study	2014	E+C	No
09-409	US 321 (SR 73)	US 11 (SR 2) to east of Little Tennessee River	Loudon County	1.7	Construct 4-lane road on existing and new alignment	2015	E+C, Under Construction	Yes
09-411	Veteran's Memorial Bridge	Veteran's Memorial Bridge	Loudon	N/A	Install lighting	2014	E+C, Complete	No
09-505	Birds Creek Road (SR 454)	Glade Rd to SR 416	Sevier County	4.6	Reconstruct 2-lane section	2014	E+C, Complete	No
09-506	SR 66	North of Nichols St to Boyds Creek Hwy (SR 338)	Sevierville/Sevier County	4.2	Widen 4-lane to 6-lane	2014	E+C, Complete	Yes
09-507	SR 66	Douglas Dam Rd (SR 139) to I-40	Sevierville/Sevier County	2.0	Widen 4-lane to 6-lane	2014	E+C, Under Construction	Yes

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Comments	Regionally Significant
09-514	SR 66	Boys Creek Hwy (SR 338) to Douglas Dam Rd (SR 139)	Sevier/Sevier County	2.1	Widen 4-lane to 6-lane	2014	E+C, Under Construction	Yes
09-600	Old Stage Road/Watt Road Extension	Old Stage Rd. from Johnson's Corner Rd. to Town Limits, Watt Road from Old Stage Rd. to Kingston Pk (SR 1) (US 11/70)	Farragut	0.8	Improve Old Stage Road to 2-lane road with sidewalk from Johnson's Corner Rd to western Town limits and Extend Watt Road from Old Stage to SR-1 with three lanes, sidewalk, curb & gutter	2014	E+C	No
09-601	Campbell Station Road	Jamestown Blvd to Parkside Dr/ Grigsby Chapel Rd	Farragut	0.9	Widen 2-lane to 4-lane w/center turn lane	2014	E+C, Complete	Yes
09-602	Outlet Drive	Lovell Rd (SR 131) to Campbell Station Rd	Farragut/Knox County	0.5	Construct new 2-lane road w/center turn lane along existing and new alignment	2014	E+C, Under Construction	No
09-603	Emory Road (SR 131)	Clinton Hwy (SR 9) (US 25W) to Gill Rd	Knox County	2.9	Widen 2-lane to 4-lane w/center turn lane	2014	E+C, Under Construction	Yes
09-604	Maynardville Hwy (SR 33)	Temple Acres Dr to Union County Line	Knox County	5.9	Widen 2-lane to 4-lane	2014	E+C, Construction Soon	Yes
09-608	Lovell Road (SR 131)	Pellissippi Pkwy (SR 162) SB Ramps to Schaeffer Rd	Knox County	0.2	Widen 2-lane to 4-lane w/center turn lane	2014	E+C, Complete	Yes
09-609	Emory Rd (SR 131)	Intersection w/Tazewell Pk (SR 331)	Knox County	0.0	Intersection improvement	2014	E+C, Construction Soon	No
09-612	Western Avenue (SR 62)	Schaad Rd to I-640	Knoxville	3.7	Widen 2-lane to 4-lane w/center turn lane	2014	E+C, Under Construction	Yes
09-614	Henley Street Bridge (SR 33/71) (US 441)	Bridge over Tennessee River	Knoxville	0.4	Rehabilitate bridge & add bike lanes	2014	E+C, Under Construction	No
09-621	I-40/75	From I-140 to Lovell Rd (SR 131) Interchange Westbound Direction	Knoxville	1.0	Add full auxiliary lane westbound between interchanges (approx 2,700 ft)	2014	E+C, Totally Funded	Yes
09-622	I-40/75 at Weigh Station	Eastbound and Westbound Truck Weigh Stations	Knoxville	0.1	Extend on and off ramps at weigh stations	2014	E+C, Totally Funded	No
09-694	I-140 (Pellissippi Pkwy)/Northshore Dr (SR 332) Interchange	I-140 EB Off Ramp to Northshore Dr (SR 332)	Knoxville	0.2	Construct new slip ramp from existing off ramp to serve the Northshore Town Center Development	2014	E+C, Complete	Yes
09-695	Dutchtown Road	Murdock Rd to E of Pellissippi Pkwy southbound ramps	Knox County	0.3	Widen to 4-lanes with center turn lane, add eastbound decel lane at Pellissippi ramps	2014	E+C, Complete	No
09-698	Kingston Pike (SR-1)(US 11/70)	Intersection w/Everett Rd	Farragut	0.3	Intersection Improvements to include center turn lane and traffic signal	2014	E+C, Under Construction	No

Appendix K-L: KRTPO FY 2011-2014 TIP Project List

TIP #	LRTP #	Horizon Year	PROJECT NAME
2011-001 Rev 0	09-618	2024	Access Improvements to I-275 Business Park
2011-002 Rev 1	09-653	2024	Alcoa Hwy (SR-115 / US-129)
2011-003 Rev 2	09-216	2024	Alcoa Hwy (SR-115 / US-129)
2011-004 Rev 0	09-628	2024	Alcoa Hwy (SR-115 / US-129)
2011-005 Rev 0	09-218	2024	Alcoa Hwy (SR-115 / US-129)
2011-006 Rev 0	09-208	2024	Blount County Streetscape Improvements
2011-007 Rev 0	09-683	2040	Boyd Station Rd, McFee Rd, Harvey Rd Underpass
2011-010 Rev 1	13-834	2014	Kingston Pk Greenway in Farragut
2011-011 Rev 0	13-849	2024	Second Creek Greenway in Knoxville
2011-012 Rev 0	09-406	2024	Dixie Lee Junction (US 11 and US 70)
2011-013 Rev 2	10-696	2014	Downtown Knoxville Wayfinding Project
2011-014 Rev 1	Consistent		Ebenezer Rd / N Westland Dr Intersection
2011-015 Rev 0	09-202,09-238	2024, 2034	Robert C Jackson Dr Extension
2011-016 Rev 2	09-621	2014 (E+C)	I-40 Auxiliary Lane
2011-017 Rev 3	09-622	2014 (E+C)	I-40 Weigh Station Ramp Extension
2011-018 Rev 1	09-611	2024	I-640, Broadway Modifications
2011-019 Rev 0	09-620	2024	Cessna Rd Railroad Improvements
2011-020 Rev 0	09-613	2024	Cumberland Ave (US-70/11 and SR-1)
2011-021 Rev 1	09-632	2024	Concord Rd
2011-022 Rev 0	09-666	2034	James White Pwy (SR 71)
2011-024 Rev 1	Complete		Papermill Bluff Greenway
2011-025 Rev 0	09-232	2024	Pellissippi Pwy (SR-162) Extension
2011-026 Rev 0	09-619	2024	Railroad Crossing Improvements - Knoxville
2011-027 Rev 0	09-401	2015	Railroad Crossing Improvements - Lenoir City
2011-028 Rev 0	09-619	2024	Railroad Crossing Improvements - Knoxville
2011-029 Rev 0	09-214	2024	Sevierville Rd Reconstruction
2011-030 Rev 0	09-211	2024	Morganton Rd Roadway Improvement
2011-031 Rev 2	10-697	2024	N Central St Road Diet and Streetscape Project
2011-032 Rev 1	09-617	2024	Blount Ave / Sevier Ave Corridor Improvements
2011-033 Rev 0	13-850	2024	South Waterfront Riverwalk: Shoals Promenade
2011-034 Rev 0	10-261	2014 (E+C)	Hall Rd (SR-35) at ALCOA South Plant Entrance
2011-035 Rev 1	09-508	2024	Chapman Hwy (SR-71) Improvements
2011-036 Rev 2	09-410	2024	US 321 (SR 73) and Hwy 11 (SR 2)
2011-037 Rev 0	09-257	2024	SR 115 / US 129 (Alcoa Hwy)
2011-038 Rev 0	09-614	2014 (E+C)	SR 33 (Henley St bridge)
2011-040 Rev 0	09-612	2014 (E+C)	SR-62 (Western Ave) Widening
2011-041 Rev 0	09-402	2014 (E+C)	Streetscape / Pavement Repair in Lenoir City
2011-042 Rev 0	Consistent		Tazewell Pk / Beverly Rd Intersection
2011-043 Rev 0	13-852	2024	Tennessee River Pedestrian Crossing
2011-044 Rev 0	09-408	2014 (E+C)	US-321 (SR-73) corridor improvements
2011-045 Rev 1	09-610	2024	Western Ave (SR 62)

TIP #	LRTP #	Horizon Year	PROJECT NAME
2011-046 Rev 2	09-698	2014 (E+C)	Kingston Pk/Everett Rd Intersection Improvements
2011-047 Rev 0	09-616	2024	Pleasant Ridge Rd
2011-048 Rev 1	E+C	Complete	Pleasant Ridge Rd
2011-049 Rev 1	09-615	2024	Washington Pk
2011-050 Rev 1	10-700	2024	Campbell Station Rd Widening
2011-051 Rev 0	10-699	2024	Kingston Pk/Campbell Station Rd Intersection Improvements
2011-052 Rev 1	09-600	2014 (E+C)	Watt Rd Extension and Old Stage Rd Improvements
2011-053 Rev 4	09-409	2015 (E+C)	US-321/SR-73 - New Bridge
2011-054 Rev 1	Consistent		I-140 (Pellissippi Pwy)
2011-055 Rev 0	09-603	2014 (E+C)	SR-131 (Emory Rd)
2011-056 Rev 1	10-259	2014	McCammon Ave Relocation
2011-057 Rev 0	13-602	2024	Traffic Control Equipment Upgrade - Knoxville
2011-058 Rev 0	Consistent		I-40/I-75 Interchange Traffic Cameras
2011-059 Rev 1	13-837	2014	Knox/Blount Greenway - Phase I
2011-060 Rev 0	13-863	2015	Knox/Blount Greenway - Phase II
2011-061 Rev 0	Consistent		Pellissippi Place Greenway - Phase I
2011-062 Rev 0	Consistent		Halls Greenway - Phase II
2011-063 Rev 1	Consistent		Lenoir City Downtown Streetscape
2011-064 Rev 0	Consistent		Broadway (Knoxville) Signal Timing Optimization Program
2011-065 Rev 0	Consistent		Kingston Pike (Knoxville) Signal Timing Optimization Program
2011-066 Rev 1	Consistent		East Knoxville Sidewalk Improvements
2011-067 Rev 0	Consistent		Millertown Pike and Mill Rd Intersection improvements
2011-068 Rev 0	Consistent		Signal System Communications Master Plan and Signal Timing Optimization Program
2011-069 Rev 1	Consistent		Adesa Boulevard
2011-070 Rev 2	Consistent		Browder Hollow Rd
2011-071 Rev 0	Complete		Pleasant Ridge Rd
2011-072 Rev 0	Consistent		Knoxville Regional ITS Architecture Update
2011-073 Rev 0	13-855	2024	First Creek Greenway - Fulton to Edgewood
2011-074 Rev 0	Consistent		Ramsey House Transportation Exhibit
2011-075 Rev 0	Consistent		Jackson Avenue, Bridges over ramp to Gay St.
2011-076 Rev 0	Consistent		Creekwood Park Blvd Sidewalk and Lighting Improvements
2011-077 Rev 1	09-400	2014 (E+C)	Harrison Rd
2011-078 Rev 0	Consistent		Traffic Equipment Control Upgrade Hardin Valley / Pellissippi Pkwy
2011-079 Rev 0	09-604	2014 (E+C)	Maynardville Hwy (Temple Acres Dr. to Union County line)
2011-080 Rev 0	Consistent		Communications Study & Signal Timing Optimization
2011-081 Rev 3	09-609	2014 (E+C)	Tazewell Pk (SR-331) and Emory Rd (SR-131) Intersection Improvements
2011-082 Rev 0	09-262	2024	SR-336 Montvale Rd (from Montvale Station Rd to Lamar Alexander Pkwy)
2011-083 Rev 1	Consistent		University of Tennessee Joint Institute for Advanced Materials
2011-084 Rev 0	09-607	2024	Halls Connector Roadway Improvements
2011-085 Rev 1	Consistent		Knoxville Smartway ITS Expansion
2011-086 Rev 1	Consistent		Knoxville Smartway ITS Communications Upgrade

TIP #	LRTP #	Horizon Year	PROJECT NAME
2011-087 Rev 0	Consistent		City of Knoxville greenway corridor feasibility and assessment
2011-200 Rev 6	Transit Section		KAT Section 5307 Transit Funds
2011-201 Rev 0	Transit Section		Section 5309 - CAC
2011-202 Rev 0	Transit Section		CAC 5310 Funds
2011-203 Rev 0	Transit Section		Section 5317 New Freedom - TPO/MPC
2011-204 Rev 0	Transit Section		Section 5309 Bus Purchase / Technology
2011-205 Rev 0	Transit Section		5316 - Job Access Reverse Commute - TPO/MPC
2011-206 Rev 0	Transit Section		Section 5310 Elderly and Disabled Program (Non-Profits and Local Governments)
2011-207 Rev 0	Transit Section		Vehicle and/or Technology Systems Purchase
2011-208 Rev 0	Transit Section		Transit Center in Knoxville
2011-209 Rev 0	Transit Section		KAT Facility Upgrade
2011-210 Rev 0	Transit Section		ADA Paratransit Vehicles - KAT
2011-211 Rev 0	Transit Section		Purchase KAT Vehicles
2011-212 Rev 0	Transit Section		Purchase KAT Vehicles
2011-213 Rev 0	Transit Section		Neighborhood Service Vehicle Purchase - KAT
2011-214 Rev 0	Consistent		Pilot Locomotive Diesel Retrofit Project
2011-215 Rev 3	Consistent		Smart Trips Program
2011-216 Rev 0	Consistent		Bicycle Parking Program
2011-217 Rev 0	Consistent		Car Share Program
2011-218 Rev 0	Consistent		KAT Transit Vehicles
2011-219 Rev 0	Transit Section		Replacement Trolley Bus
2011-220 Rev 1	Transit Section		Purchase shop equipment
2011-221 Rev 1	Transit Section		Purchase ADP hardware
2011-222 Rev 0	Transit Section		Purchase ADP software
2011-223 Rev 1	Transit Section		Acquire support vehicles
2011-224 Rev 3	Transit Section		Acquire support equipment
2011-225 Rev 3	Transit Section		Preventive maintenance
2011-226 Rev 3	Transit Section		Non-fixed route ADA paratransit
2011-227 Rev 3	Transit Section		Purchase bus shelters
2011-228 Rev 0	Transit Section		Purchase pedestrian access/walkways
2011-229 Rev 0	Transit Section		Purchase signage
2011-230 Rev 2	Transit Section		Program support and administration
2011-231 Rev 0	Transit Section		KAT Transit Vehicles - CMAQ Awarded Funds from TDOT
2011-232 Rev 0	Transit Section		Purchase LIFT vans
2011-233 Rev 0	Transit Section		Rehab/Renovate Maintenance Facility
2011-234 Rev 0	Transit Section		Short Range Transit Planning
2011-235 Rev 0	Transit Section		Real estate acquisition
2011-300 Rev 0	Consistent		Bridge Bond Bucket
2011-301 Rev 1	Consistent		Bridge Replacement Cost Overruns - Local
2011-302 Rev 0	Consistent		Bridge Replacement - Local
2011-303 Rev 0	Consistent		Bridge Replacement - State

TIP #	LRTP #	Horizon Year	PROJECT NAME
2011-304 Rev 2	Consistent		Bridge Replacement Cost Overruns - State
2011-305 Rev 1	Consistent		Enhancement Program Projects
2011-306 Rev 1	Consistent		Freeway Service Patrols
2011-307 Rev 2	Consistent		Highway Safety Improvement Program
2011-308 Rev 0	Consistent		IM - Project Contingency Overruns
2011-309 Rev 0	Consistent		IM - Project Cost Overruns
2011-310 Rev 2	Consistent		Interstate 3R Improvements
2011-311 Rev 3	Consistent		Knoxville ITS (Operations)
2011-314 Rev 1	Consistent		NHS - Project Contingency Overruns
2011-315 Rev 2	Consistent		NHS - Project Cost Overruns
2011-316 Rev 1	Consistent		Project Contingency Overruns
2011-317 Rev 1	Consistent		Project Cost Overruns
2011-318 Rev 1	Consistent		Rockfall Mitigation Program (I-75)
2011-319 Rev 0	Consistent		Safe Routes to School Projects
2011-320 Rev 5	Consistent		Spot Safety Improvement Program
2011-321 Rev 5	Consistent		State Route 3R Improvements
2011-322 Rev 1	Consistent		STP Project Contingency Overruns - State
2011-323 Rev 0	Consistent		STP Project Cost Overruns - State
2011-323 Rev 1	Consistent		STP Project Cost Overruns - State
2011-324 Rev 0	Consistent		CMAQ Cost Overruns

Appendix K-M: LAMTPO FY 2011-2014 TIP Project List

Note: Jefferson County Projects only are shown

TIP #	L RTP #	Horizon Year	PROJECT NAME
2045	09-320	2014 (E+C)	11E LED traffic signal replacements
2074	13-301		Chucky Pike resurfacing
2075	13-301		Mountcastle Ave resurfacing
2076	13-301		Old AJ Hy resurfacing
14	09-306	2014	Odyssey Road resurfacing restriping for 3 lanes
55	09-326	2014 (E+C)	Old AJ Hy bridge replacement
16, 17	09-309	2014	Old AJ Hy realignment
2077	Consistent		Argicultural Park Blvd resurfacing
45008	Consistent		School safety study
10	09-301	2014 (E+C)	Chucky Pike / 11E Intersection improvements
18	09-306	2014 (E+C)	Odyssey Rd
2043	09-317	2014	11E/ George av intersection
2044	09-318	2014	Russell Av and 11E Intersection Improvements
	Consistent		Operations/ Safety/ ITS bucket
	Consistent		STP bucket (cost overruns)
7002	13-301		road resurfacing
7005	13-301		wayfinding signs
11	13-301		George Av resurfacing
12	13-301		russell aa resurfacing
13	13-301		w rhoten st resurfacing
17	13-301		w college st resurfacing
4016	Consistent		school safety projects
4017	Consistent		Pedestrian trail
4015	Consistent		Safe Routes to Schools project

Appendix K-N: Memorandum of Agreement

MEMORANDUM OF AGREEMENT

Between the Tennessee Department of Transportation (TDOT), the Knoxville Regional Transportation Planning Organization (TPO) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) for the development of the Transportation Conformity Determination(s) under the 8-Hour Ozone and Particulate Matter 2.5 Standards

I. PURPOSE

This Memorandum of Agreement (MOA) is for the purpose of conducting cooperative planning and analysis of, and determining transportation conformity for, all transportation projects outside the TPO metropolitan planning area, but within the nonattainment or maintenance area.

II. BACKGROUND

- A. The U.S. Environmental Protection Agency (EPA) has designated the Knoxville Nonattainment Area for ozone as being the counties of Anderson, Blount, Jefferson, Loudon, Knox, Sevier and a portion of Cocke County. This ozone nonattainment became effective on June 15, 2004.
- B. The EPA designated the Knoxville Nonattainment Area for Particulate Matter less than 2.5 microns in diameter (PM 2.5) as being the counties of Anderson, Blount, Knox, Loudon and a portion of Roane County. This PM 2.5 nonattainment became effective on April 5, 2005.
- C. The above nonattainment areas include, and are larger than, the TPO planning area. In addition, a portion of the Ozone Nonattainment Area in Jefferson County lies within the jurisdiction of the LAMTPO planning area.
- D. 23 CFR 450.310(f) states that if the metropolitan planning area does not include the entire nonattainment or maintenance area, there shall be an agreement among the state department of transportation, state air quality agency, affected local agencies and the metropolitan planning organizations describing the process for cooperative planning and analysis of all projects outside the metropolitan planning area but within the nonattainment or maintenance area. The agreement also must indicate how the total transportation-related emissions for the nonattainment or maintenance area, including areas both within and outside the metropolitan planning area, will be treated for the purposes of determining conformity in accordance with the US Environmental Protection Agency (EPA) conformity regulation. The agreement shall address policy mechanisms for resolving conflicts concerning transportation-related emissions that may arise between the metropolitan planning area and the portion of the nonattainment or maintenance area outside the metropolitan planning area.

- E. Tennessee has a State Transportation Conformity Rule (1200-3-34-.01), which applies to designated nonattainment and maintenance areas and implements the requirements of the federal transportation conformity rule (40 CFR Part 93, Subpart A) concerning several of the requirements in part D above. This MOA is intended to only address the assumption of the responsibility by the TPO for completing conformity analyses/determinations for the entire Knoxville Nonattainment Area.
- F. The TPO, TDOT and LAMTPO have come to an agreement that the TPO will perform the air quality analyses and conformity determinations for the entire nonattainment area based primarily on the factors that the TPO has previous experience with preparing conformity determinations and maintains a travel demand forecasting model that covers the majority of the nonattainment areas. Thus, the TPO is in the best position to develop projections of future traffic demand and air quality impacts of proposed transportation projects in a holistic manner.

III. RESPONSIBILITIES

A. TPO:

1. The TPO, in coordination with TDOT and other affected agencies will prepare the transportation conformity analysis for the entire nonattainment area which will comply with the applicable requirements of 40 CFR Part 93. If analysis requirements for the non-TPO area are not specific, clear or well defined, the interagency consultation process will be used to determine appropriate analysis procedures.
2. The TPO will facilitate meetings of the Interagency Consultation Group as necessary in order to define the specific processes and adhere to schedules required to complete the conformity determination within the appropriate timelines to ensure that the area does not enter a conformity lapse.
3. The TPO will be responsible for the development of a comprehensive and multimodal "Urban Long Range Transportation Plan (LRTP)" that identifies a fiscally constrained transportation project listing for the TPO planning area, which is comprised of urbanized portions of Knox, Blount, Loudon and Sevier counties.
4. The TPO will be responsible for development of a "Regional LRTP" that identifies a single listing of transportation projects for each nonattainment area (for both PM2.5 and ozone). The Regional LRTP will include input from TDOT on projects in the non-urban counties.
5. The TPO will provide for public input opportunities on both the Urban and Regional LRTPs and accompanying conformity analysis.

B. TDOT:

1. TDOT, in coordination with local affected agencies, is responsible for the development of a transportation project listing on state-funded roadway system for the non-urbanized portions of the nonattainment area at appropriate horizon years to be compatible with the conformity analysis.
2. TDOT will provide for public involvement opportunities within the non-urbanized portions of the nonattainment area.

C. LAMTPO:

1. LAMTPO will provide to the TPO a list of fiscally constrained transportation projects that result from a LRTP prepared for the Lakeway Area planning boundary that are within Jefferson County with projects listed in the appropriate horizon years to be compatible with the conformity analysis.

IV. PROCEDURAL CONSIDERATIONS

A. Data Sources:

1. Travel Demand Model – The TPO will maintain a validated travel demand forecasting model in order to project future vehicle miles of travel within the nonattainment area for purposes of determining conformity of the transportation projects that are proposed. If, through the interagency consultation process, a project is determined to be regionally significant but not included in the model then appropriate off model data forecasting methodologies will be pursued.
2. Off Model Projections – Highway Performance Monitoring System (HPMS) and traffic count data will be used to develop future projections of travel along with other assumptions agreed upon through the interagency consultation process in order to determine conformity of projects in geographic areas unrepresented in the regional travel demand forecasting model such as the portion of Cocke County.

B. Conformity Submittal Protocol:

1. The TPO will develop a single conformity determination for the entire nonattainment area on an as needed basis, which will support both the Knoxville Regional TPO and the LAMTPO Long Range Transportation Plans and Transportation Improvement Programs.

2. The TPO will submit the conformity determination to the Federal Highway Administration and the Federal Transit Administration for their review and approval concurrent with EPA.
3. The LAMTPO will include the ozone conformity determination documentation within their transportation plans as an appendix.

V. AGREEMENT TERMS

- A. This MOA shall remain in effect as long as each of the parties is in agreement with its terms. The interagency consultation process shall be used for revision of the MOA as necessary.

VI. SIGNATORIES

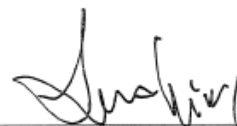
The following signatory parties do hereby agree to comply with the provisions and terms of this MOA.



Bill Haslam, TPO Executive Board Chair



David Purkey, LAMTPO Executive Board Chair



Gerald Nicely, TDOT Commissioner

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