Air Quality Conformity Determination for Amendments to 2040 Regional Mobility Plan and FY 2014-2017 Transportation Improvement Program

Adopted

March 10, 2015

Air Quality Conformity

Determination Report for March 2015 Amendments to the:

Long Range Regional Mobility Plan 2040

and

FY 2014-2017 Transportation Improvement Program

Prepared by:

Knoxville Regional TPO Staff

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Knoxville Regional TPO

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Contents

Adopting Resolution by Knoxville Regional TPO Executive Board for Long Range Plan Amendments

A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION ADOPTING AMENDMENTS TO THE KNOXVILLE LONG RANGE REGIONAL MOBILITY PLAN 2040

WHEREAS, in accordance with requirements of the U.S. Department of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Planning Organization; and

WHEREAS, the Knoxville TPO Long Range Regional Mobility Plan 2040 was originally adopted on April 24, 2013; and

WHEREAS, the Long Range Regional Mobility Plan 2040 needs to be amended to reflect proposed changes to existing Plan projects; and

WHEREAS, the amendments will result in a Plan that remains in fiscal constraint; and

WHEREAS, an updated regional air quality analysis was performed that demonstrates air quality conformity for the Plan amendments to all relevant Ozone and PM2.5 standards; and

WHEREAS, the public involvement process for the Plan amendments followed the Knoxville Regional TPO Public Participation Plan; and

WHEREAS, the Knoxville Regional Transportation Planning Organization Technical Committee recommends approval of the Resolution, and

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

That the Knoxville Long Range Regional Mobility Plan 2040, as amended, be adopted as the basis for transportation planning decisions in the Knoxville air quality non-attainment area including the TPO planning area.

March 10, 2015
Date

Mayor Madeline Rogero, City of Knoxville
TPO Executive Board Chair

Jeffrey A. Welch
TPO Director

Adopting Resolution by Knoxville Regional TPO Executive Board for FY 2014-2017 TIP Amendments

A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION
AMENDING THE FY 2014-2017
TRANSPORTATION IMPROVEMENT PROGRAM

WHEREAS, the FY 2014-2017 Knoxville Regional Transportation Improvement Program was adopted on October 16, 2013; and

WHEREAS, in accordance with requirements of the U.S. Department of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Planning Organization; and

WHEREAS, the Transportation Improvement Program must be updated as needed; and

WHEREAS, the proposed project amendments were reviewed with the Knoxville-Area Air Quality Interagency Consultation Group with respect to air quality conformity requirements and are either exempt from, or were demonstrated to conform with the federal transportation air quality conformity regulations from the Clean Air Act; and

WHEREAS, a conformity determination report with a full revised regional emissions analysis was prepared for the project amendments which concluded that air quality conformity was demonstrated; and

WHEREAS, the Knoxville Regional Transportation Planning Organization Technical Committee recommends approval of the Resolution, and

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

That the FY 2014-2017 Transportation Improvement Program be amended to include the following change and that the Tennessee Department of Transportation include this amendment into the State Transportation Improvement Program:

- **Attachment #3A - Amendment 2014-005 (Relocated Alcoa Hwy (SR-115 / US-129))** - Amend the project by changing the project description to "Widen SR-115 from a four lane divided facility to a six lane divided facility, extend Tyson Blvd under SR-115 and reconstruct Hunt Rd overpass." Amend the termini to "Hall Rd to proposed interchange at Tyson Blvd." Add "Relocated Alcoa Hwy" to the project name. Amend the total project cost from $53,967,855 to $68,130,000.
- **Attachment #3B - Amendment 2014-012 (Dixie Lee Junction (US-11 and US-70))** - Amend the project by adding $4,260,000 in L-STP funding to FY 2015 ROW for an amended total of $5,160,000 ($4,128,000 federal and $1,032,000 state). Add $1,435,000 in L-STP funding to FY 2016 for construction for an amended total of $3,185,000 ($2,548,000 federal and $637,000 state). Amend the total project cost from $2,775,000 to $8,470,000. Amend the project description to include both Knox and Loudon Counties in it.
- **Attachment #3C - Amendment 2014-035 (SR-115 / US-129 (Relocated Alcoa Hwy))** - Amend the project by changing the project description to "New alignment, four lane divided facility, construct an interchange at Pellissippi Parkway (SR-162)." Amend the project name to include "Relocated Alcoa Hwy." Amend the project length from 2.4 miles to 2.9 miles. Amend the termini to "Proposed interchange at Tyson Blvd. to Pellissippi Pkwy (SR-162)." Change the total project cost from $57,171,425 to $74,530,884.

- **Attachment #3D - Amendment 2014-038 (Washington Pike)** - Amend the project by removing $10,000,000 from FY 2016 funding for PE-N/PE-D/RW/CN for an amended total of $1,690,400 ($1,352,320 federal and $338,080 local). Amend the total project cost from $15,146,000 to $5,146,000. The $10 million in L-STP funds are being added to project 2014-056 (Cumberland Ave Phase II).
- **Attachment #3E - Amendment 2014-056 (Cumberland Ave. (US-70/11 and SR-1) Phase II)** - Amend the project by moving FY 2014 PE-D/RW/CN to FY 2015 and adding $10,000,000 in L-STP funding for an amended total of $22,832,831 ($18,266,265 federal and $4,566,566 local). The additional $10,000,000 in L-STP funding is being taken from existing project 2014-038 (Washington Pike) in the 2014-2017 TIP. Amend the total project cost from $12,832,831 to $22,832,831.
- **Attachment #3F - Amendment 2014-058 (Concord Road)** - Amend the project by moving FY 2014 ROW to FY 2015 and adding $4,200,000 in L-STP funding for an amended total of $6,200,000 ($4,960,000 federal and $1,240,000 state). Move FY 2015 Construction to FY 2016 and add $2,008,140 in L-STP funding for an amended total of $8,508,140 ($6,806,512 federal and $1,701,628 state). Amend the total project cost from $12,000,000 to $14,708,140.
- **Attachment #3G - Amendment 2014-074 (US-321 (SR-73) Widening)** - Add the project to the 2014-2017 TIP. Add FY 2016 NHPP funding for construction in the amount of $9,800,000 ($7,840,000 federal and $1,960,000 state). The project is to widen SR-73/US-321 to 6-lanes.
- **Attachment #3H - Amendment 2014-075 (Alcoa Hwy (US-129/SR-115) Widening)** - Add the project to the 2014-2017 TIP. Add FY 2016 NHPP funding for construction in amount of $26,700,000 ($21,360,000 federal and $5,340,000 state). The project is to widen a 1.4 mile section of Alcoa Hwy from 4-lane to 6-lane.

March 10, 2015
Date

Madeline Rogero

Mayor Madeline Rogero, City of Knoxville
TPO Executive Board Chair

Jeffrey A. Welch
TPO Director

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 MOBIITY PLAN 2040 AND 2014-2017 TRANSPORTATION IMPROVEMENT PROGRAM AS AMENDED MEET AIR QUALITY CONFORMITY REQUIREMENTS

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 PM2.5 Standard and 2006 Daily PM2.5 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 PM2.5 Maintenance/Nonattainment Areas; and,

WHEREAS, the Knoxville Regional TPO Amended FY 2014-2017 Transportation Improvement Program is a subset of the Amended 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 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;

WHEREAS, the Knoxville Regional Transportation Planning Organization Technical Committee recommends approval of the Resolution, and

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

That the Amended Long Range Regional Mobility Plan 2040 and 2014-2017 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.

March 10, 2015
Date

Mayor Madeline Rogero, City of Knoxville
TPO Executive Board Chair

Jeffrey A. Welch
TPO Director

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: 2015-001

A RESOLUTION APPROVING THE 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 maintenance area for the 1997 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 Air Quality Conformity Determination that cover the entire Ozone Maintenance Area, including the LAMTPO planning area within Jefferson County, which has determined that all current plans and programs within LAMTPO meet the air quality conformity requirements.

NOW, THEREFORE, BE IT RESOLVED, that the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) Executive Board approves the air quality conformity determination as prepared by the Knoxville TPO.

This Resolution shall be effective upon its passage and approval.

ATTEST:

March 11, 2015
Chairman — Date
LAMTPO Executive Board

Approval Letter by U.S. DOT for Air Quality Conformity Determination

U.S. Department of Transportation
Federal Highway Administration

Tennessee Division

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

March 26, 2015

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

In Reply Refer To:
HDA-TN

Subject: Air Quality Conformity Redetermination for the Knoxville Region

Dear Ms. Hall:

The Federal Highway Administration and Federal Transit Administration-Region IV office, in coordination with the Environmental Protection Agency-Region IV office, have reviewed the Air Quality Conformity Redetermination the Knoxville Regional Transportation Planning Organization (KRTPO) Policy Board adopted on March 10, 2015 and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) adopted on March 11, 2015.

The Air Quality Conformity Redetermination covers the Knoxville Region 1997 8-hour Ozone maintenance area and the 1997 annual PM2.5, 2008 8-hour Ozone and 2006 24-hour PM2.5 standard nonattainment area and addresses the planned transportation improvements from the KRTPO's amended 2040 Regional Mobility Plan and Fiscal Years 2014-2017 Transportation Improvement Program and the LAMTPO located in the Knoxville nonattainment area.

Based on our review, we find the documents conform to the National Ambient Air Quality Standards for the 1997 and 2008 8-hour ozone standards and the 1997 and 2006 PM2.5 standards for the Knoxville nonattainment and maintenance areas.

If you have any questions regarding this redetermination, please contact Scott Allen at (615) 781-5792.

Sincerely,

Sabrina David, AICP
Assistant Division Administrator

cc: Ms. Madeline Rogero, Transportation Policy Board Chair, KRTPO
Ms. Elizabeth Martin, Community Planner, FTA Region IV
Ms. Angela Midgett, MPO Program Manager, TDOT
Mr. Jeffrey Welch, Director, KRTPO
Ms. Dianna Myers, Environmental Scientist, EPA Region IV
Ms. Kelly Sheckler, Environmental Scientist, EPA Region IV

Executive Summary

The Knoxville Regional Transportation Planning Organization (KRTPO) is conducting a revised regional emissions analysis and conformity demonstration for a set of proposed amendments to its current 2040 Knoxville Long Range Regional Mobility Plan (KRMP) and FY 2014-2017 Transportation Improvement Program (TIP). The purpose of this report is to document that the updated KRMP and TIP conforms 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 1997 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

In order to be able to demonstrate conformity of the TPO's transportation plans with the applicable NAAQS, a regional emissions analysis is performed using outputs from a regional transportation model and a mobile source emissions model from EPA known as "MOVES" (Motor Vehicle Emission Simulator). An estimate of emissions is generated for various required analysis years between the present year and the final year of the KRMP and compared against allowable amounts that have either been formally set as part of a State Implementation Plan known as "Motor Vehicle Emissions Budgets" (MVEB) or against a required "Baseline Year" for a particular NAAQS.

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 results of the emissions analysis using the MVEBs are summarized in Table E-1:

Table E-1: MVEB Test for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year		
	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	25.19	25.19	25.19
Projected Emissions	17.25 ✓	15.03✓	16.82 ✓

Oxides of Nitrogen (NOx):	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	36.32	36.32	36.32
Projected Emissions	25.10 ✓	21.64✓	28.25✓

(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 E-2:

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

	Analysis Year 2015	
Volatile Organic Compounds (VOC):	**Knox County**	**Other Counties***
Maximum Allowable Emissions	22.12	13.25
Projected Emissions	11.44 ✓	13.16 ✓

Oxides of Nitrogen (NOx):	**Knox County**	**Other Counties***
Maximum Allowable Emissions	31.71	34.44
Projected Emissions	24.69 ✓	22.58 ✓

(emissions in tons per day)

* Note "Other Counties" include Anderson, Blount, Jefferson, Loudon, Sevier and a partial area of Cocke County. The Maximum Allowable Emissions represent the 2002 Baseline Year emissions from only the three counties of Anderson, Blount and Loudon. The assumption is made that since the 2015 emissions from the larger area are less than those three counties then they would definitely be less than the 2002 emissions from the entire 5+ region of "other counties".

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.

The emissions analysis for years 2024 and beyond is identical to the MVEB test shown in Table E-1 above with the exception that only the emissions from the 2008 Ozone Non-attainment Area are used to compare against the MVEB. 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 E-2. Table E-3 summarizes the MVEB test against the 1997 8-hour Ozone MVEB and Table E-4 summarizes the 2015 analysis year emissions test:

Table E-3: MVEB Test for 2008 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year		
	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	25.19	25.19	25.19
Projected Emissions	11.00 ✓	9.65✓	10.58 ✓

Oxides of Nitrogen (NOx):	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	36.32	36.32	36.32
Projected Emissions	15.94 ✓	13.89 ✓	17.11✓

(emissions in tons per day)

Table E-4: Analysis Year 2015 MVEB Test for 2008 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year 2015
	Anderson, Blount, Knox Counties
MVEB (Knox County 1-Hour Budget, year 2014)	22.12
Projected Emissions	15.95✓

Oxides of Nitrogen (NOx):	Anderson, Blount, Knox Counties
MVEB (Knox County 1-Hour Budget, year 2014)	31.71
Projected Emissions	30.52 ✓

(emissions in tons per day)

PM2.5 Standards

The PM2.5 Nonattainment Area includes Anderson, Blount, Knox, Loudon, and a portion of Roane County. The PM2.5 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 (same geographic area for both). The designation as a nonattainment area under the Annual PM2.5 Standard became effective on April 5, 2005 and the designation as a nonattainment area for the Daily PM2.5 Standard became effective on December 14, 2009.

1997 Annual PM2.5 Standard

The Annual PM2.5 conformity analysis consists of a "Less than Baseline Year 2002" Test for the annual PM2.5-related emissions from on-road mobile sources resulting from components such as brake and tire wear and vehicle exhaust known as "Direct PM2.5" and "Oxides of Nitrogen" (NOx) which can act as precursors to PM2.5 formation. The results of the emissions analysis are summarized in Table E-5:

Table E-5: 2002 Baseline Year Test for Annual PM2.5

Direct Particulate Matter 2.5:	Analysis Year			
	2015	2024	2034	2040
2002 Baseline Year Emissions	908.0	908.0	908.0	908.0
Projected Emissions	408.0✓	234.7✓	239.3 ✓	285.1 ✓

Oxides of Nitrogen (NOx):	2015	2024	2034	2040
2002 Baseline Year Emissions	34,175.4	34,175.4	34,175.4	34,175.4
Projected Emissions	12,420.4✓	6,653.7 ✓	5,795.9✓	7,457.1✓

(emissions in tons per year)

2006 Daily PM2.5 Standard

The Daily PM2.5 conformity analysis consists of a "Less than Baseline Year 2008" Test since an MVEB is not yet available specifically for the Daily PM2.5 Standard. The results of the emissions analysis are summarized in Table E-6:

Table E-6: 2008 Baseline Year Test for Daily PM2.5

Direct Particulate Matter 2.5:	Analysis Year			
	2015	2024	2034	2040
2008 Baseline Year Emissions	1.6	1.6	1.6	1.6
Projected Emissions	1.1 ✓	0.6 ✓	0.7 ✓	0.8 ✓

Oxides of Nitrogen (NOx):	2015	2024	2034	2040
2008 Baseline Year Emissions	58.5	58.5	58.5	58.5
Projected Emissions	34.0 ✓	18.2 ✓	15.9 ✓	20.4 ✓

(emissions in tons per day)

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 1997 8-hour Ozone, 2008 8-Hour Ozone, Annual PM2.5, and Daily PM2.5 standards has been demonstrated for the affected current transportation plans and the project amendments thereto.

The conformity determination was coordinated with stakeholder and regulatory agencies through an Interagency Consultation process and a 14-day public review and comment period was held. A summary of comments that were received and responses is included in the report.

Chapter 1 - Introduction and Background Information

1.0 Introduction

The primary purpose of this document is to demonstrate that proposed amendments to the Knoxville TPO Long Range Regional Mobility Plan 2040 (KRMP), the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2014-2017 Transportation Improvement Program (TIP) and the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) 2014-2017 TIP meet Transportation/Air Quality Conformity requirements of the Clean Air Act and Moving Ahead for Progress in the 21st Century (MAP-21). Section 1.1 describes other requirements that are being met by this conformity determination.

1.1 Background on Need for the Proposed Action

Federal Transportation Planning Regulations (23 CFR 450) require Metropolitan Planning Organizations to prepare a comprehensive Long Range Transportation Plan (LRTP) that covers a minimum 20-year horizon. The LRTP is required to be updated every four years in order to ensure that the underlying planning assumptions are still valid. The TPO is also required to prepare a four-year program of projects known as a Transportation Improvement Program (TIP) that must be consistent with the approved LRTP. Both the LRTP and TIP must meet transportation conformity requirements (described in Section 1.3). Periodically, as needs and conditions change, it becomes necessary to amend the TIP and/or LRTP to reflect updates to proposed projects. If a project amendment is determined to be "non-exempt" with respect to air quality conformity then a transportation conformity determination is required to ensure compliance with federal regulations from the Clean Air Act.

The TPO is proposing a set of amendments to its current LRTP and TIP as described in Chapter 2 of this report. Several of these amendments involve air quality non-exempt projects and therefore require an updated conformity determination. Furthermore, since some of the project amendments significantly affect project scopes, implementation time frames or termini a revised "regional emissions analysis" is required in order to fully account for these changes. This report documents the assumptions, model inputs and procedure used to conduct the regional emissions analysis to demonstrate transportation conformity for the Plan amendments.

1.2 Summary of Affected Transportation Plans and Current Conformity Status

There are two Metropolitan Planning Organization jurisdictions within the current 1997 8-Hour NAAQS Air Quality Maintenance 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. Therefore, this conformity determination will cover all of the following plans and projects therein for the two affected MPOs as follows:

- The LAMTPO 2040 Long Range Transportation Plan (LAMTPO LRTP)
- The LAMTPO FY 2014-2017 TIP
- The KRTPO Long Range Regional Mobility Plan 2040 (KRMP)
- The KRTPO FY 2014-2017 TIP

A finding of Conformity by the U.S. Department of Transportation was made on May 31, 2013 for both Ozone and PM2.5 on the previous 2040 Regional Mobility Plan that encompassed the entire air quality nonattainment/maintenance area. The KRTPO FY 2014-2017 TIP received a finding of conformity by U.S. DOT on November 22, 2013.

1.3 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 1-1 with detailed history of EPA designations for Ozone and PM2.5 following below.

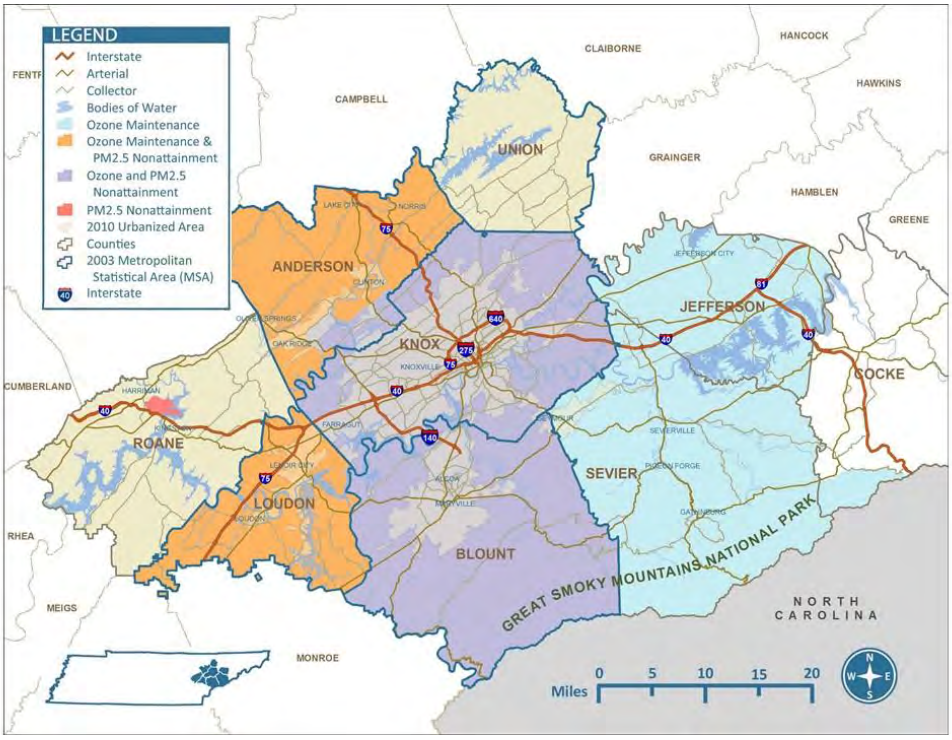


Exhibit 1-1: Knoxville 8-Hour Ozone and PM2.5 Non-Attainment Areas

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. Attainment with this standard is required to be demonstrated by July 2015 and a redesignation request to attainment has already been sent to EPA, which is currently undergoing final review and comment periods.

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.

1.4 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.

1.5 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.

1.6 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.

1.7 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 MOVES mobile emissions 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 MOVES model uses the activity data from the TDFM and combines it with other inputs describing the analysis area to derive an overall emissions amount. This procedure is known as the "Inventory Mode" of MOVES, which was chosen for this analysis as opposed to the "Emission Rate Mode" of MOVES, which produces emissions rates that must be subsequently post processed with the TDFM activity data.

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.

Appendix B of this document describes the MOVES 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 the following analysis years based on whether there is an approved MVEB or not as shown in the following table:

Approved Budget	**No Budget Approved**
Attainment Year	Year within first 5 years
Horizon years no > 10 years apart	Horizon years no > 10 years apart
Last Year of Transportation Plan	Last Year of Transportation Plan

Therefore, the analysis years for this regional emissions analysis covering both Ozone and PM2.5 are:

2015 – Attainment year for Ozone, Year within first 5 Years for PM2.5

2024 – Year no greater than 10 years apart

2034 – Year no greater than 10 years apart

2040 – Final Year of Long Range Plan

In addition, the baseline year PM2.5 emissions for 2002 and 2008 had to be developed using MOVES.

Chapter 2 – Summary of Amendments to the Knoxville Long Range Regional Mobility Plan 2040 and FY 2014-2017 Transportation Improvement Program

2.0 Introduction

A revised regional emissions analysis and conformity determination is being undertaken in order to account for project amendments being proposed to the TPO's current LRTP and TIP as discussed in Chapter 1. The process started with a single required TIP amendment involving an air quality non-exempt project being proposed that was determined to require a revised regional emissions. The TPO staff decided to undertake a comprehensive review of both the TIP and LRTP in order to determine whether other changes had occurred to projects in order to address as many required project amendments as possible under one single action. This review consisted of meeting with each of the TPO member jurisdictions and TDOT to review the current LRTP and TIP roadway project lists in detail. Several additional updates were determined to be required from this analysis as described in the following sections of this chapter, but can be summarized as follows:

- Projects moving to a different Analysis Year – The regional emissions analysis requires that projects are programmed into various analysis years based on when they are expected to be complete and open to traffic. If it is determined that a project will no longer be constructed in time to be open for its programmed horizon year then it must be pushed back to a later horizon year and included in that network year in the regional travel demand model. The reverse situation can also occur where a project is expected to be constructed sooner than originally planned.
- Change to a project scope or termini – Occasionally a roadway project will be modified in terms of its scope and/or termini as it proceeds through the preliminary engineering and design process. Oftentimes the TPO must pre-determine a project's scope for the LRTP and conformity analysis prior to a detailed design being conducted which may determine that fewer (or more) lanes may be needed to appropriately address projected traffic volumes.
- Elimination of a project – It may be determined that a roadway project is no longer desired or necessary such as during an Environmental Impact Statement process that concludes with a selection of the "No Build" scenario.
- Addition of a project – New projects may have been determined to be needed subsequent to the completion of the previous LRTP.
- TIP Amendments – As noted previously, the TIP must be consistent with and a direct subset of projects from the LRTP. The project amendments to the LRTP were evaluated

to determine whether they were included in the current FY 2014-2017 TIP and would therefore require a TIP amendment. There are also cases where a simple change to the programmed cost of a project included in the TIP requires and amendment when it is above a certain threshold amount. The changes to a cost of TIP project generally do not affect the regional emissions analysis unless they are a result of a change in project scope of timing that affects how the project was modeled for conformity.

2.1 List of Non-Exempt Projects Moving to a different Analysis/Horizon Year

The list of air quality non-exempt projects moving to a different analysis year consists primarily of projects that were in the first two analysis years of the current LRTP, which were 2014 and 2015. A review of the projects was undertaken and it was determined that several of these projects were under construction; however the current projected completion dates fall after the end of 2015. There are also a few other projects that were determined to need to have revised analysis years in other out-years. The analysis years included in this conformity determination are: 2015, 2024, 2034 and 2040. The following table lists all proposed analysis year changes:

Table 2-1 – KRMP Non-exempt Projects Changing Analysis Years

KRMP ID#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description	Current Conformity Analysis Year	Proposed Conformity Analysis Year
BLOUNT COUNTY							
13-201	Alcoa	W Plant Redevelopment Local Interstate Connector New Road Construction	Hall Rd (SR 35) / Associates Blvd to Mill St (Future Hunt Rd Interchange)	1.4	Construct 4-lane road with center median	2014	**2024**
JEFFERSON COUNTY							
09-313	Jefferson County	SR 66 Relocation	North of I-81 at SR 341 to SR 160	3.1	Construct new 4-lane road	2015	**2024**
KNOX COUNTY							
09-604	Knox County	Maynardville Hwy (SR 33) Widening	Temple Acres Dr to Union Co Line	5.9	Widen 2/4 lane to 4/5 lane	2015	**2024**
09-623	Knoxville	Pellissippi Pkwy (I-140)	I-40 to Dutchtown Rd	0.4	Widen from 1 to 2 northbound lanes on I-140	2015	**2024**
LOUDON COUNTY							
09-409	Lenoir City/Loudon Co	US 321 (SR 73) Reconstruction	US 11 (SR 2) to east of Little Tennessee River	3.7	Construct 4-lane road on existing and new alignment	2014	**2024**
ROANE COUNTY							
09-102	Harriman	SR 29	Pine Ridge Rd to SR 61	0.8	Widen 2-lane to 4-lane	2014	**2024**
SEVIER COUNTY							
13-501	Sevierville	Dumplin Creek Pkwy	SR 66 to Bryan Rd	1.5	Construct new 4-lane road	2015	**2024**

2.2 List of Projects with a Change in Scope and/or Termini

A review of current projects in the KRMP and TIP revealed that a few projects had been modified in scope, which needs to be accounted for in the revised regional emissions analysis.

Table 2-2 – KRMP Projects with Revised Scopes and/or Termini

KRMP ID#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description	Conformity Analysis Year	Summary of Scope/Termini Changes
BLOUNT COUNTY							
09-218	Alcoa	Relocated Alcoa Highway (US 129 / SR 115) New Road Construction	From Hall Rd to proposed Interchange at Tyson Blvd	1.3	Widen from 4-lane divided facility to 6-lane divided facility, Extend Tyson Blvd under SR 115 and reconstruct Hunt Rd overpass	2024	Original termini and project descriptions: From south of Airport Rd to proposed Interchange serving McGhee Tyson Airport, construct 8-lane Highway
09-257	Alcoa	Relocated Alcoa Highway (US 129 / SR 115) New Road Construction	From the proposed interchange at Tyson Blvd to Pellissippi Pkwy (SR 162)	2.9	Construct new access controlled 4-lane divided facility on new alignment	2024	Original termini and project descriptions: From Proposed Interchange serving McGhee Tyson Airport to Pellissippi Pkwy (SR 162), Construct new 8-lane highway, original length 2.4 miles
09-258	Alcoa	Relocated Alcoa Highway (US 129 / SR 115) New Road Construction	From Pellissippi Pkwy (SR 162) to Existing Alcoa Hwy near South Singleton Station Rd	1.2	Construct new access controlled 4-lane divided facility on new alignment	2024	Original project description: Construct new 8-lane highway, original length 1.4 miles
KNOX COUNTY							
09-623	Knoxville	Pellissippi Pkwy (I-140)	I-40 to Dutchtown Rd	0.4	Widen from 1 to 2 northbound lanes on I-140	2024	Pellissippi Pkwy (I-140) Restriping, Restripe to add one lane on northbound I-140 and remove one lane form the ramp from I-40. Original horizon year of 2015
13-603	Knoxville	I-40/I-75 Eastbound and Westbound Auxiliary Lanes	Lovell Road to Campbell Station Road	1.8	Add full auxiliary lane between interchanges eastbound and westbound	2024	Original description: I-40/I-75 Westbound Auxiliary Lane
LOUDON COUNTY							
09-423	Lenoir City	US 321 (SR 73) Widening to 6-lanes	Simpson Rd to US 11 (SR 2)	1.43	Widen from 4-lane divided facility to 6-lane divided facility	2024	Original description: US 321 (SR 73) Widening to 7-lanes, Remove median and install turn lanes

2.3 List of Projects being Eliminated

There are two non-exempt projects in the 2040 KRMP project list that are no longer being pursued at this time and will be removed from the project list and regional emissions analysis.

Table 2-3 – KRMP Projects being Eliminated

KRMP ID#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description	Previous Conformity Analysis Year
KNOX COUNTY						
09-666	Knoxville / Knox Co	James White Pkwy (SR 71) Extension / New Road Construction	Moody Ave to Chapman Hwy (US 441 / SR 71)	2.3	Construct / extend new 4-lane road	2034
LOUDON COUNTY						
09-414	Lenoir City	Broadway (US 11 / SR 2) Downtown Streetscaping	D St to Hill Ave	0.8	Streetscape improvements and reduction of travel lanes in downtown area to improve pedestrian use	2024

2.4 List of Projects being Added

Since the primary purpose of this update and regional emissions analysis is to account for project changes that have occurred there was no attempt to solicit new projects for the KRMP. Instead, new projects will be developed as part of the next major 4-year update of the KRMP, which will be due by June 2017. There was one non-exempt project identified however that is currently under development that needs to be explicitly accounted for in the updated regional emissions analysis. This project represents a subset of a larger project that was already included in the KRMP, but can now be identified as a standalone project. There is currently a "placeholder" project in the KRMP (ID #09-626) to account for the construction of sections of center turn lane along a lengthy corridor that currently has intermittent sections of center turn lane. The addition of turn lanes primarily serves a safety need to remove turning vehicles from a high speed travel lane; however some additional capacity is also provided which causes the project to have non-exempt status.

Table 2-4 – KRMP Project being Added

KRMP ID#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description	Conformity Analysis Year
KNOX COUNTY						
09-626d	Knox County	Chapman Hwy (US 441 / SR 71) Safety Improvements, Section 2-2	Hendron Chapel Rd to Simpson Rd	0.9	Add Center turn lane	2024

It should also be noted that one project has been incorporated into this regional emissions analysis that is temporary in nature. A new on-ramp from Cusick Road to Pellissippi Parkway (SR-162) in Blount County was constructed subsequent to the last LRTP. This project was evaluated through the IAC process and determined to be not regionally significant. It has been added to the 2015 travel model network year for this analysis to account for any possible emissions impacts. The project is temporary due to its being replaced by a new interchange with the proposed "Relocated Alcoa Highway" project in analysis year 2024 that is described in Table 2-2 above.

2.5 List of FY 2014-2017 TIP Amendments

A few of the above listed KRMP amendments need to be accounted for in the FY2014 – 2017 TIP in order to ensure that the two plans are still consistent with one another. In addition, there are a few projects in the TIP requiring additional funding that require it to be amended since the amount of increase crosses the threshold of a TIP adjustment. There are a total of eight (8) TIP amendments being proposed. Table 2-5 on the following page lists all proposed TIP

amendments and denotes whether each is also requiring an accompanying amendment to the KRMP in terms of there being a significant change in project scope that requires a revision to how it is represented in the travel demand forecasting model for purposes of the regional emissions analysis.

Table 2-5 – Summary of TIP Amendments to be adopted at March 2015 TPO Executive Board

TIP ID#	KRMP ID#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description	KRMP Amendment Required (Yes or No)	Summary of Amendment
2014-005	09-218	Alcoa - Blount County	SR-115/US-129 Relocated Alcoa Highway	Hall Rd to proposed Interchange at Tyson Blvd	1.3	Widen SR-115 from 4-lane divided facility to a 6-lane divided facility, Extend Tyson Blvd under SR 115 and reconstruct Hunt Rd overpass	Yes	Termini and scope change - Original termini and project descriptions: From south of Airport Rd to proposed Interchange serving McGhee Tyson Airport, construct 8-lane Highway
2014-035	09-257	Alcoa - Blount County	SR-115/US-129 Relocated Alcoa Highway	Proposed interchange at Tyson Blvd to Pellissippi Pkwy (SR 162)	2.9	New alignment, 4-lane divided facility, Construct an interchange at Pellissippi Parkway (SR-162)	Yes	Termini and scope change - Original termini and project descriptions: From Proposed Interchange serving McGhee Tyson Airport to Pellissippi Pkwy (SR 162), Construct new 8-lane highway, original length 2.4 miles
N/A	09-423	Lenoir City - Loudon County	SR-73/US-321	Simpson Rd East to North of SR-2 (US-11) in Lenoir City	1.4	Widen from 4-lane divided facility to 6-lane divided facility	Yes	Original description: US 321 (SR 73) Widening to 7-lanes, Remove median and install turn lanes.
N/A	09-627	Knoxville - Knox County	SR-115 (Alcoa Hwy)	Maloney Rd to Woodson Dr	1.4	Widen 4-lane to 6-lane	No	Project being added to TIP, previously accounted for in regional emissions analysis and remaining in same analysis year
2014-056	09-613b	Knoxville - Knox County	Cumberland Ave (US-70/11 and SR-1) Phase II	22nd Street to 16th Street	0.6	Pedestrian Improvements and reduce from 4 lanes to 2 lanes with center turn lane	No	Additional funding for PE-D/RW/CN phase needed. Project previously accounted for in regional emissions analysis and remaining in same analysis year.
2014-038	09-615	Knoxville - Knox County	Washington Pk	North of I-640 to Murphy Rd	1.7	Widen from 2-lanes to 4-lanes including pedestrian and bicycle facilities	No	Reduction of funding to be applied towards the Cumberland Avenue project amendment above.
2014-058	09-632	Farragut and Knox County	Concord Rd (SR-332)	Turkey Creek Rd to Northshore Dr	0.8	Widen from 2-lanes to 4-lanes including pedestrian and bicycle facilities	No	Additional funding for ROW phase needed. Project previously accounted for in regional emissions analysis and remaining in same analysis year.
2014-012	09-406	Lenoir City, Farragut - Knox and Loudon Counties	Dixie Lee Junction (US 11 and US 70)	SR 1(US 70)(Kingston Pk) Intersection at SR 2 (Lee Hwy)	0.2	Intersection Improvements such as intersection capacity, operations and geometrics and safety.	No	Project previously determined to be Exempt as Intersection Improvement

2.6 Financial Constraint

Financial constraint for the FY 2014-2017 TIP is demonstrated in the amended TIP pages included under a separate report. The proposed KRMP amendments do not affect financial constraint with the exception of the projects being added or eliminated. The one project addition (Chapman Highway) is a subset of an existing project and therefore already accounted for in the previous financial constraint determination. The elimination of the two projects described in table 2-3 will result in increased availability of revenues and therefore financial constraint is determined by default, both for the entire KRMP as well as each horizon year.

Chapter 3 – Planning Assumptions for Regional Emissions Analysis

3.1 Planning Assumptions for developing Travel Demand Forecasts:

A complete update of the 10-county Knoxville Regional Travel Demand Forecasting Model (KRTM) and associated socioeconomic forecasts was developed for the preparation of the 2040 Mobility Plan that was adopted less than two years ago. The KRTM was validated to a base year of 2010 to coincide with the latest decennial Census and this continues to represent the latest available information on which to base the travel model inputs. Since this is an interim and minor update to the 2040 Mobility Plan the Knoxville Regional TPO staff has not adjusted or updated the underlying planning assumptions related to the socioeconomic, demographic or other major inputs to the KRTM. It is believed that all of the previous socio-economic data assumptions still hold such as population and employment growth forecasts, transit ridership rates, transit fares and overall demographic characteristics. The TPO will conduct a complete review of planning assumptions at such time as development begins for the next major update of the LRTP, which will be due by June 2017.

Additional information regarding the planning assumptions for the 2040 Mobility Plan can be obtained from the conformity determination report posted on the TPO website at: http://www.knoxtrans.org/plans/mobilityplan/sections/appk.pdf

3.2 Latest Emissions Model:

The EPA has officially released a new emissions factor model known as “MOVES2014” through a Federal Register Notice of Availability on October 7, 2014, which set a 2-year grace period for its use instead of the prior version known as “MOVES2010b”. The TPO staff decided to use MOVES2010b (with default database version 10/30/2012) within this grace period for the revised regional emissions analysis primarily due to having previously conducting some of the input data development for the MOVES2010b version and integration of the KRTM with a post processing tool known as PPSUITE, which is currently only compatible with the MOVES2010b version.

Since the prior conformity determination for the 2040 Mobility Plan was conducted with MOBILE6.2 during the grace period transition from it to MOVES2010, a somewhat more significant effort than might normally be expected is involved with this updated regional emissions analysis. A special effort has been made to document any modified assumptions that are necessary between inputs that were required for MOBILE6.2 versus the newer MOVES platform.

3.3 Emissions Tests:

It should be noted that one of the primary reasons that this revised regional emissions analysis is being conducted is in order to process TIP amendments that would normally fall under a "short conformity report" requirement with the ability to rely on a previous regional emissions analysis. It has been determined however that the TPO is no longer able to rely on a previous regional emissions analysis due to the fact that a Motor Vehicle Emissions Budget (MVEB) was used from the 2009 PM2.5 Attainment Demonstration for the Knoxville Region which has subsequently been retracted. Therefore, the TPO has to utilize an "interim" emission test approach for PM2.5 that utilizes a "less than baseline year" emissions test.

3.3.1 For 1997 "Annual" PM2.5 Standard – Less than Baseline Year 2002 Emissions Test

In an attainment demonstration for the 1997 annual PM2.5 NAAQS, for the Knoxville area submitted to EPA, Tennessee made a determination regarding the significance and insignificance of precursors to PM2.5. It is assumed that for the purposes of this regional emissions analysis that the TPO is able to maintain the previously documented position on the significance of PM2.5 precursors for purposes of transportation conformity, which found only Oxides of Nitrogen (NOx) to be significant as a precursor along with Direct Particulate Matter emissions themselves.

Therefore, to demonstrate conformity for the Annual PM2.5 Standard a "less than baseline year" test against 2002 base year emissions is required for PM2.5 and NOx. These baseline emissions levels will be computed using MOVES2010b as part of the actual analysis and are reported in Chapter 4 which include the results of the regional emissions analysis.

3.3.2 For 2006 "Daily" PM2.5 Standard – Less than Baseline Year 2008 Emissions Test

The same discussion as above for the 1997 Annual PM2.5 Standard applies to the Daily Standard, however a separate baseline year of analysis is required based on the most current transportation conformity rule which ties the baseline year to the most recent year for which EPA's Air Emissions Reporting Rule (40 CFR Part 51, Subpart A) requires submission of on-road mobile source emissions inventories as of the effective date of designations (40 CFR 93.119(e)(4)). Therefore, the baseline year for the Daily PM2.5 Standard is 2008. These baseline emissions levels will be computed using MOVES2010b as part of the actual analysis and are reported in Chapter 4 which include the results of the regional emissions analysis.

3.3.3 For 1997 8-Hour Ozone Standard – Emissions Test against MVEB and Qualitative Tests

This regional emissions analysis will address and determine conformity for the 1997 8-Hour Ozone Maintenance Area as well as the 2008 8-Hour Ozone Standard. The EPA had previously revoked the requirement to determine transportation conformity for the 1997 8-Hour areas as of the effective date of the 2008 8-Hour Ozone Standard on July 20, 2013. A recent ruling on December 23, 2014 by the DC Circuit Court of Appeals however has vacated the revocation of transportation conformity requirements for the 1997 8-Hour Ozone Standard. In absence of final guidance from EPA on the effects of the court decision and whether it might be appealed to a higher court, the Knoxville TPO has decided to address the conformity requirements for the 1997 8-Hour Ozone Standard as a precautionary measure.

A Motor Vehicle Emissions Budget for the year 2024 was established as part of the redesignation of the 1997 Knoxville Region Ozone Nonattainment Area to Maintenance as shown below:

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

Since an analysis year of 2015 is required for this regional emissions analysis the conformity regulations call for a "qualitative test" for these situations where an MVEB is not available. In previous conformity determinations for the 1997 8-hour Ozone Standard it was determined through the Interagency Consultation Process that the qualitative tests would correspond with the "interim" emissions test criteria used prior to the 1997 8-Hour Ozone Maintenance Plan, which were to use the 2014 1-hour MVEB that applies only to Knox County and a "Less than Baseline Year 2002 Test" to the other counties. The 2014 1-Hour MVEB is shown below and the 2002 baseline emissions will be determined using the MOVES model.

Pollutant	2014 MVEB for Knox County (tons/day)
VOC	22.12
NO_x	31.71

3.3.4 For 2008 8-Hour Ozone Standard – Emission Test against separate MVEBs

Since there are existing MVEBs for Ozone under previous NAAQS, these generally must be used for demonstrating conformity until a newer MVEB specific to the 2008 Ozone Standard is developed. In the case of the Knoxville region, separate MVEBs come into play based on the particular analysis year as follows:

Analysis Years Prior to 2024 – Can use either the 2014 1-hour MVEB for Knox County assuming that the entire 2+ county 2008 Nonattainment Area emissions are less than that amount (as provided for in 93.109(c)(2)(iii)(B)) OR could develop a 2011 baseline year emissions test using MOVES for Anderson and Blount Counties and the Knox County 2014 MVEB for Knox County as described in 93.109(c)(2)(iii)(A). Note: it was determined that the former option (2014 1-hour MVEB) was able to be passed so it was the option ultimately chosen for this conformity determination.

Pollutant	2014 MVEB for Knox County (tons/day)
VOC	22.12
NO_x	31.71

Analysis Years 2024 and beyond – There was an MVEB for year 2024 established as part of the redesignation of the 1997 Knoxville Region Ozone Nonattainment Area to Maintenance. Although the 1997 Ozone Nonattainment Area covered a much larger region than the 2008 Ozone Nonattainment Area only the emissions from the smaller 2008 Ozone Nonattainment Area need to be computed and compared against this MVEB. Another option is provided in the conformity regulations of determining the portion of the 1997 MVEB attributable to the 2008 area and using that, however this was previously ruled out due to the difficulty in parsing out the emissions particularly for the partial area in Anderson County.

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	2024 MVEB (tons/day)
VOC	25.19
NO_x	36.32

3.4 MOVES Inputs and Runspec Development:

As noted previously, the MOVES emissions model platform represents a major change and generally requires more detail and reliance on local data than the previous MOBILE6 model. In order to assist with the transition from MOBILE6 to MOVES the EPA has provided input converter tools in MS Excel format that can be used to directly obtain several of the required inputs for MOVES using previously developed MOBILE6 input files. Since the previous regional emissions analysis for the LRTP was developed using the MOBILE6 platform, there will be a major reliance on using these converter tools in order to maintain consistency with input parameters where possible and aid in input development. There are however some inputs that are completely unique to MOVES such as "Source Type Population" that have to be developed without the aid of converters for this regional emissions analysis effort. As new MVEBs are developed as part of upcoming redesignation requests for both Ozone (currently underway) and PM2.5 there will be less reliance on the converters and more effort on developing entirely new MOVES-specific inputs.

In setting up a MOVES run, first there are a number of parameters that need to be established to define the timespan, geographic bounds, vehicle and road types, pollutants and output options for the run, which is known as a "runspec". A separate runspec will need to be developed for each individual analysis year, each county and for each pollutant being analyzed, i.e. Ozone and PM2.5. Subsequent to the runspec, the user provides locality-specific data for several parameters that can affect the amount of emissions being produced including: meteorology, source type population, vehicle age, vehicle miles of travel (VMT), average speeds, fuel type, etc… Some of these inputs stay constant for each analysis year, while others will be different particularly those related to the changes in the transportation network being proposed as part of the LRTP update such as speed and VMT.

Following are the general MOVES Runspec parameters that will be used along with information regarding where parameters will need to vary based on the pollutant or analysis year being analyzed:

MOVES2010b Runspec Parameters

1. Scale: **(Both Pollutants)**

County level scale – Inventory mode

2. Time Span:

Time Aggregation Level – Hour **(Both Pollutants)**

Analysis Years – same for **Both Pollutants** with the exception of two baseline years 2002 and 2008 that will need to be developed for the first time using MOVES as required for Annual and Daily PM2.5 emissions tests respectively.

- 2015 – Required as it is the Attainment Year for 2008 Ozone Standard, also satisfies requirement for a year within first 5 years of the LRTP for PM2.5.
- 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 2040 Mobility Plan

Months – July **(Ozone)**, All months **(PM2.5)**

Days – Weekdays **(Ozone)**, Weekdays and Weekends **(PM2.5)**

Hours – All Hours **(Both Pollutants)**

3. Geographic Bounds:

Ozone – Anderson (Partial), Blount, Knox counties

PM2.5 – Anderson, Blount, Knox, Loudon, Roane (Partial) counties

4. Vehicles/Equipment: **(Both Pollutants)**

Gasoline and diesel fuels, all vehicle combinations (the AVFT file has been edited to remove CNG from the transit bus fleet).

5. Road Type: **(Both Pollutants)**

All road types

6. Pollutants and Processes:

Ozone – NOx and VOC and all other required supporting pollutants. Unchecked the "Refueling Displacement Vapor Loss" and "Refueling Spillage Loss" to exclude refueling emissions as these emissions are captured in the Area source emissions inventory

PM2.5 – Primary PM2.5, NOx and all other required supporting pollutants.

7. Strategies: **(Both Pollutants)**

This panel is no longer used in the 2010b version of MOVES and instead the AVFT file mentioned previously is input in the County Data Manager section.

8. Output: **(Both Pollutants)**

    - General:
        - Units: grams, joules, miles
        - Activity: Distance Traveled, Population
    - Output Emissions Detail:
- On road: Road Type, Source Use Type

MOVES2010b County Data Manager Input Development

For the locality-specific inputs required in the "County Data Manager" section of MOVES, the following general information is being provided for how they were developed, additional technical details and example input files are provided in Appendix B.

CDM 1.) Meteorology – this input will vary by pollutant type, but will be constant for each analysis year. The Ozone analysis utilizes the meteorology defined in the relevant established SIPs, which used the same values for both the Knox County 1-hour area and the 1997 8-hour areas. Since there is no established SIP for PM2.5 a proposal was made to and agreed upon by the IAC group to use meteorology gathered for a 3-year period between 2009 to 2011 that was utilized recently for development of the 2008 8-hour Ozone SIP.

CDM2.) Source Type Population – this is a new input required for MOVES and was developed using the methodology documented in TDEC's "Eight-Hour Ozone Re-designation Request, Base Year Emission Inventory, and Maintenance Plan for the Knoxville, Tennessee Eight-hour Ozone Nonattainment Area". In general the process used base year estimated vehicle counts by source type for year 2011 that were generated by researchers from the Department of Civil and Environmental Engineering at the University of Tennessee, Knoxville under contract to the Tennessee Department of Transportation using county-level motor vehicle registration data from the Tennessee Department of Revenue. Future-year projections of Source Type Population for the light duty vehicle source types was generated using the Knoxville TPO's KRTM, which includes a vehicle ownership model. Special attention has to be applied to the partial counties of Anderson (for Ozone) and Roane (for PM2.5) to ensure that only the vehicles garaged in those specific areas are included. Additional steps were needed to develop the baseline 2002 and 2008 "historical" source type populations as described in Appendix B.

CDM3.) Age Distribution – vehicle age distribution datasets were also recently developed for year 2011 by the University of Tennessee in MOVES format that are utilized for all analysis years of 2011 and beyond. The appropriate inputs for the historical baseline years of 2002 and 2008 were determined through the IAC process to be the previous vehicle age distribution data developed for MOBILE6.2 year 1999/2000 and using the "RegistrationDistributionConverter_Veh16.xls" converter from EPA to develop the MOVES format required.

CDM4.) Vehicle Type VMT – this MOVES input actually consists of four separate input files related to the estimated vehicle miles of travel in the area being analyzed including:

- HPMSVTypeYear – this is the total amount of VMT estimated for each of the analysis years by Source Type. A base year value was developed by UT for 2011 and growth factors by source type provided by the KRTM are used to develop the future year estimates.
- Month – this input accounts for the variability in travel throughout the months of the year. These inputs were developed by UT from traffic count data collected by TDOT.
- Day – this input accounts for the differences in weekday travel versus weekend travel and are also available from the UT study.
- Hour – this input accounts for the hourly variation in travel and is provided by the KRTM using a post processing software tool known as PPSUITE.

Note: The above input descriptions represent the approach used for the "future" analysis years of 2015, 2024, 2034 and 2040. For the baseline years of 2002 and 2008 a different approach was required. The TPO utilized the EPA VMT Converter files to develop these inputs using the previous methodology from the MOBILE6 regional emissions analysis and the actual reported vehicle miles travelled to HPMS for 2002 and 2008.

CDM5.) Average Speed Distribution – this input will be developed for all future years using the KRTM and the PPSUITE post processing tool, which formats the travel model outputs on network speeds into the appropriate MOVES format. Again, a different approach was required for the baseline years 2002 and 2008 since a KRTM network year is not available for those. The TPO staff utilized the EPA "Average Speed Converter MOBILE6.xls" file to process the previous MOBILE6 inputs of "SpeedVMT" into the proper MOVES format for this analysis.

CDM6.) Road Type Distribution – this input provides the distribution of VMT on each road type by source type. This input was developed by UT for 2011 and will be held constant for the future year analyses. The baseline year 2002 and 2008 inputs were provided by the same MOBILE6 VMT converters used for the Vehicle Type VMT inputs described in CDM4 above.

CDM7.) Fuels – this input is provided by TDEC based on EPA guidance to reflect fuels used in the Knoxville Region. MOVES2010b defaults were used for analysis years 2011 and prior and fuel formulations for years 2012 and later were modified to reflect the maximum allowable RVP for each month, in accordance with EPA's guidance on use of MOVES in SIPs and Conformity Determinations.

CDM8.) I/M Programs – this input is not applicable as there are no current I/M Programs in the Knoxville Region.

CDM9.) Fuel Type and Technology – this input was also developed by TDEC and includes information from the local transit fleet for the types of fuels used in their buses.

Chapter 4 – Statement of Conformity

4.0 Introduction

This section of the report covers the conformity requirements for the Knoxville Region under both the 8-Hour Ozone Standard as well as the PM2.5 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 Maintenance Area includes Anderson, Blount, Jefferson, Knox, Loudon, Sevier and the portion of Cocke County within the Great Smoky Mountains National Park. 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. Table 4-1 below shows the results of the MVEB test and demonstrates that projected emissions are lower than the MVEB for all required analysis years.

Table 4-1: MVEB Test for 1997 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year		
	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	25.19	25.19	25.19
Projected Emissions	17.25 ✓	15.03✓	16.82 ✓

Oxides of Nitrogen (NOx):	2024	2034	2040
MVEB (1997 8-Hour for year 2024)	36.32	36.32	36.32
Projected Emissions	25.10 ✓	21.64✓	28.25✓

(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 4-2, which again indicate that projected emissions are less than the allowable amounts:

Table 4-2: Analysis Year 2015 Qualitative Test for 1997 Ozone Standard

	Analysis Year 2015	
Volatile Organic Compounds (VOC):	**Knox County (2014 1-Hour MVEB)**	**Other Counties* (2002 Baseline Year Emissions)**
Maximum Allowable Emissions	22.12	13.25
Projected Emissions	11.44 ✓	13.16 ✓

Oxides of Nitrogen (NOx):	**Knox County (2014 1-Hour MVEB)**	**Other Counties* (2002 Baseline Year Emissions)**
Maximum Allowable Emissions	31.71	34.44
Projected Emissions	24.69 ✓	22.58 ✓

(emissions in tons per day)

*Note "Other Counties" include Anderson, Blount, Jefferson, Loudon, Sevier and a partial area of Cocke County. The Maximum Allowable Emissions represent the 2002 Baseline Year emissions from only the three counties of Anderson, Blount and Loudon, which were used since data was readily available for the 2002 analysis year from the PM2.5 baseline emissions tests. The assumption is made that since the 2015 emissions from the larger area are less than those three counties then they would definitely be less than the 2002 emissions from the entire 5+ region of "other counties".

4.1.1 Summary of 1997 8-Hour Standard Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the Knoxville Regional Long Range Mobility Plan 2040, the LAMPTO 2040 Long Range Transportation Plan as well as the KRTPO and LAMTPO FY 2014-2017 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.

4.2 Statement of Conformity – 2008 Ozone Standard

The nonattainment designation for the 2008 Ozone Standard became effective on July 20, 2012 and included the counties of Blount, Knox and the portion of Anderson County surrounding the TVA Bull Run Fossil Plant (2000 Census Tracts 202 and 213.02) and since there have not yet been budgets approved in a State Implementation Plan for this standard the conformity analysis must rely on existing budgets developed for the 1997 Ozone Standard as described above.

The emissions analysis for years 2024 and beyond is identical to the MVEB test shown in Table 4-1 above with the exception that only the emissions from the 2008 Ozone Non-attainment Area are used to compare against the MVEB. Conformity for an analysis year prior to 2024 is demonstrated by combining the emissions from the 2008 Ozone Nonattainment counties (Anderson-partial area, Blount, and Knox) and comparing that against the 2014 Knox County 1-hour Ozone MVEB shown in Table 4-2. Table 4-3 summarizes the MVEB test against the 1997 8-hour Ozone MVEB and Table 4-4 summarizes the 2015 analysis year emissions test:

Table 4-3: MVEB Test for 2008 Ozone Standard

	Analysis Year		
Volatile Organic Compounds (VOC):	**2024**	**2034**	**2040**
MVEB (1997 8-Hour for year 2024)	25.19	25.19	25.19
Projected Emissions	11.00 ✓	9.65✓	10.58 ✓

Oxides of Nitrogen (NOx):	**2024**	**2034**	**2040**
MVEB (1997 8-Hour for year 2024)	36.32	36.32	36.32
Projected Emissions	15.94 ✓	13.89 ✓	17.11✓

(emissions in tons per day)

Table 4-4: Analysis Year 2015 MVEB Test for 2008 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year 2015 Anderson, Blount, Knox Counties
MVEB (Knox County 1-Hour Budget, year 2014)	22.12
Projected Emissions	15.95✓

Oxides of Nitrogen (NOx):	Anderson, Blount, Knox Counties
MVEB (Knox County 1-Hour Budget, year 2014)	31.71
Projected Emissions	30.52 ✓

(emissions in tons per day)

4.2.1 Summary of 2008 8-Hour Standard Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the Knoxville Regional Long Range Mobility Plan 2040, the LAMPTO 2040 Long Range Transportation Plan as well as the KRTPO and LAMTPO FY 2014-2017 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.

4.3 Statement of Conformity – 1997 Annual PM2.5 Standard

The PM2.5 Nonattainment Area includes Anderson, Blount, Knox, Loudon, and a portion of Roane County surrounding the TVA Kingston Fossil Plant (2000 Census Block Group 47-145-0307-2). The PM2.5 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 PM2.5 Standard became effective on April 5, 2005 and the designation as a nonattainment area for the Daily PM2.5 Standard became effective on December 14, 2009.

The Annual PM2.5 conformity analysis consists of a “Less than Baseline Year 2002” Test for the annual PM2.5-related emissions from on-road mobile sources resulting from components such

as brake and tire wear and vehicle exhaust known as “Direct PM2.5” and “Oxides of Nitrogen” (NOx) which can act as precursors to PM2.5 formation. The results of the emissions analysis are summarized in Table 4-5:

Table 4-5: Less than Baseline Year 2002 Test for Annual PM2.5 Standard

Direct Particulate Matter 2.5:	Analysis Year			
	2015	2024	2034	2040
2002 Baseline Year Emissions	908.0	908.0	908.0	908.0
Projected Emissions	408.0✓	234.7✓	239.3 ✓	285.1 ✓

Oxides of Nitrogen (NOx):	2015	2024	2034	2040
2002 Baseline Year Emissions	34,175.4	34,175.4	34,175.4	34,175.4
Projected Emissions	12,420.4✓	6,653.7 ✓	5,795.9✓	7,457.1✓

(emissions in tons per year)

4.3.1 Summary of 1997 Annual PM2.5 Standard Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the Knoxville Regional Long Range Mobility Plan 2040 and the KRTPOFY 2014-2017 TIP demonstrate conformity for the 1997 Annual PM2.5 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.

4.4 Statement of Conformity – 2006 Daily PM2.5 Standard

The Daily PM2.5 conformity analysis consists of a “Less than Baseline Year 2008” Test since an MVEB is not yet available specifically for the Daily PM2.5 Standard. The results of the emissions analysis are summarized in Table 4-6:

Table 4-6: Less than Baseline Year 2008 Test for Daily PM2.5

Direct Particulate Matter 2.5:	Analysis Year			
	2015	2024	2034	2040
2008 Baseline Year Emissions	1.6	1.6	1.6	1.6
Projected Emissions	1.1 ✓	0.6 ✓	0.7 ✓	0.8 ✓

Oxides of Nitrogen (NOx):	2015	2024	2034	2040
2008 Baseline Year Emissions	58.5	58.5	58.5	58.5
Projected Emissions	34.0 ✓	18.2 ✓	15.9 ✓	20.4 ✓

(emissions in tons per day)

4.4.1 Summary of 2006 Daily PM2.5 Standard Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the Knoxville Regional Long Range Mobility Plan 2040and the KRTPO FY 2014-2017 TIP demonstrate conformity for the 2006 Daily PM2.5 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.

Chapter 5 – Interagency Consultation

5.0 Introduction

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

5.1 Participating Agencies

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

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

A list of participant names is included in Appendix C.

5.2 Overview of Consultation Process

The conformity analysis process began with a presentation of a “pre-analysis consensus plan” for the conformity determination to the Interagency Consultation Group on December 17, 2014. There were subsequent meetings were held via teleconference in order to discuss various assumptions and to review drafts of the emissions analysis and documentation. Appendix C contains the minutes of each of the interagency meetings as well as comments and responses to the draft Conformity Determination Report.

Chapter 6 – Conclusion and Summary of Comments Received

6.0 Conclusion

The analysis included in this report has demonstrated that the Knoxville Regional Long Range Mobility Plan 2040 and accompanying FY 2014-2017 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 all pollutants after the year 2034 (see Figure 6-1 below).

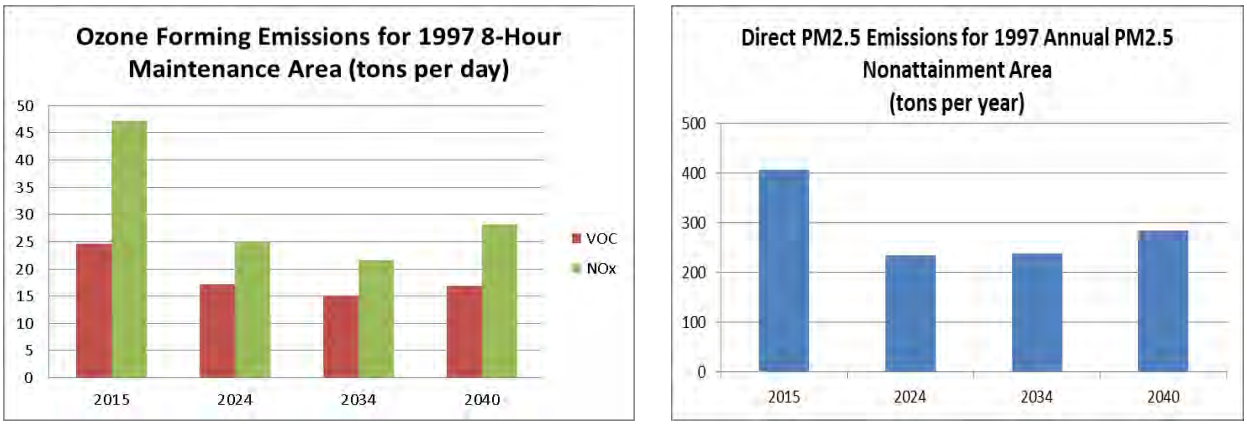


Figure 6-1: Emissions Trends for Life of KRMP

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 MOVES 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.

6.1 Transportation Control Measures

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.

6.2 Public Involvement Summary

The Knoxville Regional TPO and Lakeway Area MTPO conducted a 30-day comment period between February 9, 2015 and March 10, 2015 to allow for public review and comment on the proposed Plan amendments and a 14-day comment period between February 25, 2015 and March 10, 2015 for the accompanying 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 both held on March 10, 2015. The Lakeway MTPO held a formal public hearing on March 11, 2015 at the Morristown City Center Building.

Copies of the Conformity Determination Report were 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).

6.3 Public Comment and Response

No public comments were received.

Appendix A – Emissions Summaries by County

A.1 Emissions for the 1997 8-Hour Ozone Standard Analysis

Table A-1 – Volatile Organic Compounds (VOC) emissions summary (tons per day) by county for 1997 8-Hour Ozone Standard

	VOC Emissions (tons per day)				
	Analysis Year				
	2002	2015	2024	2034	2040
Anderson	4.19	2.50	1.58	1.21	1.33
Blount	6.06	3.95	2.91	2.38	2.62
Cocke (partial)		0.01	0.01	0.01	0.01
Jefferson		1.87	1.30	1.04	1.21
Knox		11.44	7.75	7.00	7.69
Loudon	2.99	1.47	1.11	1.00	1.21
Sevier		3.35	2.60	2.38	2.75
Total	**13.25**	**24.60**	**17.25**	**15.03**	**16.82**

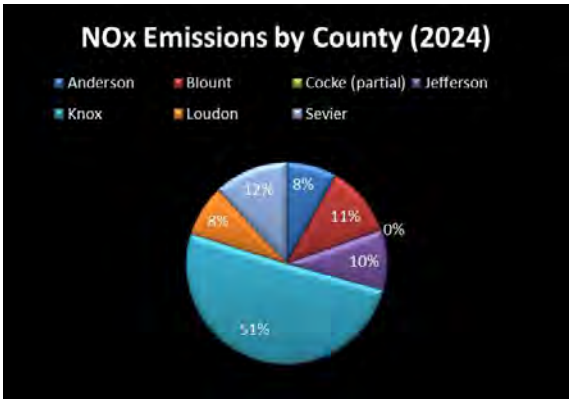
Total w/o Knox County for 2015 Qualitative Analysis	**13.25**	**13.16**

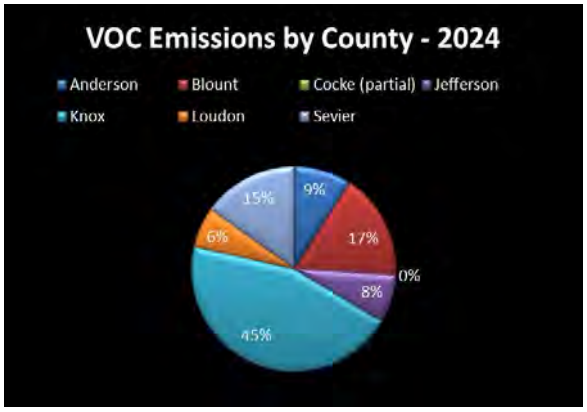
Table A-2 – Oxides of Nitrogen (NOx) emissions summary (tons per day) by county for 1997 8-Hour Ozone Standard

	NOx Emissions (tons per day)				
	Analysis Year				
	2002	2015	2024	2034	2040
Anderson	11.23	3.94	2.05	1.65	2.29
Blount	10.38	5.02	2.85	2.32	2.76
Cocke (partial)		0.04	0.02	0.01	0.01
Jefferson		4.54	2.43	2.03	3.06
Knox		24.69	12.68	11.28	14.04
Loudon	12.82	3.73	2.06	1.82	2.81
Sevier		5.32	3.01	2.52	3.27
Total	**34.44**	**47.28**	**25.10**	**21.64**	**28.25**

Total w/o Knox County for 2015 Qualitative Analysis	**34.44**	**22.58**

Figure A-1 – Charts showing 2024 emissions breakdown by county contribution





A.2 Emissions for the 2008 8-Hour Ozone Standard Analysis

Table A-3 – Volatile Organic Compounds (VOC) emissions summary (tons per day) by county for 2008 8-Hour Ozone Standard

	VOC Emissions (tons per day)			
	Analysis Year			
	2015	2024	2034	2040
Anderson (partial)	0.56	0.34	0.26	0.27
Blount	3.95	2.91	2.38	2.62
Knox	11.44	7.75	7.00	7.69
Total	**15.95**	**11.00**	**9.65**	**10.58**

Table A-4 – Oxides of Nitrogen (NOx) emissions summary (tons per day) by county for 2008 8-Hour Ozone Standard

	NOx Emissions (tons per day)			
	Analysis Year			
	2015	2024	2034	2040
Anderson (partial)	0.81	0.41	0.29	0.31
Blount	5.02	2.85	2.32	2.76
Knox	24.69	12.68	11.28	14.04
Total	**30.52**	**15.94**	**13.89**	**17.11**

A.3 Emissions for the 1997 Annual PM2.5 and 2006 Daily PM2.5 Standards

Table A-5 – Year 2002 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2002 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	2,972.8	89.2	1.4	0.9	91.5
2	2,770.8	76.5	1.3	0.9	78.7
3	3,110.7	78.3	1.6	1.0	80.9
4	2,885.6	67.9	1.5	1.0	70.4
5	2,794.3	67.5	1.6	1.0	70.1
6	2,664.0	65.3	1.6	1.0	67.9
7	2,702.3	67.4	1.6	1.0	70.0
8	2,703.6	66.9	1.6	1.0	69.5
9	2,600.6	63.7	1.5	1.0	66.2
10	2,950.6	72.5	1.6	1.0	75.1
11	2,938.3	74.3	1.5	1.0	76.8
12	3,081.8	88.3	1.5	1.0	90.8
Annual Total (tons/year)	**34,175.4**	**877.8**	**18.4**	**11.9**	**908.0**
Average Daily (tons/day)	**93.6**	**2.405**	**0.050**	**0.033**	**2.5**

Table A-6 – Year 2008 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2008 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	1,853.8	56.6	1.4	0.9	59.0
2	1,723.8	48.7	1.4	0.8	50.9
3	1,930.8	50.1	1.6	1.0	52.7
4	1,801.0	43.8	1.6	1.0	46.3
5	1,763.8	43.6	1.6	1.0	46.3
6	1,664.0	42.2	1.6	1.0	44.8
7	1,699.2	43.5	1.6	1.0	46.2
8	1,700.2	43.2	1.6	1.0	45.9
9	1,634.9	41.3	1.5	1.0	43.8
10	1,842.9	46.7	1.6	1.0	49.3
11	1,825.0	47.6	1.5	0.9	50.0
12	1,917.3	56.1	1.5	0.9	58.6
Annual Total (tons/year)	**21,356.9**	**563.5**	**18.6**	**11.6**	**593.7**
Average Daily (tons/day)	**58.5**	**1.544**	**0.051**	**0.032**	**1.6**

Table A-7 – Year 2015 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2015 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	1,079.3	37.8	3.5	1.2	42.5
2	994.7	31.8	3.3	1.1	36.2
3	1,107.4	31.4	3.8	1.3	36.5
4	1,046.8	26.3	3.7	1.3	31.3
5	1,010.9	25.8	3.9	1.3	31.0
6	983.9	24.6	3.8	1.3	29.8
7	1,006.6	25.4	3.9	1.4	30.7
8	1,007.9	25.3	3.9	1.4	30.6
9	955.7	24.3	3.7	1.3	29.3
10	1,068.9	28.4	3.9	1.3	33.6
11	1,046.5	29.8	3.6	1.3	34.7
12	1,111.7	36.9	3.7	1.3	41.8
Annual Total (tons/year)	12,420.4	347.7	44.8	15.5	408.0
Average Daily (tons/day)	34.0	0.953	0.123	0.042	1.1

Table A-8 – Year 2024 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2024 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	592.8	22.5	3.6	1.4	27.4
2	544.7	17.9	3.4	1.3	22.6
3	599.8	16.0	4.0	1.5	21.5
4	559.3	11.9	3.9	1.5	17.3
5	538.2	11.0	4.0	1.5	16.6
6	514.8	10.2	4.0	1.5	15.7
7	525.5	10.5	4.1	1.5	16.2
8	526.4	10.5	4.1	1.5	16.1
9	504.9	10.3	3.9	1.4	15.6
10	573.1	13.3	4.0	1.5	18.9
11	566.5	15.2	3.8	1.4	20.4
12	607.7	21.2	3.8	1.4	26.4
Annual Total (tons/year)	6,653.7	170.5	46.6	17.5	234.7
Average Daily (tons/day)	18.2	0.467	0.128	0.048	0.6

Table A-9 – Year 2034 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2034 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	523.1	22.2	4.5	1.6	28.3
2	481.2	17.6	4.2	1.5	23.3
3	526.8	15.4	4.9	1.8	22.1
4	486.5	11.0	4.8	1.7	17.5
5	467.6	9.9	5.0	1.8	16.7
6	442.2	9.1	4.9	1.8	15.8
7	450.4	9.4	5.1	1.8	16.3
8	451.2	9.3	5.1	1.8	16.2
9	435.2	9.2	4.8	1.7	15.7
10	499.4	12.5	5.0	1.8	19.2
11	496.7	14.5	4.7	1.7	20.9
12	535.6	20.9	4.7	1.7	27.3
Annual Total (tons/year)	5,795.9	161.0	57.7	20.6	239.3
Average Daily (tons/day)	15.9	0.441	0.158	0.056	0.7

Table A-10 – Year 2040 MOVES Emissions Outputs for PM2.5 Nonattainment Area by Month

Knoxville PM2.5 Area Regional MOVES Outputs - 2040 PM2.5 Analysis (tons)

	MOVES Pollutant ID/ Pollutant Name				
	3	110	116	117	
	NOx	Primary PM2.5	Brakewear	Tirewear	Total PM2.5
Month	----- tons/year -----				
1	671.4	24.7	5.9	1.9	32.6
2	619.5	19.7	5.6	1.8	27.1
3	681.0	17.5	6.5	2.1	26.1
4	630.4	12.7	6.4	2.0	21.2
5	602.8	11.7	6.7	2.1	20.4
6	565.2	10.8	6.5	2.1	19.4
7	574.6	11.1	6.8	2.1	20.0
8	575.3	11.0	6.7	2.1	19.9
9	559.2	10.9	6.3	2.0	19.2
10	646.1	14.4	6.6	2.1	23.1
11	641.9	16.5	6.2	2.0	24.7
12	689.8	23.3	6.2	2.0	31.6
Annual Total (tons/year)	7,457.1	184.2	76.6	24.3	285.1
Average Daily (tons/day)	20.4	0.505	0.210	0.067	0.8

Table A-11 –MOVES Emissions Outputs for Annual Direct PM2.5 Emissions by County

	Direct PM2.5 Emissions (tons per year)					
	Analysis Year					
	2002	2008	2015	2024	2034	2040
Anderson	100.9	60.4	37.7	21.5	21.3	27.4
Blount	81.6	64.6	51.1	34.5	36.8	42.5
Knox	579.5	375.3	277.0	156.1	159.2	183.2
Loudon	140.0	89.0	40.7	21.8	21.3	31.3
Roane (partial)	6.0	4.4	1.4	0.8	0.7	0.8
Total	**908.0**	**593.7**	**407.9**	**234.7**	**239.3**	**285.2**

Table A-12 –MOVES Emissions Outputs for Annual NOx Emissions by County

	NOx Emissions (tons per year)					
	Analysis Year					
	2002	2008	2015	2024	2034	2040
Anderson	3867.5	2266.4	1339.1	701.8	567.6	789.0
Blount	3544.3	2507.3	1634.4	942.9	767.7	912.6
Knox	21760.0	13528.8	7999.3	4201.7	3740.6	4647.0
Loudon	4805.9	2919.7	1394.8	779.0	697.9	1085.7
Roane (partial)	197.6	134.7	52.9	28.3	22.2	22.7
Total	**34175.3**	**21356.9**	**12420.5**	**6653.7**	**5796.0**	**7457.0**

Appendix B – MOVES2010b Input Development Documentation

B.1 Background

There was significant effort required to develop inputs for use in the MOVES2010b model as this regional emissions analysis represents the first time using this new model for transportation conformity purposes by the Knoxville Regional TPO. The MOVES2010b model requires several locality-specific input parameters as described in more detail in the remainder of this appendix, however where local data is not available oftentimes default values are available. Generally, the EPA requires the use of local data whenever possible as it will better represent the characteristics of the area being modeled.

Although this is the first conformity determination using MOVES2010b it is not the first emissions analysis performed using this model for the Knoxville Region. The Tennessee Department of Environment and Conservation (TDEC) has developed a redesignation request for the 2008 Ozone NAAQS, which began with the use of MOVES2010b and transitioned to MOVES2014 when that version became available. Therefore, this regional emissions analysis borrows several input parameters from that effort and generally follows the same methodologies for how inputs were derived.

Both TDEC and the Knoxville TPO have relied heavily on MOVES inputs developed for a base year of 2011 by the researchers with the Department of Civil & Environmental Engineering at the University of Tennessee, Knoxville (U.T.) under contract with the Tennessee Department of Transportation. The most critical dataset that was obtained and analyzed by U.T. was the motor vehicle registration data for the year 2011 that was obtained from the Tennessee Department of Revenue. This data provides information to develop two of the key inputs for MOVES which are the vehicle age distribution and source type population. Documentation of U.T.'s methodology is available in a separate document titled "Methodology for Developing Input Datasets for the MOVES Model".

B.1 MOVES Runspec Parameters

B.1.1 Ozone Analyses

As described in Chapter 3 of this report, a MOVES run begins with setting the parameters for the analysis through developing a run specification or "runspec". The options chosen for the ozone analyses that were performed for both the 1997 and 2008 8-hour Standards are as follows, with the PM2.5 runspecs shown in the subsequent section:

- Scale: County level scale – Inventory mode
- Time Span: year (2002, 2015, 2024, 2034, 2040 and 2040), by hour, for a for July weekday, all hours
- Geographic bounds: 2008 Analysis - Blount, Knox, Anderson (partial) Counties
  1997 Analysis – Anderson, Blount, Jefferson, Knox, Loudon, Sevier, Cocke (partial) Counties
- Vehicles/Equipment: Gasoline, ethanol (E85) and diesel fuels, all valid vehicle combinations
- Road type: All
- Pollutants and Processes: NOx and VOC and all other required supporting prerequisite pollutants. Unchecked the "Refueling Displacement Vapor Loss" and "Refueling Spillage Loss" to exclude refueling emissions as these emissions are captured in the Area source emissions inventory
- Output options:
  General:
  Units: grams, joules, miles;
  Activity: Distance Traveled, Population
  Output Emissions Detail:
  On road: Road Type, Source Use Type

B.1.2 PM2.5 Analyses

- Scale: County level scale – Inventory mode
- Time Span: year (2002, 2008, 2015, 2024, 2034, 2040 and 2040), by hour, for all months and both weekdays and weekends
- Geographic bounds: Anderson, Blount, Knox, Loudon, Roane (partial) Counties
- Vehicles/Equipment: Gasoline, ethanol (E85) and diesel fuels, all valid vehicle combinations
- Road type: All
- Pollutants and Processes: NOx, Primary Exhaust PM2.5 Total and all other required prerequisite PM2.5 emissions, Primary PM2.5 – Brakewear, Primary PM2.5 - Tirewear
- Output options:
  General:
  Units: grams, joules, miles;
  Activity: Distance Traveled, Population
  Output Emissions Detail:
  On road: Road Type, Source Use Type

B.2 MOVES County Data Manager Input Data Sources

Due to the size and the complexity of the MOVES input and output files, they are being provided electronically to the IAC review members and available upon request. Some of the smaller datasets, or parts of datasets for illustration, are included in this document and general descriptions of how each were derived are provided as well.

B.2.1 Meteorology

The meteorology inputs were developed by TDEC and input files provided to the TPO as described below:

Ozone:

Meteorology defined in a relevant SIP for which a MVEB is being used should be incorporated into the relevant analysis. For ozone the Knox County 1-hour meteorological data for Knox County should be used for the relevant analysis using the budget established for this NAAQS.

For the other counties where a MVEB for the 1997 8-hour ozone maintenance plan was established (a budget was established for 2024), and is being used for the conformity analysis for years 2024 and later, the meteorology used to define the budget should be used.

The meteorology inputs used for the 1-hour ozone MVEB and the 8-hour ozone MVEB in the 1997 8-hour ozone maintenance plan are the same (min/max 66/96; relative humidity 75). Thus for the ozone analyses, the same meteorological inputs can be used. These will need to be converted by using the appropriate EPA Mobile6 to MOVES converter.

PM2.5:

For the PM2.5 meteorological data, since the base year test for the daily and annual NAAQS have different base years, and since there is no SIP with a MVEB establishing meteorology yet, we are proposing to use the data from the recent 2008 8-hour ozone maintenance plan (meteorology was gathered for 2009-2011) to represent the base and future years for PM2.5. This data set includes meteorology representing an entire year, by month. This is actual, annual data average for three years to reduce the influence of any specific year which might have been a meteorologically extreme year.

B.2.2 Source Type Population

Source type (i.e., vehicle type) population is used by MOVES to calculate start and evaporative emissions. In MOVES, start and resting evaporative emissions are related to the population of vehicles in an area. Since vehicle type population directly determines start and evaporative emission, users must develop local data for this input. MOVES classifies vehicles based on the way vehicles are classified in the Federal Highway Administration's HPMS (Highway

Performance Monitoring System) rather than on the way they are classified in the EPA's emissions regulations. MOVES categorizes vehicles into 13 source types, which are subsets of 6 HPMS vehicle types.

As noted previously, the data for this input was obtained from U.T. which developed county level estimates of source type population for all 95 counties in Tennessee for the year 2011. Source type population projections for future years were based on growth in household vehicle ownership derived from the Knoxville Regional TPO's Travel Demand Model (TDM). The TDM has a vehicle ownership sub-model that allocates vehicle ownership based on population. The vehicle ownership is used in helping the TDM determine vehicle mode choice and vehicle activity. As people population increases, the TDM adjusts the vehicle ownership in accordance with population growth. The change in passenger vehicle population is used to grow motorcycle, passenger car and passenger truck (source types 11, 21 and 31) populations derived from vehicle registration data. Source type population for the remaining source types was grown using employment growth projections from the travel demand model.

Since there are three partial counties included within the nonattainment/maintenance areas for the Knoxville Region, special attention was paid to those areas to develop the sub-area source type populations for the specific affected areas. The partial county analyses affected the following areas:

- Cocke County – Partial Area included in the 1997 8-hour Ozone Maintenance area covering the portion of Cocke County within the Great Smoky Mountains National Park, which corresponds to 2010 Census Tract 47029980100.
- Anderson County – Partial Area included in the 2008 8-hour Ozone Nonattainment Areas covering the portion of Anderson County surrounding the TVA Bull Run Fossil Plant, which corresponds to Anderson County 2000 Census Tracts 202 and 213.02.
- Roane County – Partial Area included in the 1997 Annual and 2006 Daily PM2.5 Nonattainment Areas covering the portion of Roane County surrounding the TVA Kingston Fossil Plant, which corresponds to 2000 Census Block Group 471450307002

In order to develop the partial area source type populations, the 2010 Census data was reviewed to determine the percentage of both population and household vehicle ownership for the partial areas versus the entirety of each county. This review demonstrated that generally both people population and vehicle population percentages were relatively consistent so the most conservative values were chosen. A value of 21% was used for the Anderson County partial area and a value of 1.3% was chosen for the Roane County partial area.

It was determined that an alternate procedure was needed for Cocke County since the 2010 Census shows a population of only 4 people within this area. This is somewhat to be expected since the partial area is comprised of National Park boundary and the only likely residents would be perhaps Park Service personnel. There is however a campground within the partial area, known as Cosby Campground that should be accounted for. The campground contains 165 spaces so a conservative estimate that all spaces were occupied was used to develop the source type population input. Another assumption made was that the only vehicle types

present would be source types 21 (Passenger Car), 31 (Passenger Truck) and 54 (Motorhome). The 165 vehicles were broken down by assigning 65 to Motorhome and the remaining 100 vehicles were split proportionally based on the 2011 Cocke County source type population received from U.T. This value was set for 2011 and a growth rate corresponding to VMT growth used for the Cocke County partial area of 3% per year was applied to grow the population to year 2040. Table B-1 below shows the projected growth rates of source type population for all counties in the study area:

Table B-1 – Source Type Population Growth by County 2011 - 2040

	Vehicle Type	MOVES sourceType ID	Source Type Population 2011	Yearly Growth Rate (%)[a]	Source Type Population 2015	Yearly Growth Rate (%)[a]	Source Type Population 2024	Yearly Growth Rate (%)[a]	Source Type Population 2034	Yearly Growth Rate (%)[a]	Source Type Population 2040
Anderson County (partial)	Motorcycle	11	694	0.24	701	0.63	751	0.78	819	0.78	851
	Passenger Car	21	6,945	0.24	7,012	0.63	7,514	0.78	8,191	0.78	8,516
	Passenger Truck	31	8,009	0.24	8,086	0.63	8,665	0.78	9,446	0.78	9,821
	Light Commercial Truck	32	536	1.32	564	1.39	633	1.43	712	1.45	761
	Intercity Bus	41	15	1.32	16	1.39	18	1.43	20	1.45	21
	Transit Bus	42	-	1.32	-	1.39	-	1.43	-	1.45	-
	School Bus	43	21	1.32	22	1.39	25	1.43	28	1.45	30
	Refuse Truck	51	2	1.32	2	1.39	2	1.43	3	1.45	3
	Single Unit Short-haul Truck	52	111	1.32	117	1.39	131	1.43	148	1.45	158
	Single Unit Long-haul Truck	53	34	1.32	36	1.39	40	1.43	45	1.45	48
	Motor Home	54	60	1.32	63	1.39	71	1.43	80	1.45	85
	Combination Short-haul Truck	61	106	1.32	112	1.39	125	1.43	141	1.45	151
	Combination Long-haul Truck	62	130	1.32	137	1.39	153	1.43	173	1.45	185
			16,663		**16,868**		**18,128**		**19,806**		**20,630**
Anderson County (whole)	Motorcycle	11	3,303	0.24	3335	0.63	3,574	0.78	3,896	0.78	4,050
	Passenger Car	21	33,070	0.24	33387	0.63	35,778	0.78	39,003	0.78	40,550
	Passenger Truck	31	38,139	0.24	38505	0.63	41,263	0.78	44,981	0.78	46,766
	Light Commercial Truck	32	2,552	1.32	2687	1.39	3,013	1.43	3,391	1.45	3,625
	Intercity Bus	41	70	1.32	74	1.39	83	1.43	94	1.45	100
	Transit Bus	42	-	1.32	0	1.39	-	1.43	-	1.45	-
	School Bus	43	100	1.32	105	1.39	118	1.43	133	1.45	142
	Refuse Truck	51	10	1.32	11	1.39	12	1.43	13	1.45	14
	Single Unit Short-haul Truck	52	528	1.32	556	1.39	623	1.43	702	1.45	750
	Single Unit Long-haul Truck	53	164	1.32	172	1.39	193	1.43	217	1.45	232
	Motor Home	54	287	1.32	302	1.39	339	1.43	381	1.45	408
	Combination Short-haul Truck	61	505	1.32	532	1.39	596	1.43	671	1.45	718
	Combination Long-haul Truck	62	619	1.32	651	1.39	730	1.43	822	1.45	879
			79,347		**80,317**		**86,322**		**94,304**		**98,234**
Blount County	Motorcycle	11	5,657	1.48	5,992	2.21	7,282	2.26	8,598	2.3	9,430
	Passenger Car	21	58,614	1.48	62,084	2.21	75,454	2.26	89,082	2.3	97,710
	Passenger Truck	31	66,826	1.48	70,782	2.21	86,025	2.26	101,562	2.3	111,399
	Light Commercial Truck	32	4,471	1.21	4,687	1.26	5,203	1.35	5,859	1.41	6,299
	Intercity Bus	41	59	1.21	62	1.26	69	1.35	77	1.41	83
	Transit Bus	42	-	1.21	-	1.26	-	1.35	-	1.41	-
	School Bus	43	188	1.21	197	1.26	219	1.35	246	1.41	265
	Refuse Truck	51	44	1.21	46	1.26	51	1.35	58	1.41	62
	Single Unit Short-haul Truck	52	902	1.21	946	1.26	1,050	1.35	1,182	1.41	1,271
	Single Unit Long-haul Truck	53	191	1.21	200	1.26	222	1.35	250	1.41	269
	Motor Home	54	334	1.21	350	1.26	389	1.35	438	1.41	471
	Combination Short-haul Truck	61	384	1.21	403	1.26	447	1.35	503	1.41	541
	Combination Long-haul Truck	62	470	1.21	493	1.26	547	1.35	616	1.41	662
			138,140		**146,242**		**176,958**		**208,471**		**228,462**
Cocke County (partial)	Motorcycle	11	-		-		-		-		-
	Passenger Car	21	42	3	47	3	58	3	86	3	140
	Passenger Truck	31	58	3	65	3	80	3	118	3	192
	Light Commercial Truck	32	-		-		-		-		-
	Intercity Bus	41	-		-		-		-		-
	Transit Bus	42	-		-		-		-		-
	School Bus	43	-		-		-		-		-
	Refuse Truck	51	-		-		-		-		-
	Single Unit Short-haul Truck	52	-		-		-		-		-
	Single Unit Long-haul Truck	53	-		-		-		-		-
	Motor Home	54	65	3	73	3	90	3	133	3	217
	Combination Short-haul Truck	61	-		-		-		-		-
	Combination Long-haul Truck	62	-		-		-		-		-
			165		**185**		**228**		**337**		**549**

Table B-1 – Continued

Jefferson County	Motorcycle	11	1,934	1.09	2,018	1.96	2,427	2.12	2,877	2.03	3,073
	Passenger Car	21	19,900	1.09	20,768	1.96	24,971	2.12	29,603	2.03	31,615
	Passenger Truck	31	25,737	1.09	26,859	1.96	32,295	2.12	38,286	2.03	40,888
	Light Commercial Truck	32	1,954	1.04	2,035	1.08	2,228	1.25	2,516	1.29	2,685
	Intercity Bus	41	113	1.04	117	1.08	128	1.25	145	1.29	155
	Transit Bus	42	-	1.04	-	1.08	-	1.25	-	1.29	-
	School Bus	43	83	1.04	86	1.08	95	1.25	107	1.29	114
	Refuse Truck	51	13	1.04	14	1.08	15	1.25	17	1.29	18
	Single Unit Short-haul Truck	52	413	1.04	430	1.08	471	1.25	532	1.29	568
	Single Unit Long-haul Truck	53	208	1.04	217	1.08	237	1.25	268	1.29	286
	Motor Home	54	365	1.04	381	1.08	417	1.25	471	1.29	502
	Combination Short-haul Truck	61	834	1.04	868	1.08	951	1.25	1,073	1.29	1,146
	Combination Long-haul Truck	62	1,021	1.04	1,063	1.08	1,164	1.25	1,314	1.29	1,403
			52,575		**54,856**		**65,399**		**77,209**		**82,453**
Knox County	Motorcycle	11	10,738	0.99	11,163	2.01	13,544	2.21	16,196	2.16	17,464
	Passenger Car	21	174,194	0.99	181,092	2.01	219,711	2.21	262,737	2.16	283,309
	Passenger Truck	31	177,717	0.99	184,755	2.01	224,154	2.21	268,051	2.16	289,039
	Light Commercial Truck	32	11,891	1.64	12,671	1.68	14,488	1.73	16,622	1.75	17,926
	Intercity Bus	41	445	1.64	474	1.68	542	1.73	622	1.75	671
	Transit Bus	42	217	1.64	231	1.68	264	1.73	303	1.75	327
	School Bus	43	426	1.64	454	1.68	519	1.73	596	1.75	642
	Refuse Truck	51	105	1.64	112	1.68	128	1.73	147	1.75	158
	Single Unit Short-haul Truck	52	2,605	1.64	2,776	1.68	3,174	1.73	3,642	1.75	3,927
	Single Unit Long-haul Truck	53	1,013	1.64	1,079	1.68	1,234	1.73	1,416	1.75	1,527
	Motor Home	54	1,778	1.64	1,895	1.68	2,166	1.73	2,485	1.75	2,680
	Combination Short-haul Truck	61	3,221	1.64	3,432	1.68	3,924	1.73	4,503	1.75	4,856
	Combination Long-haul Truck	62	3,941	1.64	4,200	1.68	4,802	1.73	5,509	1.75	5,941
			388,291		**404,334**		**488,650**		**582,829**		**628,467**
Loudon County	Motorcycle	11	2,299	1.49	2,436	2.58	3,070	2.85	3,806	2.91	4,239
	Passenger Car	21	20,907	1.49	22,153	2.58	27,919	2.85	34,612	2.91	38,550
	Passenger Truck	31	26,147	1.49	27,705	2.58	34,916	2.85	43,286	2.91	48,212
	Light Commercial Truck	32	1,749	1.53	1,857	1.6	2,113	1.87	2,502	1.98	2,754
	Intercity Bus	41	107	1.53	113	1.6	129	1.87	153	1.98	168
	Transit Bus	42	-	1.53	-	1.6	-	1.87	-	1.98	-
	School Bus	43	57	1.53	60	1.6	69	1.87	82	1.98	90
	Refuse Truck	51	11	1.53	12	1.6	13	1.87	16	1.98	17
	Single Unit Short-haul Truck	52	503	1.53	534	1.6	608	1.87	719	1.98	792
	Single Unit Long-haul Truck	53	200	1.53	212	1.6	241	1.87	286	1.98	315
	Motor Home	54	350	1.53	372	1.6	423	1.87	501	1.98	551
	Combination Short-haul Truck	61	781	1.53	829	1.6	943	1.87	1,117	1.98	1,229
	Combination Long-haul Truck	62	954	1.53	1,013	1.6	1,153	1.87	1,365	1.98	1,502
			54,065		**57,296**		**71,597**		**88,445**		**98,419**
Roane County (partial)	Motorcycle	11	74	0.42	75	1.23	86	1.37	97	1.39	104
	Passenger Car	21	762	0.42	775	1.23	884	1.37	1002	1.39	1069
	Passenger Truck	31	869	0.42	884	1.23	1008	1.37	1143	1.39	1219
	Light Commercial Truck	32	58	1.15	61	1.18	67	1.29	75	1.32	80
	Intercity Bus	41	1	1.15	1	1.18	1	1.29	1	1.32	1
	Transit Bus	42	0	1.15	0	1.18	0	1.29	0	1.32	0
	School Bus	43	2	1.15	2	1.18	2	1.29	3	1.32	3
	Refuse Truck	51	1	1.15	1	1.18	1	1.29	1	1.32	1
	Single Unit Short-haul Truck	52	12	1.15	13	1.18	14	1.29	16	1.32	17
	Single Unit Long-haul Truck	53	2	1.15	2	1.18	2	1.29	3	1.32	3
	Motor Home	54	4	1.15	4	1.18	5	1.29	5	1.32	6
	Combination Short-haul Truck	61	5	1.15	5	1.18	6	1.29	6	1.32	7
	Combination Long-haul Truck	62	6	1.15	6	1.18	7	1.29	8	1.32	8
			1,796		**1,829**		**2,083**		**2,360**		**2,518**
Sevier County	Motorcycle	11	3,635	2.1	3,940	3.96	5,506	4.46	7,364	4.58	8,463
	Passenger Car	21	35,928	2.1	38,946	3.96	54,424	4.46	72,783	4.58	83,648
	Passenger Truck	31	51,665	2.1	56,005	3.96	78,262	4.46	104,662	4.58	120,286
	Light Commercial Truck	32	3,922	2.09	4,250	2.18	5,034	2.29	5,988	2.35	6,595
	Intercity Bus	41	70	2.09	76	2.18	90	2.29	107	2.35	118
	Transit Bus	42	-	2.09	-	2.18	-	2.29	-	2.35	-
	School Bus	43	146	2.09	158	2.18	187	2.29	223	2.35	245
	Refuse Truck	51	23	2.09	25	2.18	30	2.29	36	2.35	39
	Single Unit Short-haul Truck	52	609	2.09	660	2.18	782	2.29	930	2.35	1,024
	Single Unit Long-haul Truck	53	211	2.09	229	2.18	271	2.29	322	2.35	355
	Motor Home	54	371	2.09	402	2.18	476	2.29	566	2.35	623
	Combination Short-haul Truck	61	449	2.09	487	2.18	576	2.29	685	2.35	755
	Combination Long-haul Truck	62	549	2.09	595	2.18	705	2.29	839	2.35	924
			97,579		**105,773**		**146,343**		**194,505**		**223,075**

A separate process was needed to develop the "historical" source type populations for the years 2002 and 2008 needed for the PM2.5 baseline year analyses.

The general procedure is described as follows with additional details provided for each step below:

1.) Develop MOVES2010b runspec to obtain default vehicle populations and vehicle miles of travel (VMT). This is done by setting MOVES with a "National" modeling domain and "County" as the geographic selection type. The runspec was set up to report results for the entire year (all months and day types selected) for each county for both analysis years of 2002 and 2008. The raw results are included in the first tab of the spreadsheet titled "PM Historical Baseline Year ST Pop.xls".

2.) Use modified spreadsheet developed by U.T. titled "ST POP Default Calcs from UT Process.xls" and input the MOVES default vehicle populations and VMT from Step 1 along with actual HPMS VMT data for each county/analysis year in order to obtain the estimated Source Type Population for the vehicle types that are not available from the registration data, which are source types 41, 53, 54, 61 and 62.

3.) The "default" Source Type Population for source types 41, 53, 54, 61 and 62 are pasted directly into tab 3 (Calculations) of the Excel file "PM Historical Baseline Year ST Pop.xls". The remaining Source Types were developed using the ratios of MOVES default population to VMT which were multiplied by the actual VMT and then a final ratio was applied consisting of the 2011 Actual vehicle population (as obtained from the vehicle registration data) to the 2011 MOVES default vehicle population.

4.) Since the Roane County portion of the nonattainment area only includes a small partial area consisting of a Census Block Group surrounding the TVA Kingston Fossil Plant, a percentage of the total county vehicle population is applied. The 2010 census population of the partial area was compared to the 2010 Roane County total population as well as the ratio of estimated number of vehicles obtained from the TPO's travel demand model. The results are included in tab 2 of the Excel file "PM Historical Baseline Year ST Pop.xls". Both results are similar in the amount of 1.1% and 1.3% for percentage of partial area people population and vehicle population respectively. The 1.3% value was chosen to be applied to the county-level source type population as it is the slightly more conservative of the two.

5.) In reviewing the results of this procedure, particularly for the 2008 estimated Source Type Populations there were some issues affecting the results that required further adjustment. This overall procedure is subjected to some anomalies in terms of changes in VMT over time most likely as a result of the economic recession and high fuel prices in the latter period between 2002 and 2011. For example, the actual HPMS VMT shows much lower growth between 2002

and 2008 than the amount projected by the MOVES default. In addition, the MOVES defaults exhibit negative growth for both source type population and VMT between 2008 and 2011, which does not seem realistic for the Knoxville Region. It is TPO staff's assumption that the decline in VMT that may have resulted during the recession is most likely due to people driving less rather than due to a reduction in the overall vehicle fleet.

Finally, in order to "smooth" the results of this procedure and provide somewhat more reasonable appearing values for the 2008 Source Type Populations, an alternate method was utilized of a linear interpolation between the 2002 populations and the 2011 populations for the "non-default" source types. Table B-2 below shows the baseline year 2002 and 2008 source type populations developed using this method:

Table B-2 – Source Type Population for 2002 and 2008 Baseline Years

ANDERSON COUNTY

yearID	sourceTypeID	sourceTypePopulation
2002	11	1,804
2002	21	35,433
2002	31	29,616
2002	32	1,982
2002	41	56
2002	42	0
2002	43	72
2002	51	11
2002	52	436
2002	53	102
2002	54	273
2002	61	498
2002	62	445

yearID	sourceTypeID	sourceTypePopulation
2008	11	2,803
2008	21	33,858
2008	31	35,298
2008	32	2,362
2008	41	67
2008	42	0
2008	43	91
2008	51	10
2008	52	497
2008	53	142
2008	54	273
2008	61	477
2008	62	545

BLOUNT COUNTY

yearID	sourceTypeID	sourceTypePopulation
2002	11	2,807
2002	21	57,065
2002	31	47,150
2002	32	3,155
2002	41	43
2002	42	0
2002	43	123
2002	51	45
2002	52	677
2002	53	107
2002	54	285
2002	61	341
2002	62	305

yearID	sourceTypeID	sourceTypePopulation
2008	11	4,707
2008	21	58,098
2008	31	60,267
2008	32	4,032
2008	41	56
2008	42	0
2008	43	166
2008	51	44
2008	52	827
2008	53	164
2008	54	314
2008	61	359
2008	62	410

KNOX COUNTY

yearID	sourceTypeID	sourceTypePopulation
2002	11	5,864
2002	21	186,644
2002	31	138,003
2002	32	9,234
2002	41	336
2002	42	174
2002	43	307
2002	51	119
2002	52	2,152
2002	53	601
2002	54	1,601
2002	61	3,006
2002	62	2,687

yearID	sourceTypeID	sourceTypePopulation
2008	11	9,208
2008	21	181,347
2008	31	166,699
2008	32	11,154
2008	41	412
2008	42	200
2008	43	391
2008	51	112
2008	52	2,489
2008	53	868
2008	54	1,664
2008	61	2,999
2008	62	3,421

LOUDON COUNTY

yearID	sourceTypeID	sourceTypePopulation
2002	11	1,256
2002	21	22,401
2002	31	20,303
2002	32	1,359
2002	41	80
2002	42	0
2002	43	41
2002	51	12
2002	52	415
2002	53	117
2002	54	311
2002	61	742
2002	62	664

yearID	sourceTypeID	sourceTypePopulation
2008	11	1,990
2008	21	22,102
2008	31	24,830
2008	32	1,661
2008	41	100
2008	42	0
2008	43	53
2008	51	12
2008	52	487
2008	53	172
2008	54	329
2008	61	750
2008	62	856

ROANE COUNTY (PARTIAL)

yearID	sourceTypeID	sourceTypePopulation
2002	11	16
2002	21	291
2002	31	264
2002	32	18
2002	41	1
2002	42	0
2002	43	1
2002	51	0
2002	52	5
2002	53	2
2002	54	4
2002	61	10
2002	62	9

yearID	sourceTypeID	sourceTypePopulation
2008	11	21
2008	21	309
2008	31	340
2008	32	23
2008	41	1
2008	42	0
2008	43	1
2008	51	0
2008	52	4
2008	53	2
2008	54	3
2008	61	7
2008	62	8

B.2.3 Age Distribution

The EPA strongly recommends the use of local specific data for vehicle age distribution as it can vary greatly for various areas based on a number of factors. This input is important because of the fact that older vehicles generally exhibit higher emissions than newer vehicles due to fewer controls required to meet newer emissions standards and deterioration of other emissions control systems components. The Age Distribution inputs for this regional emissions analysis were obtained from U.T. as developed based on year 2011 motor vehicle registration data for each county, which were used for all analysis years of 2015 and beyond. It was determined through IAC consultation that for the baseline years 2002 and 2008 that prior data should be used, of which an age distribution dataset was available from around year 2000 that had been formatted for use with the MOBILE6 model. The EPA converter spreadsheet to convert MOBILE6 age distribution to MOVES age distribution input was used to obtain the necessary input file for the 2002 and 2008 analysis years.

B.2.4 Vehicle Type Vehicle Miles Traveled (VMT)

MOVES defines roadways into five different functional types: Off-Network, Rural Restricted Access, Rural Unrestricted Access, Urban Restricted Access and Urban Unrestricted Access. The TPO's Travel Demand Model uses a different roadway classification system, however it is easily converted to the MOVES road types as the Restricted categories involve roadways with no direct access such as Interstates and the Unrestricted road type includes all other types of roadways. The Vehicle Miles Traveled (VMT) from the TDM were then aggregated into the respective MOVES road types

The Knoxville Regional TPO's TDM predicts average weekday traffic volumes for all arterials and collectors and some major local roads in the 10-county modeling region. The model's roadway network covers over 7,500 lane miles in total over an area of 3,725 square miles represented by 1,186 traffic analysis zones. The current version of the model also predicts the Knoxville Area Transit (KAT) average weekday system ridership and the number of average weekday bicycle and pedestrian trips within the region. All current nonattainment/maintenance area counties are included in the TDM with the exception of the Cocke County partial 8-hour ozone maintenance area.

The methodology used to grow VMT to the future analysis years was to compare the base year 2011 VMT developed from actual traffic count data and reported by the Tennessee Department of Transportation for the federal Highway Performance Monitoring System (HPMS) to the travel demand model VMT. Correction factors for the model volume were developed and then subsequently applied to the growth rates exhibited for each future network year of the travel demand model based on changes in population and proposed transportation projects included in the Long Range Transportation Plan.

The travel demand model forecasts VMT growth for four different vehicle types of: Passenger Vehicles, Four-Tire Commercial Vehicles, Single-Unit Trucks and Multi-Unit Trucks. Growth factors for each vehicle type were applied to the base year data separately. Spreadsheets were used for each analysis year and county. Figure B-1 below shows an example VMT growth calculator spreadsheet used to develop the 2040 VMT for Knox County.

Figure B-1 – Example VMT Growth Calculator Spreadsheet for 2040 Knox County VMT

Knox County

HPMS Vtype Year 2011 (Original From UT):

CountyID	HPMSVtypeID	yearID	HPMSBaseYearVMT
47093	10	2011	56,392,087
47093	20	2011	3,705,819,739
47093	30	2011	1,094,042,408
47093	40	2011	24,117,344
47093	50	2011	126,144,788
47093	60	2011	367,240,664

2011 TDM VMT	Passenger Vehicles	4 Tire Comm Veh	SU	MU	Total
	10,793,070	168,049	282,852	628,926	11,872,898

2040 TDM VMT	Passenger Vehicles	4 Tire Comm Veh	SU	MU	Total
	16078810.58	252327.9158	445771.4067	1231021.851	18,007,932

Others Growth (applied to 10, 20, 30)	SU Growth (applied to 40, 50)	MU Growth (applied to 60)
48.99%	57.60%	95.73%

Note: Others = Model types Passenger Veh + 4 Tire Comm Veh

HPMS Vtype Year 2040 Calculated from Model Growth Rate applied to Base Year 2011:

CountyID	HPMSVtypeID	yearID	HPMSBaseYearVMT
47093	10	2040	84,019,431
47093	20	2040	5,521,357,335
47093	30	2040	1,630,030,465
47093	40	2040	38,008,595
47093	50	2040	198,802,412
47093	60	2040	718,814,501

In order to more simply document the projected growth in VMT for each analysis year covered in this conformity determination, the following table (Table B-3) depicts only the total county-level Daily VMT for each analysis year.

Table B-3 – Growth in Average Annual Daily Vehicle Miles of Travel (AADVMT) by County

	Average Annual Daily Vehicle Miles Travelled (AADVMT)			
	Analysis Year			
	2015	2024	2034	2040
Anderson (whole)	2,226,421	2,582,759	2,958,899	3,317,867
Anderson (partial)	558,792	671,105	764,931	825,736
Blount	3,178,691	3,965,584	4,678,730	5,204,921
Cocke (partial)	24,837	30,482	36,753	40,516
Jefferson	2,326,022	2,760,012	3,199,687	3,794,010
Knox	15,882,745	17,738,596	20,460,523	22,441,186
Loudon	2,254,503	2,717,727	3,171,619	3,666,629
Roane (partial)	89,203	105,049	116,327	122,065
Sevier	3,671,779	4,478,591	5,296,199	5,884,594
Total	**30,212,993**	**35,049,905**	**40,683,668**	**45,297,522**

EPA's MOVES model uses fractions to parse out monthly, daily, and hourly VMT. These fractions are often locally developed to represent local conditions as much as possible. The report developed by the University of Tennessee (UT) for TDOT discusses the development of month and day VMT fractions. These fractions were developed from historical 5-year average HPMS data. These fractions for July were used to adjust annual average weekday VMT to July average weekday VMT. Hourly VMT fractions by road type were developed by the Knoxville Regional TPO. These fractions are calculated from the TDM and a separate post-processing software platform known as "PPSUITE". The post-processer is required in order to disaggregate the TDM traffic volume outputs from three time periods (AM, PM and rest of day) into individual hourly volumes for each of the twenty-four hours in a day. The hourly volumes are developed primarily by pattern matching based on the MOVES defaults for VMT by hour, which vary by road type (urban and rural) but not source type. The PPSUITE software uses the four vehicle types from the TDM (passenger vehicles, four-tire commercial vehicles, single-unit trucks and multi-unit trucks) to generate hourly VMT fractions for the different source types that are associated with those categories. In addition, special hourly distributions were applied to source types 42 and 43 (transit bus and school bus) to reflect the unique operating characteristics of these vehicles; for example, school buses basically only operate during school beginning and dismissal periods. It should be noted that TDM/PPSUITE outputs were not available for the two historical years required for the PM2.5 "Less than Baseline Year" tests and therefore the hourly VMT fractions for those years were developed using the EPA MOBILE6 converter spreadsheets with the default hour fractions, which is consistent with previous conformity determinations.

B.2.5 Average Speed Distribution

Average speed distribution is the speed of each source type by road type for each hour of the day. MOVES uses 16 speed bins to group source type speed fractions. These fractions represent the amount of time a source type spends traveling at that speed on a particular road type. Note, these fractions represent the time spent in these speed bins; these fractions do not reflect instantaneous speeds, but the average speed, including delays like congestion and traffic signals. Average speed distribution for the Knoxville Nonattainment Area is developed by the TPO's TDM along with the aforementioned PPSUITE post-processer. Similar to the hourly VMT fractions, there is a need for post processing of the raw TDM outputs for average speeds on roadway links primarily for the disaggregate level of detail needed for MOVES inputs. Speed is a direct function of several roadway characteristics and the amount of congestion that is present. The PPSUITE software develops separate 24-hour traffic volumes for each direction of travel on every roadway link in the model network and determines the average speed based on the amount of congestion (link volume-to-capacity ratio) and other characteristics, such as presence of traffic signals. The same speeds were assumed for all vehicle types. The speeds change between over the course of the analysis years in this conformity analysis. The difference accounts for increased congestion and the impact of any changes to the transportation network such as road widening or new roadway construction projects.

B.2.6 Road Type Distribution

Road type distribution is the distribution of VMT on each roadtype by sourcetype. Road type distribution data was provided by TDOT for the base year 2011. Road type distribution was held constant between the base and future year analyses. The historical year 2002 and 2008 road type distribution is based on inputs obtained by inputting MOBILE6 inputs developed for previous conformity determinations for the years 2002 and 2008 through the EPA converter spreadsheet "vmt-converter-road-veh16-20100209.xls". The off-network road type represents areas where start and idling activity occur. No VMT is assigned to this road type.

B.2.7 Ramp Fractions

Ramp fractions are the fraction of VHT (vehicle hours traveled) spent on urban and rural restricted access ramps. This data is generated by the TPO's TDM.

B.2.8 Fueltype and Technologies

Data for this input was developed and provided by TDEC. A copy of the methodology is provided as follows:

Fuel Type and Technology was formerly called Alternative Vehicle Fuels & Technology (AVFT). This data is now entered in the County Data Manager in MOVES 2010b. This input allows users to define the split between different fuel types, including gasoline, diesel and CNG (compressed natural gas) for each vehicle type and model year.

EPA's guidance recommends the use of local data where available. Default information can be used where no local information is available. The default information for transit buses

(sourceType 42) includes CNG buses as part of the fleet mix. In most areas of Tennessee there are no transit buses fueled with CNG. Therefore, at a minimum, these buses should be allocated to diesel fuel.

Local information for the Knoxville Area Transit (KAT) fleet was obtained by the Knoxville Regional TPO. This information included bus size, fuel type, model year and number of miles driven in the last year. This data was examined for use in developing local fuelEngFraction fractions. Table B-4 illustrates the data developed into MOVES fuelEngFraction format. The last column, fuelEngFraction, contains the fraction of miles driven for each model year by fuel type (1 = gasoline, 2 = diesel). Note, the KAT fleet does not have any model year 2006 or 2010 buses or vans (sourceType 42 is defined by EPA as passenger vehicles with a capacity of 15 or more persons primarily used for transport within cities).

Table B-4. Local fuelEngFraction From KAT Data.

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2002	1	1	0
42	2003	1	1	0
42	2004	1	1	0
42	2005	1	1	0
42	2007	1	1	1
42	2008	1	1	0
42	2009	1	1	0
42	2011	1	1	0.389721741
42	2012	1	1	0.623587602
42	2013	1	1	0
42	2002	2	1	1
42	2003	2	1	1
42	2004	2	1	1
42	2005	2	1	1
42	2007	2	1	0
42	2008	2	1	1
42	2009	2	1	1
42	2011	2	1	0.610278259
42	2012	2	1	0.376412398
42	2013	2	1	1

Some model year vehicles in the KAT fleet are comprised strictly of gas or diesel powered vehicles. Only a couple model years have both gas and diesel vehicles. EPA states in their Technical Guidance2: “In making projections, users should assume no future changes in activity associated with alternate fuel or engine technologies unless those alternate fuels or technologies are required by regulation or law. This necessitates the assumption that all future-year analyses will need to have the same distribution. After examining the distribution of gasoline and diesel transit buses and their VMT in the last year, a more homogenized approach was considered. The VMT were used to develop overall fractions based on fuel type (Table B-5).

Table B-5. Overall KAT Fleet Statistics.

	VMT	Fraction
Gasoline:	712,109	0.25798
Diesel:	2,048,262	0.74202
Total:	2,760,371	1

Using the total fraction of VMT attributable to gasoline vehicles versus diesel vehicles homogenizes the distribution of VMT across all model years while still maintaining the contribution from both diesel vehicles and gasoline vehicles to the overall vehicle miles traveled (approximately 26 percent gasoline and 74 percent diesel) by the transit fleet. This approach is more appropriate for the application of future-year analysis since the specific model year makeup in the future is unknown.

Applying the revised values for the transit bus fleet results in the values contained below in Table B-6. Note fuelTypeID 3 is CNG. These values are set to zero since there are no CNG buses in the KAT fleet. For any future year these same fractions would be applied.

Table B-6. Revised AVFT Values for sourceType 42.

sourceTypeID	modelYearID	fuelTypeID	engTechID	fuelEngFraction
42	2002	1	1	0.25797583
42	2003	1	1	0.25797583
42	2004	1	1	0.25797583
42	2005	1	1	0.25797583
42	2006	1	1	0.25797583
42	2007	1	1	0.25797583
42	2008	1	1	0.25797583
42	2009	1	1	0.25797583
42	2010	1	1	0.25797583
42	2011	1	1	0.25797583
42	2012	1	1	0.25797583
42	2013	1	1	0.25797583
42	2002	2	1	0.74202417
42	2003	2	1	0.74202417
42	2004	2	1	0.74202417
42	2005	2	1	0.74202417
42	2006	2	1	0.74202417
42	2007	2	1	0.74202417
42	2008	2	1	0.74202417
42	2009	2	1	0.74202417
42	2010	2	1	0.74202417
42	2011	2	1	0.74202417
42	2012	2	1	0.74202417
42	2013	2	1	0.74202417
42	2002	3	1	0
42	2003	3	1	0
42	2004	3	1	0
42	2005	3	1	0
42	2006	3	1	0
42	2007	3	1	0
42	2008	3	1	0
42	2009	3	1	0
42	2010	3	1	0
42	2011	3	1	0
42	2012	3	1	0
42	2013	3	1	0

B.2.9 Fuel

The fuel input was also developed and provided by TDEC based on EPA guidance. Essentially the fuels inputs reflect the maximum regulatory RVP levels by month for Tennessee. In addition, since EPA anticipates (based on the 2012 fuel formulations and supply information in MOVES) that essentially all gasoline sold in Tennessee in 2012 and later will contain at least nine percent ethanol, an additional 1.0 PSI waiver applies to the RVP values. Therefore, the RVP values developed are 1.0 PSI above the listed regulatory maximum as allowed by the 1.0 PSI waiver. Additionally, the fuels input provided by TDEC to the TPO includes the appropriate "fuel region" for Knoxville. For the historical baseline year analyses of 2002 and 2008, the MOVES default fuels were used as exported from the County Data Manager for each analysis county.

B.2.10 I/M Programs

Not applicable to the Knoxville Region

Appendix C – Interagency Consultation

C.1 Interagency Consultation Participants

Table C-1 shows the current participants in the Knoxville Interagency Consultation process

Table C-1 Knoxville IAC 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
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	Scott Allen, 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 Myers, Environmental Scientist

Agency	Representative(s)
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

C.2 Interagency Consultation Meeting Minutes

The following meeting minutes were applicable to this transportation conformity determination:

C.2.1 Meeting minutes for IAC Conference Call on 12/17/14

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 12/17/14

Call Participants:

Mike Conger, TPO
Kelly Sheckler, EPA
Dianna Myers, EPA
Amanetta Somerville, EPA
Marc Corrigan, TDEC
Angie Midgett, TDOT
Rich DesGroseillers, LAMTPO
Jim Renfro, NPS

Discussion Items:

1.) Discussion of Draft Pre-Analysis Consensus Plan for Regional Emissions Analysis

Mike reviewed the document that was sent previously to the IAC and summarized the major aspects contained in the sections therein, with the following items having discussion:

Background – Mike noted that the need for this revised regional emissions analysis arose primarily from the inability to continue processing plan amendments through a "short conformity report" process, but the TPO would also be reviewing all projects in the current plans to account for any other amendments to projects as necessary at one single time. Angie Midgett asked if the TDOT Programming office had been consulted for any necessary project amendments that may be on the radar. Mike replied that they were notified of this effort a few weeks ago however it would be good to follow-up and check again with them.

Latest Emissions Model – Mike stated that the TPO would be proposing to use the MOVES2010b platform for this effort primarily due to its compatibility with the PPSUITE travel demand model post processing tool. Angie asked whether the consultant that developed PPSUITE had provided information on when it would be updated to be compatible with MOVES2014. Mike replied that he had not heard a time frame on that but would check with them soon on that.

Emissions Tests – Mike reviewed the proposed emissions tests that would be used. Kelly Sheckler brought up the possibility of new Motor Vehicle Emissions Budgets becoming available as part of the 2008 Ozone Redesignation Request that had been forwarded to EPA by TDEC recently. She noted that if those new MVEBs were going through the adequacy determination process and were made effective prior to this conformity determination being approved by U.S. DOT then the new MVEBs would have to be used instead of the older ones that were being proposed in the pre-analysis consensus plan. Mike replied that an earlier discussion had been held between the TPO, TDEC and EPA that Kelly had been unable to attend where the timing of the new MVEB approval had been discussed. The conclusion from that discussion was that TDEC and the TPO would not ask EPA for an adequacy finding on the MVEBs in advance of the full Redesignation Request approval which was targeted for the middle of 2015. Mike noted that the primary reason for this decision was to bring more certainty to the process and not be caught in a situation where the TPO was waiting for MVEBs to be deemed effective that might be delayed for some unforeseen circumstance. Marc Corrigan confirmed the results of the prior discussion and that the position at this time was to not pursue any type of early adequacy finding for the MVEBs. Dianna Myers stated that she would follow up with Lynorae Benjamin who is the EPA staff person handling the processing of the Redesignation request to confirm the timing of MVEB establishment in relation to this conformity effort.

Update: prior to the end of the conference call Dianna received an email reply from Lynorae stating that the current target was to have the Redesignation request and associated MVEBs approved in the April 2015 time frame. There was some discussion regarding whether the approval meant that the MVEBs would actually become effective at that point or if it would have to go through further comment period and posting in the Federal Register. Dianna said she thought it would be 30 to 60 days after the approval before the MVEBs would be effective but she would double check on that.

MOVES Inputs and Runspec Development – Mike briefly reviewed the requirements for setting up a MOVES run and general parameters that were planned to be used for the regional emissions analysis. He noted that additional technical details would be provided with the full conformity report but there were a few specific inputs that he wanted to consult with the IAC on regarding appropriate assumptions. The first input that was discussed was Meteorology and specifically what should be used for the PM2.5 analysis since there were no parameters established in a SIP yet to follow. Mike noted that he provided a document outlining met data input proposals for ozone and PM2.5 along with the IAC call reminder email the previous day

that was put together by Marc Corrigan. Marc summarized the proposal saying that the process was straightforward for Ozone with the previously established SIP inputs, but that in lieu of established inputs for PM2.5 that the proposed approach was to use the met data averaged over the period from 2009 to 2011 that was developed for the Ozone Redesignation request. Kelly asked for clarification regarding the use of inputs developed for an Ozone SIP being applied for a PM2.5 emissions analysis. Marc replied that the met data was for the entire year and could apply to both Ozone and PM2.5 depending on the parameters established in the MOVES runspec, e.g. that the Ozone analysis would select the met inputs for the month of July and so on.

The discussion on met data led into further discussion regarding the process and requirements needed to address conformity for the annual versus daily PM2.5 standards. Marc noted that the ability to use the met data hinged to some degree on the ability to use the same analysis for both the daily and annual standards as had been done in the past. Marc also noted that a previous determination had been made regarding the non-seasonality of PM2.5 exceedances in the Knoxville region that was established as part of a prior emissions inventory. Mike stated that the initial assumption being proposed was for a single analysis being able to satisfy conformity for both the Annual and Daily standards, but that he was interested if there was specific guidance on this issue from EPA. Amanetta Somerville stated that EPA staff would have to discuss this issue internally as well as possibly consulting with the EPA MOVES team in Ann Arbor, Michigan for additional guidance. She stated that with the holidays coming up it might take longer to get a response and it would likely not be until the IAC call scheduled for January 14th before final guidance could be provided on this issue.

Mike next discussed options for developing the historical baseline year 2002 and 2008 Source Type Populations, which is the population of motor vehicles by type that are garaged in the area being analyzed. He noted that a 2011 vehicle population was developed based on motor vehicle registration data however it was not possible to obtain historical registration data for the years 2002 and 2008. He stated that one option would be to develop a default population based on guidance from EPA in running the MOVES model to obtain the vehicle miles of travel and population it uses in its national-scale runs for each county and to apply that ratio to the actual observed VMT from the baseline years. He stated the other option would be to use projected growth factors developed for the ozone redesignation request and back cast from 2011 to 2002 and 2008 using those factors. Amanetta Somerville stated that the first option of developing MOVES defaults would be the preferred approach.

Mike discussed the availability of vehicle age distribution data for this analysis. He stated that year 2011 data was recently developed and will be used for any analysis years of 2011 and beyond whereas an alternate source would likely be needed for the two historical baseline years of 2002 and 2008. He noted that previous emissions analyses had relied on age distribution data that was developed for MOBILE6 from around 1999 or 2000. Mike asked EPA if that would be the appropriate input to use and Amanetta replied that the data should be used and run through the MOBILE to MOVES converter spreadsheet.

Mike briefly reviewed the other inputs as they were described in the document. Amanetta asked for additional documentation to be provided on the "Fuels" and "Fuel Type and Technology" inputs. Mike asked if Marc Corrigan could briefly respond since TDEC had developed these inputs as part of prior efforts. Marc stated that the fuels inputs had been developed based on EPA guidance regarding the use of defaults for years 2011 and prior and for years 2012 and

beyond to base the input on the assumption for the regulatory maximum fuel RVP. He noted that the "AVFT" file used in MOVES had been modified to remove the default assumption of CNG vehicles and furthermore specific vehicle fleet characteristics were obtained from the Knoxville Area Transit agency in order to further refine this input based on the relatively small fleet of vehicles that fall under the MOVES Source Type 42 (transit buses). Marc noted that he or Mike could forward the documentation from these previous efforts to the IAC group. Update: Marc sent an email to the IAC subsequent to the call with documentation on the fuels input development.

2.) Discussion of Schedule and next IAC Call

Mike reviewed the proposed schedule for completing the conformity determination that was provided the previous day to the IAC group. He noted that this was a very ambitious schedule being driven in large part by the desire to process a certain TIP amendment as soon as possible, which would be the February 25, 2014 TPO Executive Board meeting. He stated that in order to meet the schedule that a shortened IAC review period would be necessary and he was asking for initial IAC comment on this approach in terms of whether it would be even allowable at this point. Kelly Sheckler stated some concerns she had on the proposed schedule in terms of the fact that the upcoming holidays causing some EPA staff to be unavailable that would need to be consulted on this effort given the new requirements of MOVES. She emphasized the need to establish appropriate inputs for this process since it was essentially setting a precedent for future emissions analyses using MOVES in Knoxville and the schedule may not allow for enough time to ensure appropriate guidance could be obtained. She also noted that the proposed 14-day public comment period seemed to be too short given the amount of new information being developed and presented along with the MOVES emissions analysis that was above and beyond a typical plan amendment. Mike asked Marc Corrigan for further clarification regarding the requirements in the Tennessee Conformity SIP that establishes required IAC and Public review times based on whether it is a "new" plan or plan amendments. Marc stated that he would have to research further after the call to see whether the SIP specifically addressed a required public comment period if an amendment included a new regional emissions analysis was being conducted.

Update: Marc sent an email to the IAC group subsequent to the call stating that after reviewing the conformity SIP that the language only addresses that amendments have a comment period of no less than 14 days. Therefore, that is all that the TPO could essentially be required to conduct however he stated that as Kelly Sheckler pointed out, this is a significant change to the regional emissions analysis and if possible more public comment period would be encouraged to the extent possible beyond 14 days.

Kelly stated that it appeared as though most items on the schedule would need to be pushed back roughly 2 weeks to reasonably allow time and avoid rushing through the important aspects of getting the MOVES inputs right for this analysis. Angie Midgett asked Mike if it might be possible to look into combining the TPO Executive Board with the Technical Committee to adopt this in concurrent meetings on the same day in March. Mike replied that might be an option, as well as possibly changing the date of the Executive Board further up in March from the original time frame they usually meet which is the 4th Wednesday of the month. Mike stated that he would have to further review these options with other staff and develop a revised schedule.

Kelly Sheckler stated that from her end at EPA that she would attempt to expedite as much as possible the time at the end of the process where there are up to 30 days allowed for U.S. DOT to make a conformity finding with input from EPA. It was noted that the TPO would need to also formally request an expedited final review period from both FHWA and FTA and obtain their consent for such to make this work.

Marc Corrigan suggested that a revised schedule be developed and sent to the entire IAC group since there were some members not present on the call today in order to obtain input on any reductions in IAC review time that might be proposed.

The next IAC call was scheduled for **10:00 a.m. ET on Wednesday, January 7th** as suggested by Kelly in order to have at least a brief discussion and check on progress being made.

C.2.2 Meeting minutes for IAC Conference Call on 1/7/14

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 1/7/15

Call Participants:

Mike Conger, TPO
Kelly Sheckler, EPA
Dianna Myers, EPA
Amanetta Somerville, EPA
Richard Monteith, EPA
Angie Midgett, TDOT

Discussion Items:

1.) Discussion of Recent DC Circuit Court Decision to Vacate EPA's Revocation of the 1997 Ozone NAAQS for Transportation Conformity Purposes

Mike began the discussion by asking if there was more information available regarding a recent court decision he became aware of yesterday in an email from Kelly Sheckler at EPA that could have a major impact since it appears to require that areas still do transportation conformity for the 1997 Ozone nonattainment and maintenance areas which had previously been revoked when the 2008 Ozone standard became effective. Kelly stated that there was no clear direction at the moment on the immediate impacts of this decision and that the EPA attorneys were still reviewing the implications and next steps. She noted that prior to any specific guidance that it is basically up to the TPO to determine how it should proceed in terms of whether to include a scenario in the upcoming conformity determination that addresses the old 1997 nonattainment area. Mike replied that he would have to give some thought to the amount of extra workload needed to include that scenario as well as determine the extra coordination that would be required since the old area includes the Lakeway Area MTPO. A link to the case decision is at: NRDC v. EPA, et al.

2.) Discussion of Follow-up items from Previous IAC Call

Mike stated that there were a few brief items to follow up on from our previous conference call as follows:

- Redesignation Request MVEB Adequacy Timing – Mike asked if there had been any further discussion regarding the proposed schedule for EPA finalizing the 2008 Ozone Redesignation Request and Maintenance Plan that would trigger the new motor vehicle emission budgets (MVEB) for use in conformity. Kelly responded that there had not been any updates on this other than EPA was planning to proceed as discussed on the previous call and the MVEB would not be finalized prior to the current schedule that this conformity effort was on. Dianna Myers noted that the budgets would become effective 30 days after the final publication in the Federal Register.

- Demonstration of Conformity for both Annual and Daily PM2.5 Standards – Mike noted that on the previous call a question had been raised regarding the process necessary to satisfy both the daily and annual PM2.5 standards in the emissions analysis in terms of how the MOVES model inputs should be handled and if there was EPA guidance on this issue. Amanetta Somerville replied that she had sent an inquiry to headquarters regarding this but had not heard back yet due to a backlog over the holiday break. She stated that she expected a response by the end of this week and would forward that to the group.

- Discussion of updated Conformity Timeline – Mike stated that an updated timeline had been provided with the minutes from the previous call that showed an adoption date in March and accommodated a slightly shortened IAC review period of 30 days to 28 days and the minimum required 14-day public comment period. Mike noted that the timeline could be modified if determined necessary to perhaps shorten the IAC review period in order to increase the public comment period however he stated that from past experience there had not typically been much if any public comment on air quality conformity determinations and that it would probably make more sense to allot as much time as possible for IAC review in this case. Kelly Sheckler noted that there would need to be agreement from the IAC group on any amount of reduced review time and that she was initially okay with the reduction but she only represents one agency. Mike stated that there would be other opportunities to discuss the schedule with more participants on the line and that the schedule could be modified should significant issues arise that require additional review time.

3.) Schedule Next IAC Call

The next IAC call was scheduled for two weeks from today's date on **Wednesday, January 21, 2015**.

C.2.3 Meeting minutes for IAC Conference Call on 1/21/15

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 1/21/15

Call Participants:

Mike Conger, TPO
Kelly Sheckler, EPA
Dianna Myers, EPA
Amanetta Somerville, EPA
Scott Allen, FHWA TN Division
Marc Corrigan, TDEC
Greg Riggs, TDEC
Angie Midgett, TDOT
Deborah Fleming, TDOT
Jim Ozment, TDOT
Darlene Reiter, TDOT
Steve McDaniel, Knox County Air Quality Mgmt
Brian Rivera, Knox County Air Quality Mgmt
Jim Renfro, GSMNP
Rich DesGrosseillers, LAMTPO

Discussion Items:

1.) Discussion of Recent DC Circuit Court Decision to Vacate EPA's Revocation of the 1997 Ozone NAAQS for Transportation Conformity Purposes

Mike Conger asked if there had been any updates on possible implications of the recent court decision. Kelly Sheckler responded that there was a meeting happening this morning between EPA Headquarters and FHWA Headquarters to discuss this. She stated that until she got official guidance from EPA Headquarters that there was not any detailed information that she would be able to pass along. Marc Corrigan asked for clarification regarding whether the current interpretation of the court decision would be one of assuming that it takes effect immediately. Kelly responded that the action was immediate and as of December 23, 2014 the EPA's revocation of the conformity requirements for the 1997 NAAQS was vacated. She noted that some other possible measures were being looked at such as EPA conducting a complete revocation of the 1997 NAAQS, but it was not clear on the timing of such an action relative to the TPO's current conformity process. Jim Renfro asked if this action had anything to do with the larger 1997 area becoming eligible for additional funding sources such as CMAQ? Mike replied that it was his understanding that the entire 1997 Maintenance Area was still eligible for CMAQ regardless of this action since it strictly pertains to the conformity requirements and not the other factors that go along with being a Maintenance Area. Kelly asked about any issues with coordination with the other MPO included in the 1997 area which is Lakeway. Rich DesGrosseillers indicated that it would not be a problem for the Lakeway Board to meet as necessary to adopt the conformity determination. Marc stated that based on this information that it sounds like the TPO should go ahead and be proactive and try to address both the 1997 and 2008 ozone areas in this conformity determination. Mike agreed and stated the TPO would proceed with doing the analysis for both areas.

2.) Discussion of Long Range Plan Project List Updates

Mike provided background information on the proposed project list changes that would be addressed by the current conformity determination. He stated that the primary source of changes were in looking at projects in the first horizon year of 2015 to make sure they were still on track for completion by the end of this year. He noted that there were a few that are under construction but not due to be completed by the end of this year so that those would be moved out to the next horizon year of 2024. He stated that there were some other changes dealing with project descriptions and termini as well as a few projects that were being dropped from the Long Range Plan. He noted that there is only one new project on the list, which wasn't really new but rather a subset of a previous project showing where a 1 mile segment would be improved by adding a center turn lane. He also noted that since these projects were all previously included in the most recent conformity determination that the exempt and regional significance status had already been determined such that additional discussions on those topics should not be required for this effort.

3.) Discussion of Daily and Annual PM2.5 Conformity Process

Mike added an item to the agenda for discussion of a previous topic regarding the process used to determine appropriate daily emissions for the Daily PM2.5 Standard. Mike noted that he had previously had separate discussions about this with Amanetta Somerville from EPA and that they had discussed developing an annual emissions amount and then dividing that by the number of days in the year to determine the average daily emissions. Amanetta replied that EPA was in agreement with the TPO's proposed methodology for this.

4.) Discussion of Schedule and Next IAC Call

Mike provided an update on the current schedule noting that he was shooting for a draft being ready for IAC review by January 27th. He noted that was ambitious based on the added analysis for the 1997 area and that it might slide by a day or two. He also noted that the schedule required a reduction in the IAC review period from 30 days to 28 days if the draft is provided on the 27th. He asked if there was agreement on the reduction in review period based on there not being major issues brought out. Kelly Sheckler indicated she was in agreement with the reduction. Marc Corrigan asked for clarification whether this request was regarding the IAC review or the final Federal review period. Mike responded that he was talking about the IAC review period right now, however there would also be a request for an expedited Federal review period if possible. Mike noted that Kelly had previously indicated that EPA was receptive to expediting their portion of the review, but he didn't think that Scott Allen with FHWA had previously weighed in on this. Scott stated that there would work with TDOT and TPO on the processing of this approval along the lines of the typical process and look into areas that could be expedited where possible. Mike noted that we could have further discussions about this on future IAC calls as well and nothing needed to be committed to today.

The next IAC call was scheduled for **Friday, February 6, 2015 at 10:00 am ET**

Knoxville Air Quality Interagency Consultation Conference Call
Meeting Minutes for 2/6/15

Call Participants:

Mike Conger, TPO
Kelly Sheckler, EPA
Marc Corrigan, TDEC
Greg Riggs, TDEC
Angie Midgett, TDOT
Deborah Fleming, TDOT
Brian Rivera, Knox County Air Quality Mgmt
Jim Renfro, GSMNP

Discussion Items:

1.) Discussion of Recent DC Circuit Court Decision to Vacate EPA's Revocation of the 1997 Ozone NAAQS for Transportation Conformity Purposes

Mike Conger asked if there had been any updates on possible implications of the recent court decision. Kelly Sheckler responded that there was no official guidance but that the track the TPO was taking by going ahead and addressing the 1997 8-Hour Ozone area was right course of action and covers all the possible bases. It was noted that an effort was underway by EPA to formally revoke the 1997 8-hour NAAQS for all purposes but the timing of that was uncertain in relation to when the TPO would be needing a conformity finding for the current effort.

2.) Overview of Draft Conformity Determination Report

Mike provided an overview of the draft conformity determination report document that was sent to the IAC the previous week. He discussed the types of emissions tests used for the various NAAQS and noted that the TPO was able to demonstrate conformity by estimating that emissions were below the required budgets or baseline year emissions as necessary. Kelly Sheckler stated that the MOVES experts from the EPA Region had reviewed the technical aspects of the model runs used for the emissions modeling using MOVES2010b and that they had provided her with written comments to the effect that it appeared to be in order. Marc Corrigan provided a couple of comments and questions for clarification regarding table headings that Mike noted would be corrected in the next version of the report. Marc stated he would follow up with other editorial comments that he had in a written format and that he was still in the process of reviewing the MOVES data and runs.

3.) Discussion of Schedule

Mike discussed the proposed schedule moving forward and noted that the TPO was still currently on track for adopting the Plan amendments and Conformity Determination at a March 10th Executive Board meeting. He stated that Rich DesGrosseillers from LAMTPO had indicated that they would need to hold their meeting on the following day, March 11th but that extra day should not be an issue. Mike stated that in order to provide the minimum 14-day Public

Comment period that he would need to start that on February 25th and therefore he was asking for IAC comments by February 23rd. He noted that any comments received on the 23rd would need to be fairly minor if they were going to be able to stay on track so he encouraged the IAC to provide any significant comments as soon as possible. There was discussion about the process following adoption of the conformity determination in terms of how soon the FHWA Division could act on the conformity finding and how soon they might request concurrence from EPA. Mike stated that he would follow up with Scott Allen at FHWA since he was unable to attend today's call to talk about the process. It was noted that the timing of this conformity finding needs to occur prior to the final action on the 2008 8-hour Ozone redesignation request since it will set new MVEBs for that standard.

It was determined that there was not a need at the present time to schedule another IAC call prior to the end of the IAC comment period, however if the need arises then one can be scheduled such as if significant comments/issues are raised.

C.3 Responses to Comments from IAC Participants

Comments received from Marc Corrigan, Air Pollution Control Division, Tennessee Department of Environment and Conservation

Mike,

Thanks for sending the revised version of the document, as it saved me some typing, since you address a number of my comments. Below are a few of my other comments:

We need to mention in the CDR that the socio-economic data assumptions still hold: growth, population, transit and transit fares, etc.

Response: There was some discussion of the previous socio-economic data still being relevant in Section 3.1 of the document, but I have added some more info in that section based on this comment.

On page 5, should the section title "1997 Annual PM2.5 Standard" be moved to the bottom of that paragraph since it talks about both the annual and daily PM NAAQS?

Response: I have updated the section titles to clarify which ones cover the Daily and Annual standards appropriately.

The title to table E-6 is confusing. We may need to add more explanation before the table as to how the baseline emissions were determined and how the daily emissions were generated for the years of analysis. What were the 2008 emissions, and how were those generated?

Response: I have corrected the title of this table, it was a copy-paste error from a previous CDR where we were using the MVEB test instead of the Less than Baseline Year Test.

Page 27, regarding the fuels input: The fuels are not the actual fuels used in the Knoxville region, necessarily. We used default fuel supply and formulations data for years 2011 and earlier (which are based on sampling data, to some extent). The fuel formulations were modified to reflect the maximum

allowable RVP for each month, in accordance with EPA's guidance on the use of MOVES in SIPs and Conformity Determinations, for those years 2012 and later.

Response: I have modified the language based on this comment.

Page 30, the Statement of Conformity – 2008 Ozone Standard, consider revising the first sentence to "…and since there have not yet been budgets approved in a State Implementation Plan for this standard…"

Response: I have revised the sentence.

Check the table references in the second paragraph in section 4.2.

Response: I have updated the table references.

Section 4.3.1, the LAMPTO Plan and TIP do not need to conform the 1997 PM NAAQS, do they?

Response: You are correct, this section has been revised accordingly.

Section 4.4.1 may need to be changed to the daily NAAQS. The LAMPTO Plan and TIP do not need to conform the PM NAAQS, do they?

Response: I have changed the title to daily NAAQS and corrected the references to LAMTPO.

Figure 6.1: the right hand graphic: what area is this for?

Response: The graphic has been updated to indicate this represents the 1997 Annual PM2.5 Nonattainment Area.

Figure B-1: the text in pink indicates that the year 2026, while the table below indicates 2040.

Response: The figure was corrected to show the year 2040.

Table B-3: This depicts AADVMT? Not summer day VMT, correct? Does this match up with the annual VMT? The trend is interesting, it seems a linear trend from 2015-2034, then a jump from 2034 to 2040, with about 5 million miles increase between each horizon year. Is this as expected?

Response: Yes, this is AADVMT instead of summer day VMT and represents the annual VMT divided by 365 days. The table heading has been revised to reflect this. I agree that the trend is somewhat different between the out-years of 2034 to 2040 than previous horizon years. It is not easy to deduce the exact reasons for this however, but it does not necessarily seem dramatically different to warrant a detailed investigation at this time especially since the growth rate is higher and therefore somewhat more conservative than if the opposite case were true. I looked at the annual percentage growth rates and they were: 1.78 % from 2015 to 2024, 1.61% from 2024 to 2034 and 1.89% from 2034 to 2040, which do not appear to be a huge amount of variance and are in the same relative ballpark.

Section B.2.4: How were the 2002 and 2008 hourly fractions developed?

Response: The 2002 and 2008 hourly fractions were developed using the EPA converter spreadsheets and are based on MOBILE6 defaults consistent with past conformity determinations. This information was added to Section B.2.4.

Should Table B-6 actually be B-5?

Response: Yes, the table heading was corrected.

Should the table on page 60 be a different number? In the paragraph previous, it is referred to as table 10.

Response: Yes, the table numbers were corrected.

You've done a great job doing all the work to prepare the inputs and conduct the MOVES runs for this analysis!

Marc

Appendix D – Amended Regional Mobility Plan Project List for Conformity Demonstration

D.1 Background

The project list contained in this conformity determination is based on the amendments discussed in Chapter 2 and reflects all roadway projects being programmed in the entire Knoxville Air Quality Maintenance/Nonattainment Region, which includes projects under jurisdiction of the Knoxville TPO, Lakeway MTPO and TDOT for those areas within counties included in one of the ozone or PM2.5 nonattainment/maintenance areas. The purpose of this list is to specifically document the current projected horizon year for each project and to identify each project's air quality conformity exempt/non-exempt status as well as whether it has been determined to be regionally significant. It should be noted that the Knoxville Long Range Regional Mobility Plan identifies separate interim horizon years that were used to better define a project's priority within the required 10 year intervals for conformity purposes, however these are still consistent with the conformity project list.

D.2 List of Projects Completed since the previous Conformity Determination

The following projects were listed as being in an initial horizon year or in the "Existing plus Committed" list in the previous conformity determination and have since been completed and open to traffic by the end of 2014:

Table D-1 Completed Projects

KRMP#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description
09-203	Alcoa	Old Knoxville Hwy (SR 33) Widening	Hunt Rd (SR 335) to 800' past Pellissippi Pkwy (SR 162)	0.71	Widen 2-lane to 4-lane w/ center turn lane or median
09-206	Alcoa	US 129 Bypass (SR 115) at Louisville Rd Intersection Improvements	Intersection with Louisville Rd (SR 334)	0	SB US 129 acceleration lane safety improvements and NB US 129 deceleration lane safety improvements
10-261	Alcoa	Hall Rd (SR 35) at ALCOA South Plant Entrance Intersection Improvements	Intersection with Alcoa South Plant Entrance	0	Construct left turn deceleration lane taper and storage for SB left turning trucks entering the ALCOA South Plant.
09-408	Lenoir City	US 321 (SR 73) Intersection Improvements	I-75 Interchange to Simpson Rd	1.7	Intersection Improvements and addition of left turn lanes identified in Corridor Study
09-600	Farragut	Watt Rd Extension and Old Stage Rd Widening	Old Stage Rd: Johnson's Corner Rd to Town Limits; Watt Rd: Old Stage Rd to Kingston Pk (US 11/70 / SR 1)	0.5	Widen Old Stage Rd, Extend Watt Rd to Old Stage Rd
09-621	Knoxville	I-40/75 Westbound Auxiliary Lane	From Lovell Rd (SR 131) to Pellissippi Pkwy (I-140)	0.97	Add full auxiliary lane westbound

KRMP#	Jurisdiction	Project Name	Termini	Length (mi.)	Project Description
09-622	Knoxville	I-40/75 Weigh Stations Ramp Extension	Eastbound and Westbound Truck Weigh Stations	0	Extend on and off ramps at weigh stations
09-602	Farragut / Knox Co	Outlet Dr	Lovell Rd (SR 131) to Campbell Station Rd	1.6	Construct new 2-lane road w/center turn lane along existing and new alignment
09-324	Jefferson Co	US 411 / US 25W (SR 35) Widening	Grapevine Hollow Rd to 4-lane section of SR 9	3.7	Widen 2-lane to 4-lane
09-325	Jefferson Co	I-40 / I-81 Interchange Safety Improvements	I-40 / I-81 Interchange	0.1	Safety Improvements to increase length of acceleration ramps
09-603	Knox Co	Emory Rd (SR 131) Widening	Clinton Hwy (SR 9) (US 25W) to Gill Rd	2.9	Widen 2-lane to 4-lane w/center turn lane
09-614	Knoxville	Henley St Bridge (US 441 / SR 33/71) Reconstruction	Bridge over Tennessee River	0.4	Rehabilitate bridge & add bike lanes
09-505	Sevier Co	Birds Creek Rd (SR 454) Reconstruction	Glade Rd to SR 416	4.6	Reconstruct 2-lane section
09-506	Sevierville / Sevier Co	SR 66 Widening	North of Nichols St to Boyds Creek Hwy (SR 338)	4.2	Widen 4-lane to 6-lane

D.3 Updated List of all Mobility Plan Projects by Horizon Year

The following project lists (Tables D-2 through D-5) represent the updated Knoxville Regional Mobility Plan based on the project amendments covered by this regional emissions analysis and conformity determination. Table D-6 shows the two projects that have been eliminated. The projects with red text are ones that have had some change made to them from the original Mobility Plan. The last two columns in this table are important for transportation conformity as they indicate (1) whether a project has been determined to be Exempt or Non-Exempt with respect to the requirement to demonstrate conformity, i.e. generally any project affecting roadway capacity will be considered “Non-exempt” and (2) whether a project is Regionally Significant or not. The regional significance of a project can affect whether a regional emissions analysis may be required for the project or a project change as non-regionally significant projects may be able to rely on a previous regional emissions analysis to determine conformity. These cells are color coded as follows:

Blue – Exempt projects (typically will be non-regionally significant)

Pink – Non-Exempt projects that are Regionally Significant

Olive Green – Non-Exempt projects that are Non-Regionally Significant

Table D-2 2015 Horizon Year Projects

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
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	2015	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	2015	Exempt	No
Jefferson County Projects								
09-309	Old AJ Hwy and SR 92 w/Montcastle St	Intersection at Mountcastle St	Jefferson City	0.0	Realign, Add turn lanes and Signalize Intersection	2015	Exempt	No
09-317	US 11E (SR 34)	Intersection w/ George Ave	Jefferson City	0.0	Intersection improvements	2015	Exempt	No
09-318	US 11E (SR 34)	Intersection w/ Russell Ave	Jefferson City	0.0	Intersection improvements	2015	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	2015	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
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…	2015	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.	2015	Exempt	No

Table D-3 2024 Horizon Year 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								
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**	2024	Non-Exempt	No
09-202	Robert C. Jackson Dr Extension	Middlesettlements 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	Morganton 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
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

Table D-3 continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
09-218	**Relocated Alcoa Highway (US 129) (SR 115) New Road Construction**	**From Hall Rd (SR 35)/Alcoa Hwy (SR 115) to Proposed Interchange at Tyson Blvd**	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	Willam 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 Swanee 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)	Swanee 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	**Relocated Alcoa Highway (US 129) (SR 115) New Road Construction**	**From the Proposed Interchange at Tyson Blvd 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	**Relocated Alcoa Highway (US 129) (SR 115) New Road Construction**	**From Pellissippi Pkwy (SR 162) to Existing Alcoa Hwy Near Singleton Station Rd**	Alcoa	1.4	Construct new 8-lane freeway (6 thru lanes plus 2 auxiliary lanes)	2024	Non-Exempt	Yes
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

Table D-3 continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
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
Jefferson County Projects								
09-313	**SR 66 Relocation**	**North of I-81 at SR 341 to SR 160**	**Jefferson County**	**3.1**	**Construct new 4-lane road**	2024	Non-Exempt	Yes
09-302	E. Main St/N. 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
13-305	Jefferson City Pedestrian	Various	Jefferson City	various	Pedestrian Improvements	2024	Exempt	No
13-306	ITS w/Railroad Intersections	Various	Jeffeson 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
13-301	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

Table D-3 continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Loudon County Projects								
13-402	Queener Rd	SR 72 to River Rd	Loudon	0.7	Widen from 15.8' to 26', drainage, reduce curves	2024	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
09-415	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
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
Sevier County Projects								
13-501	**Dumplin Creek Pkwy**	**SR 66 to Bryan Rd**	**Sevierville**	**1.5**	**Construct new 4-lane road**	**2024**	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	Boyds 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)	Boyds 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

Table D-3 continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
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
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								
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**	**2024**	Non-Exempt	Yes
09-604	**Maynardville Hwy (SR 33)**	**Temple Acres Dr to Union County Line**	**Knoxville**	**5.9**	**Widen 2-lane to 4-lane**	**2024**	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 accomodations 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 Sreet. 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

Table D-3 continued

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
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
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
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
09-626d	**Chapman Highway (SR 71) (US 441)**	**Hendron Chapel Rd to Simpson Rd**	**Knox County**	**0.9**	**Add center turn lane**	**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

Table D-3 continued

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 Eastbound and Westbound Auxiliary Lanes**	**Lovell Rd (SR 131) Interchange to Campbell Station Rd Interchange**	**Knoxville**	**1.8**	**Add full auxiliary lane between interchanges eastbound and westbound**	**2024**	Non-Exempt	Yes
Roane County Projects								
09-102	**SR 29**	**Pine Ridge Rd to SR 61**	**Harriman/Roane County**	**0.8**	**Widen 2-lane to 4-lane**	**2024**	Non-Exempt	Yes

Table D-4 2034 Horizon Year Projects

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Blount County Projects								
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
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
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
Jefferson County Projects								
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

Table D-4 Continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Loudon County Projects								
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
Knox County Projects								
09-630	Virtue Road	Boyd Station Rd to Kingston Pike (SR 1) (US 11/70)	Farragut	1.4	Reconstruct 2-lane section	2034	Exempt	No
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

Table D-4 Continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
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
09-667	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

Table D-5 2040 Horizon Year Projects

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Blount County Projects								
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								
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
Knox County Projects								
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
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

Table D-5 continued

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
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

Table D-6 Projects Eliminated from 2040 Regional Mobility Plan

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Loudon County Projects								
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
Knox County Projects								
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