

# 9-22-2022 Draft for Public Review and Comment



Air Quality Conformity Determination Report for the  
Knoxville Regional TPO  
FY 2023-2026 Transportation Improvement Program (TIP)  
and  
Amendments to the Knoxville Regional 2045 Mobility Plan

Also Covering Projects within areas subject to Air Quality Conformity in the  
Knoxville Region as included in:  
the TDOT FY 2023-2026 Statewide Transportation Improvement Program (STIP)  
and  
the Lakeway Area MTPO FY 2023-2026 TIP

Prepared by:  
Knoxville Regional TPO Staff

For additional information contact:  
Mike Conger, Senior Transportation Engineer  
Knoxville Regional TPO  
Email: [Mike.Conger@knoxtpo.org](mailto:Mike.Conger@knoxtpo.org)  
Phone: 865-215-3813



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# Adopting Resolution by Knoxville Regional TPO Executive Board for Mobility Plan 2045 Amendments and Air Quality Conformity Determination

## A RESOLUTION BY THE EXECUTIVE BOARD OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION (TPO) ADOPTING AMENDMENTS TO THE MOBILITY PLAN 2045 & AIR QUALITY CONFORMITY DETERMINATION REPORT

WHEREAS, the Infrastructure Investment and Jobs Act (IIJA) requires that each MPO have a current metropolitan transportation plan; and,

WHEREAS, the guidance for the development of the metropolitan transportation plan, as found in the Final Rule for Metropolitan Transportation Planning and Programming in the Federal Register under section 23 CFR 450.322, was followed and,

WHEREAS, the metropolitan transportation plan must address all modes of transportation in an urban area, have a planning horizon of at least 20 years, and be financially constrained; and,

WHEREAS, the Clean Air Act Amendments of 1990 (CAAA) and the IIJA require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment or maintenance of an air pollution standard; and,

WHEREAS, the Knoxville Region is subject to air quality conformity requirements under the 1997 and 2008 8-Hour Ozone Standards and the 2006 Daily PM<sub>2.5</sub> Standard; and,

WHEREAS, an Air Quality Conformity Determination Report was prepared to demonstrate conformity of the Mobility Plan 2045 as Amended and the accompanying FY 2023-2026 Transportation Improvement Program based on the required emissions tests and using the latest emissions model from the Environmental Protection Agency; and,

WHEREAS, the TPO's public outreach and Interagency Consultation procedures were adhered to with Mobility Plan 2045 and the Air Quality Determination being circulated for public review, presented at more than two open public meetings and coordinated with stakeholder and regulatory agencies through the Interagency Consultation process; and,

WHEREAS, the TPO Technical Committee has recommended the adoption of Amended Mobility Plan 2045; and,

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

That Mobility Plan 2045 as Amended and the Air Quality Conformity Determination Report be adopted as the basis for transportation planning decisions in the areas subject to air quality conformity in the Knoxville Region including the TPO Planning area.

October 26, 2022

Date

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Mayor Terry Frank  
City of Clinton  
TPO Executive Board Chair

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Jeffrey A. Welch, AICP  
TPO Director



# Adopting Resolution by Knoxville Regional TPO Executive Board for FY 2023-2026 Transportation Improvement Program

Pending



# Adopting Resolution by Lakeway Area Metropolitan Transportation Planning Organization 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: 2022-010**

#### **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 Clean Air Act Amendments of 1990 (CAAA) and the Infrastructure Investment and Jobs Act (IIJA) require that transportation plans and programs conform to air quality goals established by the State Implementation Plan (SIP) for regions in nonattainment or maintenance of an air pollution standard; and,

WHEREAS, the Lakeway Area Metropolitan Transportation Planning Organization and the Knoxville TPO are within the same area previously designated nonattainment 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 an updated Air Quality Conformity Determination in conjunction with the new FY 2023-2026 Transportation Improvement Program 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:

\_\_\_\_\_  
Chairman  
LAMTPO Executive Board

\_\_\_\_\_  
October 26, 2022  
Date



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

Pending



# Executive Summary

## Overview and purpose

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The Knoxville Regional Transportation Planning Organization (KRTPO) has conducted a regional emissions analysis to support an air quality conformity demonstration for the regular 3-year update to its Transportation Improvement Program (TIP) covering Fiscal Years 2023 – 2026, i.e. the “FY 2023-2026 TIP”. The conformity determination also covers project amendments being made to the current Metropolitan Long-Range Transportation Plan (LRTP) known as the Mobility Plan 2045 to ensure that the TIP and LRTP are directly consistent with one another in terms of the projects included in each and their scope and timeframe for implementation. The purpose of this report is to document that the updated LRTP and TIP conform to federal regulations from the latest surface transportation act known as “Infrastructure Investment and Jobs Act” a.k.a. “Bipartisan Infrastructure Law” and hereinafter referred to as IJJA/BIL 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 is currently designated as a “Maintenance Area” for the 8-Hour Ozone Standard as well as the Particulate Matter 2.5 (PM<sub>2.5</sub>) Daily Standard. 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 transportation 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 subject to transportation conformity requirements based on the designations under three separate NAAQS in the following specific geographic locations:

Maintenance for **2008 8-hour Ozone Standard** – Blount, Knox, and part of Anderson counties

Maintenance for **2006 Daily PM<sub>2.5</sub> Standard** – Anderson, Blount, Knox, Loudon and part of Roane counties

**1997 8-hour Ozone Standard** – Anderson, Blount, Jefferson, Knox, Loudon, Sevier and part of Cocke counties. This standard was revoked by EPA, but transportation conformity remains as an anti-backsliding measure and with fewer requirements that need to be met compared with the above two NAAQS.



Note, the above geographies extend beyond the base planning area boundary of the KRTPO and the intent of this conformity determination is to cover the entirety of the area subject to conformity in coordination with TDOT and the Lakeway Area MTPO. There is a Memorandum of Agreement (MOA) in place for the purpose of defining roles and responsibilities for conducting the required overall regional conformity determination for the affected areas of the Knoxville Region. The Knoxville Regional TPO has been identified as the lead agency for completing all associated analyses and compiling conformity documentation and have coordinated with staff from TDOT and the Lakeway Area MTPO to get information on projects being programmed in their Transportation Improvement Program updates that are all being done simultaneously.

## Emissions Analysis Summary

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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 LRTP and compared against allowable amounts that have been formally set as part of a State Implementation Plan known as "Motor Vehicle Emissions Budgets" (MVEB).

### **2006 DAILY PM<sub>2.5</sub> STANDARD**

The PM<sub>2.5</sub> 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 designation as a nonattainment area under the Annual PM<sub>2.5</sub> Standard became effective on April 5, 2005 and the designation as a nonattainment area for the Daily PM<sub>2.5</sub> Standard became effective on December 14, 2009. The EPA approved a redesignation of the area to Attainment with a Maintenance Plan effective on August 28 and 29, 2017 for the daily and annual standards respectively. The Region is meeting the current (2012) Annual PM<sub>2.5</sub> Standard of 12 µg/m<sup>3</sup> and the 1997 Standard has been revoked by EPA, thereby removing the requirement to demonstrate conformity for the Annual Standard.

The EPA published a notice announcing a finding that the 2014 and 2028 Motor Vehicle Emissions Budgets (MVEB) for Direct PM<sub>2.5</sub> and Oxides of Nitrogen (a PM<sub>2.5</sub> precursor pollutant) included in the Maintenance SIP are adequate for the purposes of transportation conformity in the Federal Register / Vol. 82, No. 46, page 13347 on March 10, 2017. A regional emissions analysis was conducted using inputs consistent with both the SIP and other latest planning assumptions. The computed emissions from on-road mobile sources



compared against the MVEB in the 2006 Daily PM<sub>2.5</sub> Maintenance Area for the analysis years of 2026, 2028 (interpolated), 2035 and 2045 are shown in Table 1.

**Table 1: MVEB Test for 2006 Daily PM<sub>2.5</sub> Standard**

Direct Particulate Matter 2.5:	Analysis Year			
	2026	2028	2035	2045
Motor Vehicle Emissions Budget (MVEB)	1.22	0.67	0.67	0.67
Projected Emissions	0.42 ✓	0.40 ✓	0.34 ✓	0.36 ✓
Oxides of Nitrogen (NO <sub>x</sub> ):	2026	2028	2035	2045
	2026	2028	2035	2045
Motor Vehicle Emissions Budget (MVEB)	42.73	19.65	19.65	19.65
Projected Emissions	12.74 ✓	11.79 ✓	8.45 ✓	8.66 ✓

*Emissions in tons per day*

## 2008 OZONE STANDARD

The nonattainment designation for the 2008 8-hour Ozone Standard became effective on July 20, 2012. A redesignation request to Attainment with a Maintenance Plan was submitted to EPA by the Tennessee Department of Environment and Conservation (TDEC) in November 2014 and approved by EPA on July 13, 2015 with an effective date of August 12, 2015. Therefore, as of August 12, 2015 the Knoxville Region is considered a “Maintenance Area” for the 2008 Ozone Standard.

The EPA published a notice announcing a finding that the 2011 and 2026 Motor Vehicle Emissions Budgets (MVEB) for NO<sub>x</sub> and VOC included in the Maintenance SIP are adequate for the purposes of transportation conformity in the Federal Register / Vol. 80, No. 133, page 39970 on July 13, 2015.

A regional emissions analysis was conducted using inputs consistent with both the SIP and other latest planning assumptions, which are documented in Chapter 3 of this report. The computed emissions from on-road mobile sources compared against the MVEB in the 2008 Ozone Maintenance Area for the analysis years of 2026, 2035 and 2045 are shown in Table 2.



Table 2: MVEB Test for 2008 Ozone Standard

	Analysis Year		
Volatile Organic Compounds (VOC):	2026	2035	2045
Motor Vehicle Emissions Budget (MVEB)	10.49	10.49	10.49
Projected Emissions	5.14 ✓	3.76 ✓	3.37 ✓
Oxides of Nitrogen (NO <sub>x</sub> ):	2026	2035	2045
Motor Vehicle Emissions Budget (MVEB)	17.69	17.69	17.69
Projected Emissions	10.05 ✓	6.68 ✓	6.84 ✓

*Emissions in tons per day*

## 1997 OZONE STANDARD

The 1997 8-Hour Ozone conformity analysis consists of an abbreviated process since a regional emissions analysis is not required per EPA guidance for this revoked NAAQS. A full description of the requirements to demonstrate conformity for this standard is provided in the main report which essentially boil down to meeting interagency consultation requirements and fiscal constraint of the applicable Plans.

## SUMMARY CONFORMITY STATEMENT

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 2008 8-Hour Ozone, 1997 8-hour Ozone, and Daily PM<sub>2.5</sub> 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 30-day public review and comment period was held. A summary of comments that were received and responses is included in the report.



# Chapter 1 - Introduction and Background Information

## 1.0 Introduction

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The primary purpose of this document is to demonstrate that the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2023-2026 Transportation Improvement Program (TIP) and resulting amendments to the KRTPO Metropolitan Long Range Transportation Plan, known as “Mobility Plan 2045” meet Transportation/Air Quality Conformity requirements of the Clean Air Act and Infrastructure Investment and Jobs Act/Bipartisan Infrastructure Law (IIJA/BIL). This conformity determination also covers the entire affected Knoxville Region that is subject to conformity and incorporates the regular updates of both the Lakeway Area MTPO FY 2023-2026 TIP as well as TDOT’s FY 2023-2026 STIP.

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 air quality nonattainment/maintenance areas 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 and is updated on a 3-year cycle. Air Quality Conformity determinations are required with each new transportation plan and this document provides information about the projects included in the new TIP and demonstrates their conformity to the State Implementation Plan (SIP) to ensure federal funding eligibility.

## 1.1 Background on transportation Conformity

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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.

The general criteria and procedures for determining conformity of transportation plans are described in 40 CFR 93.109 as:

Latest Planning Assumptions (40 CFR 93.110)

Latest Emissions Model (40 CFR 93.111)

Consultation (40 CFR 93.112)

TCMs (40 CFR 93.113)

Emissions Budget (40 CFR 93.118)

Subsequent sections of this report document the assumptions, model inputs and procedures used to satisfy the above requirements in conducting the regional emissions analysis to demonstrate transportation conformity for the amendments to the Mobility Plan 2045 and the FY 2023-2026 TIP.

## 1.2 Background on the Knoxville Region Ozone and PM<sub>2.5</sub> maintenance Areas

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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”.

The Knoxville Region has previously been in non-attainment for two criteria pollutants (ground-level ozone and fine particulate matter) under federal NAAQS with detailed history of EPA designations for Ozone and PM<sub>2.5</sub> following sections:



## 1.2.1 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 and was considered a Maintenance Area. This standard was subsequently revoked with the effective date of the more stringent 2008 8-hour Ozone Standard thereby eliminating the maintenance designation and conformity requirements however a court ruling made in 2018 reinstated the conformity requirement as an anti-backsliding measure. EPA has released specific guidance as to how to address conformity for this revoked standard which is explained in a subsequent section of this report. An important aspect of this geographical area is that it overlaps with a separate adjacent MPO area known as the Lakeway Area Metropolitan Transportation Planning Organization (LAMTPO) specifically in the Jefferson County area. Conformity findings for plans and projects in this overlapping area must be coordinated as with this particular conformity determination report which covers the entire area.

EPA again strengthened the ozone standard in 2008 based on an updated review of scientific and medical data. 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 portion of Anderson County surrounding the TVA Bull Run Fossil Plant. The EPA approved a re-designation of the area to Attainment with a Maintenance Plan effective on August 12, 2015.

Figures 1 & 2 on the following page show the affected geographies for the 1997 and 2008 Ozone Standards:



Figure 1: Knoxville 1997 8-Hour Ozone “Conformity” Area

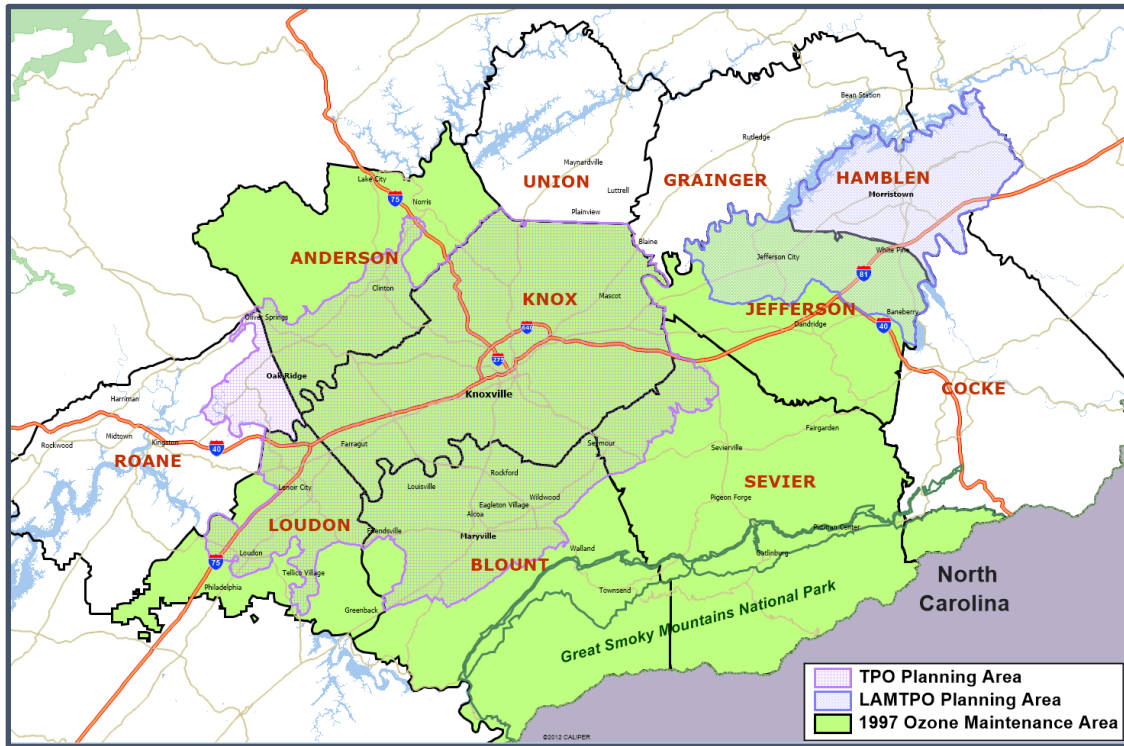
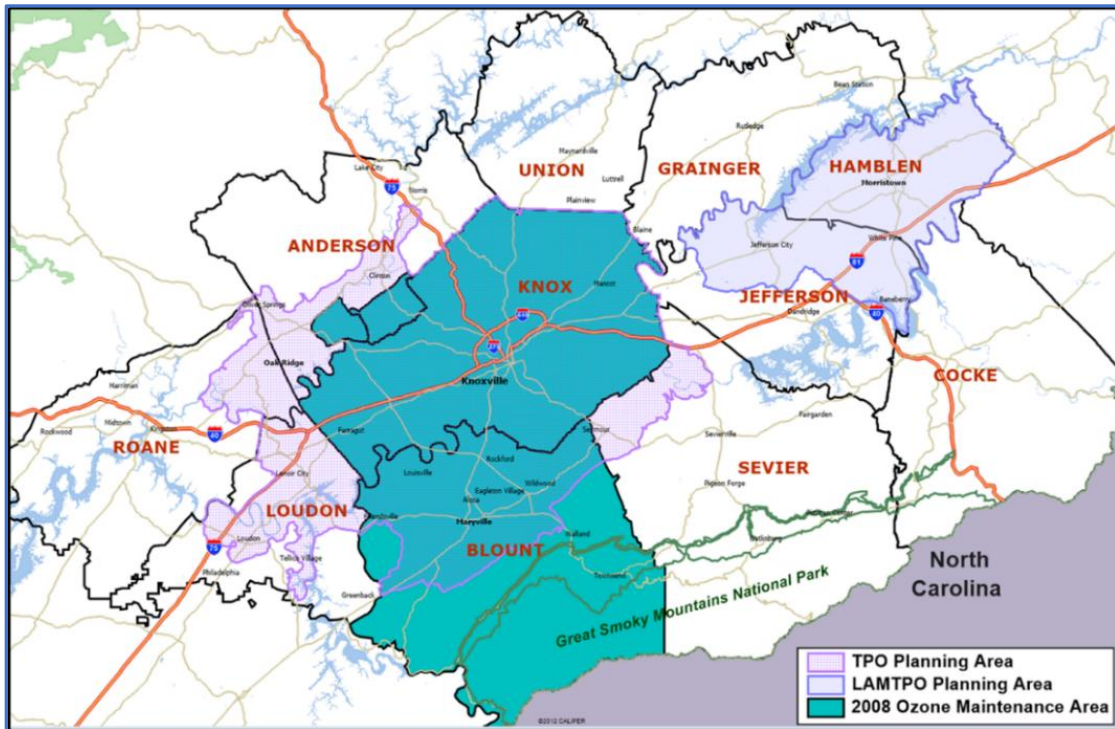


Figure 2: Knoxville 8-Hour Ozone Maintenance Area





## 1.2.2 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 bypass the nose and throat defenses and lodge deeply within the lungs. 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 EPA set these initial standards on 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.

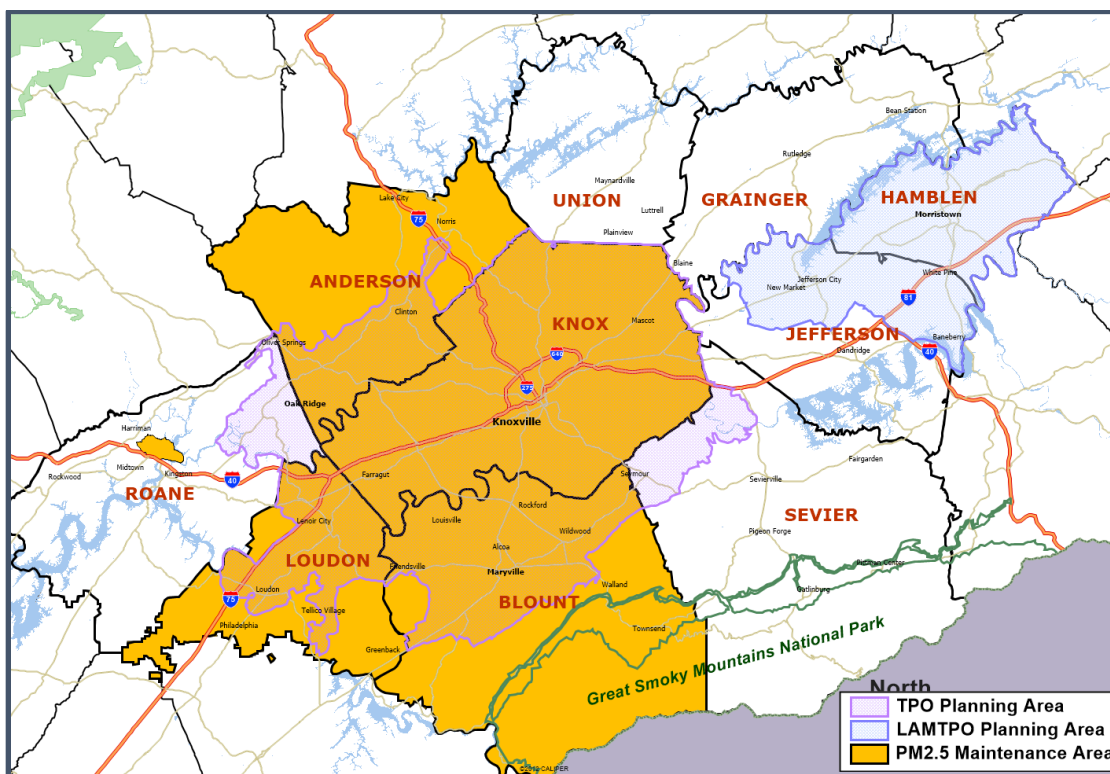
EPA strengthened the PM2.5 standard in 2006 by reducing the permissible daily levels of PM2.5 from 65 to 35 micrograms per cubic meter. The same counties that were designated under the 1997 Annual PM2.5 Standard were formally designated nonattainment for the 2006 Daily PM2.5 Standard effective December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

The EPA approved a redesignation of the area to Attainment with a Maintenance Plan effective on August 28 and 29, 2017 for the daily and annual standards respectively. The Region is meeting the current (2012) Annual PM2.5 Standard of 12 µg/m<sup>3</sup> and the 1997 Standard has been revoked by EPA, thereby removing the requirement to demonstrate conformity for the Annual Standard.

The current Knoxville Region Maintenance Areas for the 2006 Daily PM2.5 Standard is shown in Figure 3 on the next page:



Figure 3: Knoxville PM2.5 Daily Standard Maintenance Area



## 1.3 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 also included in the emissions analysis.



## 1.4 Emissions Analysis Procedure

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The emissions analysis is performed primarily using two different models – a Travel Demand Forecasting Model (TDFM), developed by the KRTPO and the MOVES3 mobile source 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 MOVES3 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 MOVES3, which was chosen for this analysis as opposed to the “Emission Rate Mode”, which produces emissions rates that must be subsequently post processed with the TDFM activity data. Appendix B of this document describes the MOVES3 inputs that were used in the emissions analysis.

Finally, the emissions analysis must also be performed for different years throughout the life of the LRTP. Since the timeframe covered by the LRTP is from 2021-2045, and MVEBs are available for both Ozone and PM2.5, 40 CFR part 93.118 establishes the required analysis years and emissions tests. In general, the required analysis years include:

- Attainment Year for applicable pollutants
- Last Year of the maintenance plan for applicable pollutants
- Any other years for which the maintenance plan establishes budgets
- Last year of the timeframe of the conformity determination
- Years such that there are no more than 10 years between analysis years

Following are the analysis years that were selected to meet the above requirements:

- 2026 – First Analysis Year and also Last Year of 2008 Ozone Standard Maintenance Plan
- 2028 – Applies only to PM2.5 as the Last Year of the 2006 Daily PM2.5 Standards Maintenance Plan (interpolated)
- 2035 – Year no greater than 10 years apart
- 2045 – Last Year of Transportation Plan

Note, 2028 is designated as being interpolated per the conformity regulations in 40 CFR 93.118(d) which states “the emissions for years for which consistency with motor vehicle emission budgets must be demonstrated may be determined by interpolating between the years for which the regional emissions analysis is performed”. The interpolation is performed as a linear regression between the two emissions outputs for years 2026 and 2035 and is a much simpler analysis than setting up a travel demand model and MOVES model run to specifically quantify emissions for those years.



# Chapter 2 – Summary of Project Amendments

## 2.0 Introduction

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Due to the differing cycles of major updates for the Long-Range Transportation Plan, a.k.a. Mobility Plan and the Transportation Improvement Program (TIP) of 4-years and 3-years respectively, project changes often result that necessitate amendments to ensure direct consistency is always maintained between both plans as required. In this situation, the Mobility Plan 2045 was fully updated in 2021 with an adoption date of April 28, 2021 while the 3-year update of the TIP is now required and projected for adoption in October 2022. As the fiscally constrained project list was developed for the new TIP all changes as described further in this chapter must be documented and conformity re-analyzed. A full new “regional emissions analysis” was deemed to be necessary since the project changes involved air quality Non-Exempt projects.

The remainder of this chapter summarizes the project changes/amendments that result from preparation of the updated TIP, which fall into the major categories of: New Projects, Removed Projects and Updated Projects (changes to existing project descriptions, horizon year or scope). Appendix D has a summary table of Mobility Plan air quality Non-Exempt projects with scope changes. Appendix E includes the final amended project list of the Mobility Plan 2045 and surrounding projects from the affected regional area also subject to air quality conformity in the Knoxville Region and Appendix F provides a crosswalk between the FY 2023-2026 TIP/STIP for the Knoxville TPO, the Lakeway MTPO and TDOT’s projects within the affected counties subject to air quality conformity in the Knoxville Region.

## 2.1 New Projects

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Projects that were not previously accounted for in the 2045 Mobility Plan Conformity Determination, but are being added to the new TIP must be accounted for in the regional emissions analysis. There were only two new projects identified for inclusion in the 2045 Mobility Plan. One project (ID# 13-215) was previously included in the unfunded “illustrative” list, but funding was appropriated through a special appropriation of state general fund revenue to TDOT in Governor Bill Lee’s FY 2022-2023 budget. The other project is proposed as a major state and locally funded project on Everett Road in west Knox County that will connect with the I-40/75 at Watt Road Interchange.



## 2.2 Removed Projects

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The originally adopted 2045 Mobility Plan included assumptions about funding sources in its revenue projections for fiscal constraint that were later determined to be inaccurate. Specifically, it was originally assumed that TDOT’s “IMPROVE Act” funding that resulted from fuel tax increases in 2017 was a dedicated revenue source that was to be applied to projects that were specifically called out in the Act. The TPO was later instructed to instead utilize federal funding sources from NHPP and STBG for those projects and in order to maintain fiscal constraint certain other projects needed to be moved into the unfunded or “illustrative” project list. In total, there were six projects that were moved to the Illustrative list while one project was shifted out one horizon year. All projects were in later horizon periods of 2035 and 2045 and none were included in the previous TIP.

## 2.3 Updated Projects

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There are often changes that result to specific details of projects as they undergo preliminary design stages or as priorities shift and projects need to be re-slotted into a different horizon year from what was originally expected and modeled for conformity. It is important to assess each project’s status and description each time a major update is undertaken to either the Mobility Plan or TIP and the development of the FY 2023-2026 TIP is no exception. A couple of the notable changes affecting air quality conformity Non-Exempt projects are: (1) the Relocated Alcoa Highway project in Blount County being combined into one overall project with staged construction in two stages as opposed to being two separate projects with phases associated with different termini and (2) updated details resulting from a planning study for two I-40/I-75 interchanges at Watt Road and Campbell Station Road that were also included in the aforementioned special general fund appropriation from Governor Bill Lee to TDOT that affects how these projects are described and modeled for conformity.



# Chapter 3 - Planning Assumptions for Regional Emissions Analysis

## 3.0 Introduction

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An important component of the conformity determination is to ensure that the latest planning assumptions are used in developing the inputs to both the regional travel demand model, which provides the majority of the activity data (vehicle speeds and miles driven) for the various analysis years and the emissions rate model, which requires other locality-specific characteristics. The latest planning assumptions requirements are contained in 40 CFR 93.110 and were discussed through the Interagency Consultation (IAC) process as required by 40 CFR 93.105. The draft planning assumptions document provided to the IAC is included in Appendix C. The following sections of this chapter summarize the primary planning assumptions used to support the regional emissions analysis that was conducted as part of this conformity determination.

## 3.1 Planning Assumptions for developing Travel Demand Forecasts

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The TPO uses a TDFM that was originally finalized in 2012 based on regional travel surveys conducted in 2008 and validated to a 2010 base year. The model has been maintained since that time and other minor updates conducted for previous Mobility Plans. The model has been re-validated to a base year of 2018 to coincide with the latest available traffic and land use data at the time of the model update development and all standard FHWA validation targets have been achieved. Following is a summary of the travel model development and additional information regarding model validation is included in Appendix I of the main 2045 Mobility Plan document.

The model outputs for total vehicle miles of travel (VMT) by roadway functional classification have been compared against the estimated actual amount of VMT as reported to FHWA for the Highway Performance Monitoring System (HPMS) and appropriate HPMS adjustment factors have been developed to ensure accurate replication of the amount of travel in the region. The travel demand model encompasses a total of 10 counties in the Knoxville Region and includes the entirety of the previously noted maintenance/nonattainment areas as shown on figures 1, 2 and 3.

The county-level data for base year 2018 population and household characteristics is primarily derived from the U.S. Census Bureau's inter-censal Population Estimates data and American Community Survey (ACS) whereas employment data was obtained through various sources such as the Bureau of Economic Analysis



(BEA) and Bureau of Labor Statistics (BLS). The future year 2045 county-level population and employment control totals were developed through a review of available sources of projection data including proprietary data from Woods & Poole Economics, the University of Tennessee Center for Business & Economic Research and previous custom projections developed by a consultant for the TPO. It was determined that the most appropriate source of future year projections was the Woods & Poole Economics, inc data source and these projections were endorsed by the TPO Executive Board at its February 26, 2020 meeting.

The travel demand model summarizes socioeconomic characteristics (population, employment, household income, etc) into sub-county geographic units of somewhat homogenous land use known as Traffic Analysis Zones (TAZ). The county-level estimates for the base and future analysis years must be allocated to the TAZs. In the case of the base year, population data from the 2010 decennial census is available at very small geographic units known as Census Blocks which are aggregated to the TAZ-level. The net change in population for each county between 2010 and 2018 was then allocated based on recent trends in residential building permit activity and using the previous model base year 2014 as a starting point. Employment data was allocated based on a proprietary data set known as InfoGroup obtained through TDOT, which provides detailed establishment level information of employment counts by industry type geocoded to its actual location.

In order to allocate the future growth of population and employment from the county control totals to the smaller TAZs, the TPO staff consulted with planning staffs and stakeholders from each jurisdiction within the TPO and LAMTPO area. TPO staff obtained information on proposed developments and other likely development areas in the various jurisdictions to inform the allocation. Stakeholders reviewed the outputs to determine the overall reasonableness. This exercise is inherently challenging due to the unforeseen things that can influence development patterns, but provides a “best guess,” and can be updated as needed to account for major changes with each subsequent Mobility Plan update.

## 3.2 Latest Emissions Model

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The EPA officially released an emissions factor model known as “MOVES3” through a Federal Register Notice of Availability on January 7, 2021, which set a 2-year grace period for its use instead of the prior version known as “MOVES2014b”. The release of MOVES3 occurred subsequent to the development of planning assumptions for the emissions model inputs which were started based on MOVES2014b being the latest available model. Since very few changes were required to adapt to MOVES3 the TPO staff decided to



use it instead of MOVES2014b even though it was technically not yet required until January 9, 2023. The input default database for the latest version of MOVES3 used to determine the total on-road emissions of the pollutants of concern for this conformity analysis is known as “movesdb20220802”.

## 3.3 Emissions Tests

The emissions tests used for this conformity analysis follow the requirements listed in 40 CFR 93.118 based on the fact that a Motor Vehicle Emissions Budget (MVEB) is available for all pollutants. The following subsections of this chapter document the specific MVEBs for each pollutant and note their applicability in terms of the analysis years that were selected as documented in Section 1.4.

### 3.3.1 FOR 2008 8-HOUR OZONE STANDARD

The emissions test for the 2008 8-Hour Ozone Standard is based on an MVEB set for both an interim year (2011) and the last year of the Maintenance Plan (2026). The EPA published a notice announcing a finding that the 2011 and 2026 Motor Vehicle Emissions Budgets (MVEB) for NO<sub>x</sub> and VOC included in the Maintenance SIP are adequate for the purposes of transportation conformity in the Federal Register / Vol. 80, No. 133, page 39970 on July 13, 2015. Table 3 shows the MVEB for the 2008 Ozone Standard:

*Table 3: MVEB for 2008 Ozone Standard*

Pollutant	2011	2026
	(tons/day)	
VOC	19.71	10.49
NO <sub>x</sub>	41.62	17.69

The emissions tests are performed for the analysis years previously identified in Section 1.5 of this report of 2026, 2035 and 2045. Since all of these analysis years are from 2026 and later the emissions for those years are compared against the MVEB for 2026.

### 3.3.2 FOR 2006 “DAILY” PM<sub>2.5</sub> STANDARD

The EPA published a notice announcing a finding that the 2014 and 2028 Motor Vehicle Emissions Budgets (MVEB) for Direct PM<sub>2.5</sub> (including direct exhaust PM<sub>2.5</sub> emissions and from brake and tire wear) and Oxides of Nitrogen (a PM<sub>2.5</sub> precursor pollutant) included in the Maintenance SIP are adequate for the purposes of transportation conformity in the Federal Register / Vol. 82, No. 46, page 13347 on March 10,



2017. These emissions are actually calculated for an annual situation and converted to daily amounts by dividing by 365. Table 4 shows the MVEB for the 2006 Daily PM2.5 Standard:

*Table 4: MVEB for 2006 Daily PM2.5 Standard*

Pollutant	2014	2028
	(tons/day)	
PM2.5	1.22	0.67
NOx	42.73	19.65

The emissions tests are performed for the analysis years previously identified in Section 1.4 of this report of 2026, 2028, 2035 and 2045. Analysis years prior to 2028 (the 2026 analysis year) use the MVEB for 2014 while all other analysis years are compared against the MVEB for 2028. The year 2028 emissions are interpolated between the 2026 and 2035 analysis year outputs from the emissions modeling process.

## 3.4 MOVES3 Inputs and Runspec Development

In order to set up a MOVES3 model run the user must first define the “run specification” or “Runspec” for short, which establishes the specific model domain such as the county, time period, road types, vehicle types and pollutants being modeled for. Following the Runspec, the user enters specific input data for the county being modeled through an interface known as a “County Data Manager”. The County Data Manager allows inputs for a variety of characteristics affecting emissions generation including the number of vehicles, vehicle miles of travel, average speeds, meteorological information, fuel types and average vehicle fleet age by vehicle type among others. The following sub-sections detail the Runspec and County Data Manager parameters used for this conformity analysis.

### 3.4.1 MOVES3 RUNSPEC PARAMETERS

The MOVES model run is first set up based on a number of parameters to define the appropriate geographic scale and other aspects of the modeling domain to be utilized in the analysis, which is referred to as a “run specification” or runspec for short. Following is a list of the MOVES runspec panels and how they were set up for the KRMP conformity analysis and based on appropriate technical guidance documentation from EPA:



1.) Scale:

Both Pollutants – County level scale – Inventory mode

2.) Time Spans:

Both Pollutants – Year (based on analysis years as ultimately selected, 2026, 2035 and 2045), by Hour, all hours

Ozone – July weekday

PM2.5 – All months, all days

3.) Geographic Bounds:

2008 Ozone – Anderson (partial), Blount and Knox counties

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

4.) Onroad Vehicles:

Both Pollutants – Gasoline, CNG, ethanol (E85) and diesel fuels, all valid vehicle combinations

5.) Road Type:

Both Pollutants – All road types

6.) Pollutants and Processes:

Ozone – NOx and VOC and all other required supporting prerequisite pollutants

PM2.5 – Primary PM2.5 (exhaust, brake and tire wear), NOx and all supporting prerequisite pollutants

Note – unchecked the “Refueling Displacement Vapor Loss” and “Refueling Spillage Loss” to exclude refueling emissions that are instead included in the Area source emissions inventory.

7.) Output options:

Both Pollutants –

General Output tab: Units = grams, joules, miles; Activity: checked “Distance Traveled” and “Population”

Output Emissions Detail tab: checked “Road Type” and “Source Use Type”

### **3.4.2 MOVES3 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 consists of locality specific values of temperature and humidity covering the required analysis time frame, i.e. summer months for Ozone and all months for annual PM2.5. It is generally required that the conformity analysis must use consistent inputs for meteorology that were developed for an applicable SIP and its MVEBs. Since MVEBs are available in all cases the direct MOVES inputs used in their development will be utilized for this analysis.

Analysis Year Variation – This input is held constant for all analysis years.

**CDM2.) Source Type Population** – this input defines the vehicle population within the study area by type of vehicle and must be generated using local-specific data. This input is derived from various sources, the primary of which is vehicle registration data that is maintained by the Tennessee Department of Revenue in terms of the “light duty” categories of vehicles and other national sources and default data for the “heavy duty” categories. Future-year projections are also necessary to account for growth in population and corresponding vehicle ownership and these are described in more detail in the Appendix.

Analysis Year Variation – This input is varied for each analysis year based on the projected growth in total vehicles.

**CDM3.) Age Distribution** – vehicle age distribution datasets are tied somewhat with the source type population input since the same data sources that track vehicle ownership also contain information about vehicle age. Locality specific data is critical for this input as there can be wide variation in vehicle fleet age depending on the specific geographic area being analyzed.

Analysis Year Variation – This input is held constant for all analysis years.

**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. TDOT annually reports total VMT by roadway functional classification to the FHWA’s Highway Performance Monitoring System (HPMS) and the most recent available year of data when the conformity analysis was started was for 2018. Statewide vehicle classification data was used to derive urban/rural factors by road type and vehicle (source) types and compiled for a 2014 base year by the University of Tennessee on behalf of TDOT. These factors were applied to the 2018 data to obtain the required format of VMT by source type for this input. Future year projections of VMT are derived from the TPO’s travel demand forecasting model.

Analysis Year Variation – This input is varied for each analysis year based on the projected growth in VMT.



- **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.

Analysis Year Variation – This input is held constant for all analysis years.

- **Day** – this input accounts for the differences in weekday travel versus weekend travel and are also available from the UT study.

Analysis Year Variation – This input is held constant for all analysis years.

- **Hour** – this input accounts for the hourly variation in travel and is provided by the regional travel demand forecasting model.

Analysis Year Variation – This input is varied for each analysis year based on the results of the travel demand model run.

**CDM5.) Average Speed Distribution** – this input was developed using the travel demand model and additional built-in post processing steps to derive the needed format for MOVES.

Analysis Year Variation – This input is varied for each analysis year based on the results of the travel demand model run.

**CDM6.) Road Type Distribution** – this input provides the distribution of VMT on each road type by source type. This input is also derived from post processing the travel demand model outputs.

Analysis Year Variation – This input is held constant for all analysis years.

**CDM7.) Fuel** – Consists of four separate inputs (Fuel Supply, Fuel Formulation, Fuel Usage Fraction and AVFT). These inputs are provided by TDEC based on EPA guidance to reflect fuels used in the Knoxville Region. Transit fleet data from Knoxville Area Transit (KAT) was used to develop fuel type profiles for transit buses (sourceType 42), which consist only of gasoline and diesel fuel vehicles (no CNG).

Analysis Year Variation – This input is held constant for the most part with the exception of phase-in of various fuel formulation regulatory information in the appropriate timeframes.

**CDM8.) Starts** – local information for this input is not currently available and therefore MOVES defaults are utilized for all analysis years.

**CDM9.) Hotelling** – local information for this input is not currently available and therefore MOVES defaults are utilized for all analysis years.



**CDM10.) I/M Programs** – this is not applicable to the Knoxville Region as it does not currently have any inspection and maintenance programs.



# Chapter 4 – Mobile Source Emissions Analysis and Applicable Governing Regulations

## 4.0 Introduction

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The Metropolitan Planning Regulations of the IIJA/BIL (23 CFR Parts 450 and 771, May 27, 2016) and the USEPA Transportation Conformity Rule (40 CFR Parts 51 and 93, August 15, 1997 and amended most recently on March 14, 2012) specify certain minimum requirements that must be addressed in performing a mobile source emissions analysis in order to determine conformity of a Long-Range Transportation Plan (LRTP). The following sections in this chapter discuss these requirements and how they were addressed by the KRTPO in making the determination of conformity on the updated FY2023-2026 Transportation Improvement Program and amended Mobility Plan 2045.

## 4.1 Regulations related to Development of LRTP and Transportation Conformity

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

**23 CFR 450.322(a)** – The LRTP must have a minimum 20-year planning horizon. The LRTP covers the period of 2021-2045, which meets the requirement for a minimum 20-year planning horizon. The LRTP is known as the Mobility Plan 2045.

**23 CFR 450.322(b)(6)** – The LRTP must “include design concept and scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of the source of funding, in nonattainment and maintenance areas to permit conformity determinations under the U.S. EPA conformity regulations at 40 CFR part 51. In all areas, all proposed improvements shall be described in sufficient detail to develop cost estimates”. The project list included in the Mobility Plan document and in Appendix E covers the necessary detail and project scopes to develop cost estimates as accurately as possible.

**23 CFR 450.322(b)(11)** – The LRTP must “include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue...” The Mobility Plan 2045 main document contains a financial analysis that demonstrates financial constraint.



## 4.2 Regulations Governing Mobile Source Emissions Analyses

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The Transportation Conformity Rule was first promulgated by EPA on November 24, 1993 (58 FR 62188). It has subsequently been amended several times to cover changes such as the implementation of the 1997 8-Hour Ozone and PM<sub>2.5</sub> National Ambient Air Quality Standards on July 1, 2004. The most recent amendment to the Transportation Conformity Rule was published in the Federal Register on March 14, 2012 (75 FR 14979), which was a restructuring of several sections such that the Conformity Rule would not need to be revised each time a new or revised NAAQS is issued by EPA. Applicable guidelines from the Transportation Conformity Rule and how they have been addressed in this conformity determination are as follows:

**40 CFR 93.106(a)** – The transportation plan must specifically describe the transportation system envisioned for certain future years, which are called horizon years and are subject to the following restrictions:

The horizon years may be no more than 10 years apart;

The first horizon year may not be more than 10 years from the base year used to validate the transportation demand planning model;

If the attainment year is in the time span of the transportation plan, the attainment year must be a horizon year, and;

The last horizon year must be the last year of the transportation plan's forecast period.

The base year for validation of the KRTPO's transportation demand planning model is 2018 and the KRMP's forecast period is from 2021 to 2045. Therefore, the analysis years used in developing the conformity analysis are:

### Analysis Years for 2008 8-hour Ozone Standard:

2026 – First horizon year within 10 years from base year used to validate the transportation demand planning model, also is the Final year of the Ozone Maintenance Plan

2035 – Year such that there are no more than 10 years between analysis years

2045 – Final year of Mobility Plan 2045



#### Analysis Years for 2006 Daily PM2.5 Standard:

2026 – First horizon year within 10 years from base year used to validate the transportation demand planning model

2028 – Final year of the Maintenance Plan (interpolated)

2035 – Year such that there are no more than 10 years between analysis years

2045 – Final year of Mobility Plan 2045

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

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

Total Population

Household Population

Group Quarters Population

Number of Households

Average Persons per Household

Average Median Household Income

Workers per Household

Vehicles per Household

Students per Household

School Enrollment (K-12)

University Student Enrollment

Total Employment

Basic Employment

Industrial Employment

Retail Trade Employment

Services Employment

Further information regarding the development of the transportation model socioeconomic data is presented in Appendix I of the Mobility Plan document.

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



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

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

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

**40 CFR 93.110** – The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination. The KRTPO documented its assumptions and planning data with the Interagency Consultation Group, which is summarized in the meeting information included in the Appendix C. The demographic and transportation modeling assumptions are documented in Chapter 3.

**40 CFR 93.111** – The conformity determination must be based on the latest emission estimation model available. This conformity determination utilized the most recent available version of MOVES –MOVES3, with default database “movesdb20220802”.

**40 CFR 93.112** – The conformity determination must satisfy consultation requirements in the applicable implementation plan. Chapter 6 and documentation in the appendix relate to the interagency consultation process.

**40 CFR 93.118 and 93.119** – Motor vehicle emissions budget and other applicable conformity tests that must be used. Chapter 5 of this report documents the emissions tests that were used to demonstrate conformity. The emissions tests were discussed in the Interagency Consultation process to determine their appropriateness.

**40 CFR 93.122** – Procedures for determining transportation-related emissions. The TPO documented its assumptions and methodology for determining future growth in vehicle miles of travel on the regionally significant transportation system with the Interagency Consultation Group. The primary source for projecting future vehicle activity is the travel demand forecasting model, which includes all regionally significant roadways and represents all regionally significant highway projects being proposed for implementation in the Mobility Plan 2045 and FY 2023-2026 TIP by analysis year. All counties in the nonattainment area are represented in the travel demand model.



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

Examples of exempt projects include:

Bridge Replacement Project – A project that only entails rehabilitating or replacing the existing bridge in-kind without any additional laneage being constructed.

Pedestrian Improvement Project

Interchange Reconfiguration Project

Intersection Project – This could include any type of project that involves only a single intersection such as adding turn lanes (channelization) or a traffic signal.

Street Lighting

Pavement Resurfacing

Reconstruction of a 2-lane roadway, which is only improving the width and geometrics of the roadway and perhaps some additional turn lanes.

## 4.3 Availability of Technical Information Related to Emissions Analyses

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Additional information regarding specific MOVES3 emissions model inputs and outputs and travel demand model assumptions is available upon request.



# Chapter 5 – Statement of Conformity

## 5.0 Introduction

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This section of the report covers the conformity requirements for the Knoxville Region under both the 8-Hour Ozone Standard as well as the PM<sub>2.5</sub> 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 IJA/BIL (23 CFR 450.322).

## 5.1 Statement of Conformity – 1997 8-Hour Ozone Standard

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### 5.1.1 OVERVIEW OF SOUTH COAST VERSUS EPA DECISION

On February 16, 2018, the United States Court of Appeals for the District of Columbia Circuit in *South Coast Air Quality Mgmt. District v. EPA* (“South Coast II,” 882 F.3d 1138) held that transportation conformity determinations must be made in areas that were either nonattainment or maintenance for the 1997 ozone national ambient air quality standard (NAAQS) and attainment for the 2008 ozone NAAQS when the 1997 ozone NAAQS was revoked. The Knoxville Region was designated as a “maintenance area” at the time of the 1997 ozone NAAQS revocation on April 6, 2015 and was also designated attainment for the 2008 ozone NAAQS on May 21, 2012.

Per the court’s decision in *South Coast II*, beginning February 16, 2019, a transportation conformity determination for the 1997 ozone NAAQS is needed in 1997 ozone NAAQS nonattainment and maintenance areas identified by EPA for certain transportation activities, including updated or amended metropolitan MTPs and TIPs.

### 5.1.2 APPLICABLE GEOGRAPHY INCLUDED IN 1997 8-HOUR OZONE ORPHAN AREA

This section of the conformity determination report is specifically intended to cover what is known as the “orphan area”, which are the parts of the 1997 8-hour Ozone Standard that were not included within the 2008 8-hour Ozone Standard nonattainment designation. Figure 1 in Section 1.2 above shows the geography in the Knoxville Region affected by the 1997 8-hour Ozone Standard and its relationship to the planning areas for the KRTPO and the LAMTPO. Areas entirely in green shading are considered part of the TDOT FY 2023-2026 rural area STIP, whereas those areas in green with either purple or blue overlay are covered by Knoxville and Lakeway respectively.



### **5.1.3 ORPHAN AREA CONFORMITY REQUIREMENTS**

For the 1997 ozone NAAQS areas, transportation conformity for MTPs and TIPs for the 1997 ozone NAAQS can be demonstrated without a regional emissions analysis, per 40 CFR 93.109(c). This provision states that the regional emissions analysis requirement applies one year after the effective date of EPA's nonattainment designation for a NAAQS and until the effective date of revocation of such NAAQS for an area. The 1997 ozone NAAQS revocation was effective on April 6, 2015, and the South Coast II court upheld the revocation. As no regional emission analysis is required for this conformity determination, there is no requirement to use the latest emissions model, or budget or interim emissions tests.

Therefore, transportation conformity for the 1997 ozone NAAQS for the Knoxville and Lakeway Metropolitan Transportation Plan updates can be demonstrated by showing the remaining requirements in Table 1 in 40 CFR 93.109 have been met. These requirements, which are laid out in Section 2.4 of EPA's guidance and addressed below, include:

Latest planning assumptions (93.110)

Consultation (93.112)

Transportation Control Measures (93.113)

Fiscal constraint (93.108)

### **5.1.4 LATEST PLANNING ASSUMPTIONS**

The use of latest planning assumptions in 40 CFR 93.110 of the conformity rule generally apply to regional emissions analysis. In the 1997 ozone NAAQS areas, the use of latest planning assumptions requirement applies to assumptions about transportation control measures (TCMs) in an approved SIP.

The Tennessee SIP does not include any TCMs, see also Section 4.1.6.

### **5.1.5 CONSULTATION REQUIREMENTS**

The consultation requirements in 40 CFR 93.112 were addressed both for interagency consultation and public consultation. Interagency consultation was conducted with the Knoxville-Area Interagency Consultation group which includes federal partners such as FHWA, FTA, and EPA as well as state and local partners. Interagency consultation was conducted consistent with the Tennessee Conformity SIP and the conformity regulation's requirements at 40 CFR 93.105. Refer to Chapter 6 of this report for additional information on interagency consultation.

Public consultation was conducted consistent with planning rule requirements in 23 CFR 450. Refer to Chapter 7 for additional information on public consultation.



## **5.1.6 TIMELY IMPLEMENTATION OF TCM'S**

The Tennessee SIP does not include any TCMs, therefore this does not apply in the Knoxville Region.

## **5.1.7 FISCAL CONSTRAINT**

Transportation conformity requirements in 40 CFR 93.108 state that transportation plans and TIPs must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450. The 2045 MTP's for the Knoxville and Lakeway areas and the FY 2023 – 2026 TIP's for KRTPO and LAMTPO and the TDOT FY 2023 – 2026 STIP are fiscally constrained, as demonstrated in applicable sections of those documents.

## **5.1.8 ORPHAN AREA PROJECTS**

Table E-2 in Appendix E of this report provides a listing of the projects within the geography of the 1997 8-Hour Ozone Standard "orphan area" as previously described. These include all projects currently under development by TDOT as well as the projects included in the LAMTPO 2045 MTP update. Guidance from EPA indicates that IAC consultation is still required for projects within the orphan area to determine whether they are exempt or non-exempt, but a regional significance determination is no longer required since that aspect was only applicable to the regional emissions analysis requirement. A project listing within the conformity determination report noting the project's exempt/non-exempt status is necessary because non-exempt projects need to have a conformity determination, and exempt projects do not. Also, if there's a change to a non-exempt project, then the plan/TIP will need to be amended and a new conformity determination done for the plan/TIP. If there's a change to an exempt project, determining conformity for the plan/TIP is not necessary.

## **5.1.9 SUMMARY OF 1997 8-HOUR STANDARD CONFORMITY ANALYSIS**

The KRTPO staff has determined that the Mobility Plan 2045, LAMTPO 2045 MTP, and FY23-26 TIPs are demonstrating conformity with the 1997 8-hr Ozone standard based on the qualitative analysis performed by TPO staff and demonstrated in the CDR. 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 IJA/BIL) has also been demonstrated.



## 5.2 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). A redesignation to Attainment for this Standard was approved by EPA through a Federal Register notice on July 13, 2015 and made effective on August 12, 2015. The conformity analysis documented in this report utilizes the newly approved Motor Vehicle Emissions Budgets (MVEB).

An emissions analysis was conducted for the required analysis years of 2026, 2035 and 2045.

Table 5 below summarizes the MVEB test for all analysis years:

*Table 5: MVEB Test for 2008 Ozone Standard*

	Analysis Year		
Volatile Organic Compounds (VOC):	2026	2035	2045
Motor Vehicle Emissions Budget (MVEB)	10.49	10.49	10.49
Projected Emissions	5.14 ✓	3.76 ✓	3.37 ✓
Oxides of Nitrogen (NOx):	2026	2035	2045
Motor Vehicle Emissions Budget (MVEB)	17.69	17.69	17.69
Projected Emissions	10.05 ✓	6.68 ✓	6.84 ✓

*Emissions in tons per day*

### 5.2.1 SUMMARY OF 2008 8-HOUR STANDARD CONFORMITY ANALYSIS

Based on the quantitative conformity analysis the KRTPO staff has determined that the Mobility Plan 2045 as amended and the KRTPO FY 2023-2026 TIP 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 IIJA/BIL) has also been demonstrated.

## 5.3 Statement of Conformity – 2006 Daily PM2.5 Standard

The Daily PM2.5 conformity analysis consists of an MVEB 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. An emissions analysis was conducted for the required analysis years of 2026, 2028, 2035 and 2045, with year 2028 being interpolated between 2026 and 2035. The results of the emissions analysis are summarized in Table 6:

*Table 6: MVEB Test for 2006 Daily PM2.5 Standard*

	Analysis Year			
Direct Particulate Matter 2.5:	2026	2028	2035	2045
Motor Vehicle Emissions Budget (MVEB)	1.22	0.67	0.67	0.67
Projected Emissions	0.42 ✓	0.40 ✓	0.34 ✓	0.36 ✓
Oxides of Nitrogen (NOx):	2026	2028	2035	2045
Motor Vehicle Emissions Budget (MVEB)	42.73	19.65	19.65	19.65
Projected Emissions	12.74 ✓	11.79 ✓	8.45 ✓	8.66 ✓

### 5.3.1 SUMMARY OF 2006 DAILY PM2.5 STANDARD CONFORMITY ANALYSIS

Based on the quantitative conformity analysis the KRTPO staff has determined that the Mobility Plan 2045 as amended and the KRTPO FY 2023-2026 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 IIJA/BIL) has also been demonstrated.



# Chapter 6 – Interagency Consultation

## 6.0 Introduction

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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.

## 6.1 Participating Agencies

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The 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.

## 6.2 Overview of Consultation Process

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The development of this conformity determination was coordinated with the Knoxville-area Interagency Consultation group. The process began with a kickoff of the FY 2023 – 2026 TIP development and preliminary discussion of latest planning assumptions and required model inputs on an IAC conference call held on March 8, 2022. Subsequent calls were held to further discuss various assumptions and to review drafts of the emissions analysis and documentation. The draft Conformity Determination Report was provided to the IAC group for a 30-day review between August 15, 2022 to September 15, 2022. Appendix C contains the minutes of each of the interagency meetings as well as comments and responses to the draft Conformity Determination Report.



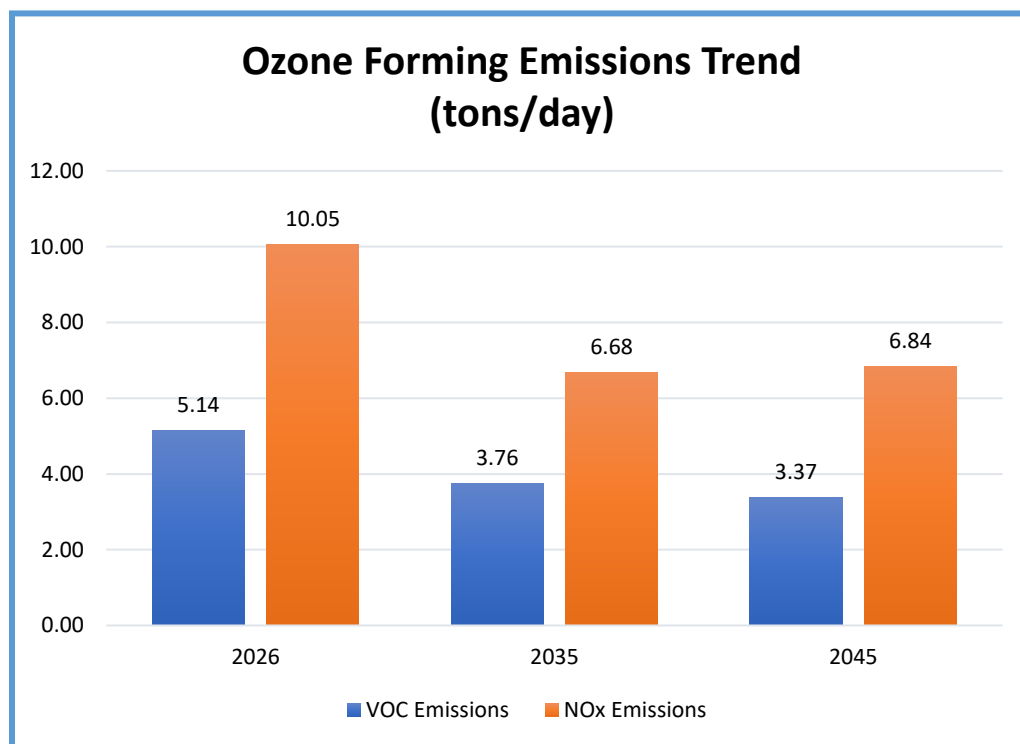
# Chapter 7 – Conclusion and Summary of Comments Received

## 7.0 Conclusion

The analysis included in this report has demonstrated that the KRTPO and LAMTPO FY 2023-2026 Transportation Improvement Programs, the TDOT FY 2023-2026 STIP and the resulting amendments to the 2045 Mobility Plan are in conformity with air quality regulations found in the Clean Air Act Amendments of 1990 and IIJA/BIL.

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 the NO<sub>x</sub> emissions after the year 2035 (see Figure 4 below).

*Figure 4: Ozone Emissions Trends for Life of Mobility Plan 2045*



The primary reason that emission rates are projected to decline is due to stricter tailpipe emission standards enacted by EPA, most notably the “Tier 2” 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). More recently the “Tier 3” standards promulgated in 2014 and effective beginning in 2017 have further addressed tailpipe emissions from motor vehicles and will continue to become more prevalent as the fleet turns over. 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.

## 7.1 Transportation Control Measures

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Currently there are no transportation control measures (TCMs) in the Tennessee SIP for the Knoxville 8-hour ozone and PM<sub>2.5</sub> nonattainment areas. However, should TCMs be introduced in the area, nothing in the KRMP nor the Transportation Improvement Program will prohibit the timely implementation of any that are approved in the SIP for the Knoxville area.

## 7.2 Public Involvement Summary

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The Knoxville Regional TPO conducted a 30-day comment period between September 22, 2022 and October 21, 2022 to allow for public review and comment on the FY 2023 – 2026 TIP, 2045 Mobility Plan Amendments and accompanying Air Quality Conformity Determination. Public hearings were held with the regularly scheduled TPO Technical Committee and Executive Board meetings on September 28, 2022 and October 18, 2022.

Copies of the Conformity Determination Report were made available on the KRTPO web site. Public notice and advertisements for the hearings and how 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 Mountain Press, News Herald, Knoxville-Knox County Focus (free newspaper), Jefferson Standard Banner, Enlightener (paper targeted toward minority population) and on Hispanic focused social media outlets.

## 7.3 Public Comment and Response

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TBD



# Appendix A – Emissions Analysis Summary

## A.1 Emissions for the 2008 8-Hour Ozone Standard Analysis

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*Table A-1 – Volatile Organic Compounds (VOC) emissions summary by county for 2008 8-Hour Ozone Standard*

	VOC Emissions (tons per day)		
	Analysis Year		
	2026	2035	2045
Anderson (partial)	0.18	0.12	0.10
Blount	1.21	0.89	0.79
Knox	3.74	2.75	2.48
<b>Total</b>	<b>5.14</b>	<b>3.76</b>	<b>3.37</b>
<b>MVEB</b>	<b>10.49</b>	<b>10.49</b>	<b>10.49</b>

*Table A-2 – Oxides of Nitrogen (NOx) emissions summary by county for 2008 8-Hour Ozone Standard*

	NOx Emissions (tons per day)		
	Analysis Year		
	2026	2035	2045
Anderson (partial)	0.20	0.08	0.07
Blount	1.39	0.82	0.78
Knox	8.47	5.78	5.99
<b>Total</b>	<b>10.05</b>	<b>6.68</b>	<b>6.84</b>
<b>MVEB</b>	<b>17.69</b>	<b>17.69</b>	<b>17.69</b>



## A.2 Emissions for the 2006 Daily PM2.5 Standard

Table A-3 –MOVES Emissions Outputs for Daily NOx Emissions by County

	NOx Emissions (tons per day)			
	Analysis Year			
	2026	2028 (interpolated)	2035	2045
Anderson	1.29	1.17	0.74	0.72
Blount	1.38	1.25	0.83	0.81
Knox	8.51	7.92	5.88	6.13
Loudon	1.46	1.34	0.93	0.94
Roane (partial)	0.11	0.10	0.06	0.06
<b>Total</b>	<b>12.74</b>	<b>11.79</b>	<b>8.45</b>	<b>8.66</b>
<b>MVEB</b>	<b>42.73</b>	<b>19.65</b>	<b>19.65</b>	<b>19.65</b>

Table A-4 –MOVES Emissions Outputs for Daily Direct PM2.5 Emissions by County

	PM2.5 Emissions (tons per day)			
	Analysis Year			
	2026	2028 (interpolated)	2035	2045
Anderson	0.04	0.04	0.03	0.03
Blount	0.05	0.05	0.05	0.05
Knox	0.28	0.27	0.23	0.25
Loudon	0.04	0.04	0.03	0.03
Roane (partial)	0.00	0.00	0.00	0.00
<b>Total</b>	<b>0.42</b>	<b>0.40</b>	<b>0.34</b>	<b>0.36</b>
<b>MVEB</b>	<b>1.22</b>	<b>0.67</b>	<b>0.67</b>	<b>0.67</b>



# Appendix B – MOVES3 Input Development Documentation

## B.1 Background

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General information regarding the MOVES2014 runspec and county data manager input development was provided in Section 3.4 of this report. The purpose of this appendix is to provide additional details and example input files used for the county data manager. Several of the inputs were derived based on methodology developed as part of other efforts, primarily the development of the onroad mobile source emissions inventories to support both recent Redesignation Requests and Maintenance Plans for Ozone and PM<sub>2.5</sub> prepared by the Tennessee Department of Environment & Conservation (TDEC). A primary source of inputs utilized by TDEC was from a report and research conducted by the University of Tennessee, Knoxville Department of Civil & Environmental Engineering, titled “Methodology for Developing Input Datasets for the MOVES Model”, August 2014. These additional reference materials are not repeated in this document, but are available upon request.

## B.2 MOVES County Data Manager Input Data Sources

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Several of the following data sets required for MOVES are extremely large and impossible to fully copy into the following sections. 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, with full data sets being available upon request to KRTPO staff.

### **B.2.1 METEOROLOGY**

Meteorology defined in a relevant SIP for which a MVEB is being used should be incorporated into the relevant analysis. The meteorology inputs (temperature and humidity) were developed and documented by TDEC in the Redesignation Requests and Maintenance Plans for both Ozone and PM<sub>2.5</sub> following the appropriate EPA Technical Guidance. The 2008 8-hour Ozone inputs are based on an average of 3-years between 2009-2011 while the PM<sub>2.5</sub> inputs are based on a 3-year average spanning 2012-2014. This input is the same for all counties and all analysis years for the applicable pollutant.



## **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.

A detailed evaluation of potential sources of Source Type Population was performed for the 2045 Mobility Plan regional emissions analysis that was conducted within the last two years. Documentation is available in the final conformity determination report that is posted online at: [https://knoxtpo.org/wp-content/uploads/2021/12/2045MobilityPlan\\_Air-Quality-Conformity-Determination\\_for-adoption.pdf](https://knoxtpo.org/wp-content/uploads/2021/12/2045MobilityPlan_Air-Quality-Conformity-Determination_for-adoption.pdf).

In summary, the TPO staff reviewed and compared data sources that could be used to develop a baseline source type population for year 2018 to be consistent with the base year of other data sources and travel demand model being utilized for the regional emissions analysis. The primary sources used to develop the 2018 base year data were:

Tennessee Department of Transportation (TDOT) 2017 NEI Dataset Development  
Coordinating Research Council (CRC) Project No. A-115, "Developing Improved Population Inputs for the 2017 National Emissions Inventory" April 2019.

In order to meet the requirement of using the "latest planning assumptions" for this conformity analysis, the TPO staff reviewed a more recent dataset that was developed by TDOT for use in the 2020 National Emissions Inventory (NEI) effort. TDOT obtained new database of motor vehicle registration records from the Tennessee Department of Revenue (TDOR) with which to determine source type population and age distribution. As with past efforts in this regard, multiple challenges arose with processing the data and categorizing vehicles per the required MOVES source types. Through a statewide IAC review process led by staff from TDEC, an eventual determination was made as to which source types should utilize the TDOR data versus ones that should instead be developed using the so-called national default local data (NDLD) method as prescribed in EPA MOVES guidance. As of the first preparation of this document in May 2022 however a final dataset has not been produced by TDOT.

Comparisons were made between the latest set of TDOT Source Type Population data, known as Version 3, and the TPO's base year 2018 data and shown in the following charts for each affected county.



Anderson County		
sourceTypeID	TDOT 2020 Source Type Population	Knox TPO 2018 Source Type
11	2,214	2,544
21	31,489	32,672
31	43,040	40,728
32	1,737	1,919
41	61	1
42	0	0
43	136	86
51	1	35
52	2,506	1,020
53	112	46
54	256	266
61	99	487
62	185	565
<b>TOTAL</b>	<b>81,836</b>	<b>80,369</b>

Loudon County		
sourceTypeID	TDOT 2020 Source Type Population	Knox TPO 2018 Source Type
11	1,725	1,855
21	19,249	22,005
31	30,370	30,295
32	661	996
41	77	1
42	13	0
43	91	63
51	0	44
52	1,685	921
53	73	50
54	277	259
61	72	685
62	144	810
<b>TOTAL</b>	<b>54,437</b>	<b>57,984</b>

Blount County		
sourceTypeID	TDOT 2020 Source Type Population	Knox TPO 2018 Source Type
11	5,697	5,070
21	48,278	59,894
31	73,533	70,745
32	4,129	9,354
41	27	1
42	0	0
43	282	164
51	1	33
52	4,895	1,778
53	224	55
54	697	355
61	178	322
62	205	361
<b>TOTAL</b>	<b>138,146</b>	<b>148,132</b>

Roane County		
sourceTypeID	TDOT 2020 Source Type Population	Knox TPO 2018 Source Type
11	1,564	1,724
21	18,507	22,264
31	27,070	29,947
32	572	804
41	55	1
42	0	0
43	86	79
51	2	35
52	1,708	901
53	75	43
54	257	234
61	76	558
62	142	653
<b>TOTAL</b>	<b>50,114</b>	<b>57,243</b>

Knox County		
sourceTypeID	TDOT 2020 Source Type Population	Knox TPO 2018 Source Type
11	8,568	9,180
21	163,850	182,950
31	211,987	194,417
32	12,910	17,457
41	356	7
42	58	154
43	964	449
51	53	213
52	11,167	8,699
53	497	313
54	1,091	1,919
61	614	3,547
62	973	4,061
<b>TOTAL</b>	<b>413,088</b>	<b>423,366</b>

Since a final dataset has not yet been made available from the TDOT process and the Knoxville TPO 2018 base year totals are higher for each county with the exception of a slightly lower value in Anderson County, the TPO staff is proposing to continue to use the methodology and data developed for the 2045 Mobility Plan regional emissions analysis for the FY 2023-2026 TIP conformity determination.



Following is a summary of data source used for each vehicle (source) type for this regional emissions analysis:

Source Type 11 (Motorcycle) – Utilized TDOT 2017 NEI data. It was decided that motorcycles should be represented in an unambiguous fashion in the TDOR data obtained by TDOT and the total numbers were consistent with the 2014 input data appearing more reasonable than the CRC data.

Source Type 21 (Passenger Car) – Utilized CRC A-115 Scenario 2

Source Type 31 (Passenger Truck) – Utilized CRC A-115 Scenario 2

Source Type 32 (Light Commercial Truck) – Utilized CRC A-115 Scenario 2

Source Type 41 (Other Bus) – Use National Default Local Data Method applied to 2018 VMT

Source Type 42 (Transit Bus) – Utilized 2018 National Transit Database (NTD) information (Knox County only county in study area with transit buses).

Source Type 43 (School Bus) – Utilized TN Department of Education school bus database provided in 9/2020 and information from Knox County Schools 2018.

Source Type 51 (Refuse Truck) – Use National Default Local Data Method applied to 2018 VMT

Source Type 52 (Single Unit Short-Haul Truck) – Utilized CRC A-115 Scenario 2

Source Type 53 (Single Unit Long-Haul Truck) – Use National Default Local Data Method applied to 2018 VMT

Source Type 54 (Motorhome) – Use National Default Local Data Method applied to 2018 VMT

Source Type 61 (Combination Short-Haul Truck) – Use National Default Local Data Method applied to 2018 VMT

Source Type 62 (Combination Long-Haul Truck) – Use National Default Local Data Method applied to 2018 VMT

Source types 11, 21 and 31 were grown from the available data year of 2017 to the baseline year 2018 by utilizing the household vehicle ownership growth rates obtained from the TPO travel demand model between the previous model base year of 2014 and the new base year of 2018. The growth rates for 2017 to 2018 for source types 32 and 52 were developed using the NDLD method and the growth rate between 2014 and 2018.

Source type population projections for future years are based on various methods as follows based on the specific vehicle type:

Source Types 11, 21 and 31 - 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 as part of its household population synthesizer. 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 and other socioeconomic characteristics. The household vehicle ownership is aggregated to the TDM Traffic Analysis Zone (TAZ) level and then further aggregated to the county level to develop an



independent growth rate from the base year 2018 to future analysis years 2026, 2035 and 2045 for each county subject to air quality conformity.

Source Type 32 – The growth in passenger vehicle VMT from the TDM is applied to the base year 2018 for each analysis year.

Source Type 41 – The growth in overall VMT from the TDM is applied to the base year 2018 for each analysis year.

Source Type 42 – Since transit buses (as defined by EPA in MOVES) only operate in Knox County, it was decided to utilize the overall population growth in Knox County to determine transit bus growth rate since it would be logical to assume that transit usage would increase relative to population growth.

Source Type 43 – Growth in student population by county as calculated by the TDM household population synthesizer.

Source Types 51, 52, 53 and 54 – The growth in “single-unit” truck VMT from the TDM is applied to the base year 2018 for each analysis year.

Source Types 61 and 62 – The growth in “multi-unit” truck VMT from the TDM is applied to the base year 2018 for each analysis year.

Since there are two 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.

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. In order to be consistent with past methodology used in developing the SIP MVEB, a constant factor of 0.21 is multiplied by each Source Type to derive the partial area vehicle counts. This was based on comparing population and vehicle counts in the partial area relative to the entire county.

Roane County – Partial Area included in the 1997 Annual and 2006 Daily PM<sub>2.5</sub> 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 be consistent with past methodology used in developing the SIP MVEB, a constant factor of 0.013 is multiplied by each Source Type to derive the partial area vehicle counts. This was based on comparing population and vehicle counts in the partial area relative to the entire county.

In general, it is believed that the adoption of the above assumptions will lead to a conservative (high) estimate of total source type population. A comparison of the county with the largest source type population in the region (Knox County) showing the total estimated vehicle count for the previous base year of 2014 to 2018 is provided in table B-1:



**Table B-1 – Knox County Source Type Population Comparison of Previous 2014 and New 2018 Base Year**

Source Type ID	2014 Population	2018 Population
11	8,817	9,180
21	171,062	182,950
31	140,750	194,417
32	24,722	17,457
41	6	7
42	153	154
43	383	449
51	184	213
52	7,683	8,699
53	271	313
54	1,683	1,919
61	3,217	3,547
62	3,503	4,061
<b>TOTAL</b>	<b>362,434</b>	<b>423,366</b>

Table B-2 below and continued on the following pages provides the breakdown of vehicle population growth by source type and county:

**Table B-2 – Source Type Population Growth by County 2018 – 2045**

Source Type	2018	2026	2035	2045
<b>Anderson County - Full County for PM2.5 Analysis Only</b>				
<i>Motorcycle</i>	2,544	2,595	2,651	2,698
<i>Passenger Car</i>	32,672	33,337	34,051	34,649
<i>Passenger Truck</i>	40,728	41,557	42,447	43,193
<i>Light Commercial Truck</i>	1,919	1,980	2,082	2,252
<i>Other Buses</i>	1	1	1	1
<i>Transit Bus</i>	0	0	0	0
<i>School Bus</i>	86	82	84	85
<i>Refuse Truck</i>	35	37	39	43
<i>Single Unit Short-haul Truck</i>	1,020	1,073	1,129	1,239
<i>Single Unit Long-haul Truck</i>	46	48	51	56
<i>Motor Home</i>	266	280	294	323
<i>Combination Short-haul Truck</i>	487	511	538	611
<i>Combination Long-haul Truck</i>	565	593	624	709
<b>TOTAL</b>	<b>80,369</b>	<b>82,094</b>	<b>83,991</b>	<b>85,859</b>



Table B-2 – Source Type Population Growth by County 2018 – 2045 (Continued)

Source Type	2018	2026	2035	2045
<b>Blount County</b>				
<i>Motorcycle</i>	5,070	5,423	5,817	6,270
<i>Passenger Car</i>	59,894	64,068	68,723	74,074
<i>Passenger Truck</i>	70,745	75,674	81,173	87,494
<i>Light Commercial Truck</i>	9,354	10,574	11,518	12,625
<i>Other Buses</i>	1	1	1	1
<i>Transit Bus</i>	0	0	0	0
<i>School Bus</i>	164	155	172	196
<i>Refuse Truck</i>	33	35	38	41
<i>Single Unit Short-haul Truck</i>	1,778	1,900	2,043	2,210
<i>Single Unit Long-haul Truck</i>	55	59	63	68
<i>Motor Home</i>	355	379	408	441
<i>Combination Short-haul Truck</i>	322	341	365	411
<i>Combination Long-haul Truck</i>	361	382	409	461
<b>TOTAL</b>	<b>148,132</b>	<b>158,991</b>	<b>170,730</b>	<b>184,292</b>
<b>Knox County</b>				
<i>Motorcycle</i>	9,180	9,758	10,456	11,252
<i>Passenger Car</i>	182,950	194,464	208,380	224,232
<i>Passenger Truck</i>	194,417	206,653	221,441	238,287
<i>Light Commercial Truck</i>	17,457	19,098	20,556	22,286
<i>Other Buses</i>	7	8	8	9
<i>Transit Bus</i>	154	165	177	189
<i>School Bus</i>	449	472	536	604
<i>Refuse Truck</i>	213	230	245	264
<i>Single Unit Short-haul Truck</i>	8,699	9,402	10,004	10,794
<i>Single Unit Long-haul Truck</i>	313	338	360	388
<i>Motor Home</i>	1,919	2,074	2,207	2,381
<i>Combination Short-haul Truck</i>	3,547	3,861	4,017	4,542
<i>Combination Long-haul Truck</i>	4,061	4,421	4,599	5,200
<b>TOTAL</b>	<b>423,366</b>	<b>450,944</b>	<b>482,986</b>	<b>520,428</b>
<b>Loudon County</b>				
<i>Motorcycle</i>	1,855	1,989	2,175	2,374
<i>Passenger Car</i>	22,005	23,601	25,808	28,169
<i>Passenger Truck</i>	30,295	32,493	35,531	38,782
<i>Light Commercial Truck</i>	996	1,070	1,152	1,306
<i>Other Buses</i>	1	1	1	1
<i>Transit Bus</i>	0	0	0	0
<i>School Bus</i>	63	63	66	72
<i>Refuse Truck</i>	44	47	50	54
<i>Single Unit Short-haul Truck</i>	921	984	1,044	1,137
<i>Single Unit Long-haul Truck</i>	50	53	57	62
<i>Motor Home</i>	259	277	294	320
<i>Combination Short-haul Truck</i>	685	739	760	870
<i>Combination Long-haul Truck</i>	810	874	899	1,028
<b>TOTAL</b>	<b>57,984</b>	<b>62,191</b>	<b>67,837</b>	<b>74,175</b>



Table B-2 – Source Type Population Growth by County 2018 – 2045 (Continued)

Source Type	2018	2026	2035	2045
<b>Anderson County - Partial County for Ozone Analysis</b>				
<i>Motorcycle</i>	534	545	557	566
<i>Passenger Car</i>	6,861	7,001	7,151	7,276
<i>Passenger Truck</i>	8,553	8,727	8,914	9,071
<i>Light Commercial Truck</i>	403	415	452	480
<i>Other Buses</i>	0	1	1	1
<i>Transit Bus</i>	0	0	0	0
<i>School Bus</i>	18	17	18	18
<i>Refuse Truck</i>	7	8	8	9
<i>Single Unit Short-haul Truck</i>	214	226	239	250
<i>Single Unit Long-haul Truck</i>	10	10	11	11
<i>Motor Home</i>	56	59	62	65
<i>Combination Short-haul Truck</i>	102	109	114	115
<i>Combination Long-haul Truck</i>	119	126	132	134
<b>TOTAL</b>	<b>16,878</b>	<b>17,244</b>	<b>17,659</b>	<b>17,996</b>
<b>Roane County - Partial County for PM2.5 Analysis</b>				
<i>Motorcycle</i>	22	23	23	23
<i>Passenger Car</i>	289	293	294	296
<i>Passenger Truck</i>	389	393	396	398
<i>Light Commercial Truck</i>	10	11	11	13
<i>Other Buses</i>	0	1	1	1
<i>Transit Bus</i>	0	0	0	0
<i>School Bus</i>	1	1	1	1
<i>Refuse Truck</i>	0	1	1	1
<i>Single Unit Short-haul Truck</i>	12	12	13	15
<i>Single Unit Long-haul Truck</i>	1	1	1	1
<i>Motor Home</i>	3	3	3	4
<i>Combination Short-haul Truck</i>	7	8	8	9
<i>Combination Long-haul Truck</i>	8	9	9	11
<b>TOTAL</b>	<b>744</b>	<b>756</b>	<b>761</b>	<b>773</b>

### 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 developed using an approach of attempting to blend consistent data sources with what was used to develop the overall Source Type



Population for each vehicle type as described in the previous section. For example, cases where the CRC A-115 data source was used for vehicle population its corresponding age distribution that was provided in the same overall dataset was utilized. For source types in which the NDLD method was used it was decided to use the MOVES default age distributions that were exported from a MOVES 3 national scale run for calendar year 2017. Local data was used for age of transit and school buses.

## **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.

The methodology used to grow VMT to the future analysis years was to compare the base year 2018 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. A special model post-processor was developed for the current TPO TDM which automates the previous process of compiling the VMT by vehicle type into a spreadsheet format and calculating growth factors to apply to each HPMS vehicle type. Table B-3 below displays this model-generated VMT growth calculator spreadsheet for the specific example of the 2045 analysis year for the 2008 Ozone Standard geography:



**Table B-3 – Example VMT Growth Calculator for MOVES HPMSVType Year Input**

County	HPMSVTypeID	HPMS_2018o3_vmt	growth	HPMS2045o3_vmt
Anderson	10	1,905,431	1.19	2,268,168
Anderson	25	233,651,944	1.19	278,132,288
Anderson	40	146,472	1.17	171,763
Anderson	50	3,943,287	1.17	4,624,172
Anderson	60	2,257,398	1.13	2,542,742
Blount	10	7,996,420	1.35	10,798,868
Blount	25	1,181,311,185	1.35	1,595,316,910
Blount	40	458,075	1.26	575,361
Blount	50	21,590,845	1.26	27,118,973
Blount	60	43,263,450	1.29	55,689,808
Knox	10	33,790,605	1.27	43,062,345
Knox	25	5,587,211,950	1.27	7,120,276,456
Knox	40	4,915,090	1.24	6,106,755
Knox	50	122,615,180	1.24	152,343,256
Knox	60	484,040,370	1.28	620,740,317

In order to more simply document the projected growth in VMT for each analysis year covered in this conformity determination, the table on the following page (Table B-4) depicts only the total county-level Daily VMT for each analysis year. Subsequent to running the MOVES3 model, the TPO staff reviewed the detailed activity outputs from the model run to ensure that the output VMT matched the input VMT so that it could be verified that all emissions were properly accounted for.



**Table B-4 – Growth in Total Daily VMT by County (PM2.5 Maintenance Area)**

	2018 Actual	2026	2035	2045
<b>Anderson</b>	2,566,316	2,658,996	2,794,858	3,034,176
<b>Blount</b>	3,437,315	3,698,643	4,222,459	4,628,754
<b>Knox</b>	17,075,543	18,576,268	20,005,773	21,760,295
<b>Loudon</b>	2,420,082	2,601,858	2,784,860	3,155,554
<b>Roane - P</b>	N/A	170,448	177,892	199,751

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 for the Ozone analysis. Note, this same data source (UT, 2014) was carried forward to the current analysis since the 2017 TDOT NEI effort did not provide new documentation for how these were modified and they appeared to be generally inconsistent with what would be expected.

Hourly VMT fractions by road type were developed from the TPO’s travel demand model using a new post processor created specifically for developing MOVES-ready inputs. The post-processor 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. Further documentation of the new post-processor is provided in a separate document that was produced by the TPO’s modeling consultant.



### **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 model post-processor. 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 model post-processor 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. A separate speed distribution for multi-unit trucks was developed and validated against real-world speed information obtained through the National Performance Measure Research Dataset (NPMRDS). The speeds change 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 is developed using the TDM post-processor which automatically tabulates the aggregate VMT (HPMS model adjusted model volumes) by road type and calculates the percent on each road type.

### **B.2.7 FUELS**

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 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-5 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-5. 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 Guidance: “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-6).



**Table B-6. Overall KAT Fleet Statistics**

	<b>VMT</b>	<b>Fraction</b>
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-7. 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-7. 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

The other portions of the required fuels 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.2.8 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)
<b>Knoxville Regional Transportation Planning Organization (TPO)</b> 400 Main Street, Suite 403 Knoxville, TN 37902 (865) 215-2500   FAX: (865) 215-2068	Jeff Welch, TPO Director Mike Conger, Transportation Engineer Craig Luebke, Transportation Planner
<b>Knox County Department of Air Quality Management</b> 140 Dameron Avenue Knoxville, TN 37917 (865) 215-5900   FAX: (865) 215-5902	Brian Rivera, Director Coby Webster, Engineer
<b>Tennessee Department of Transportation (TDOT)</b> 505 Deaderick Street Nashville, TN 37243 (615) 741-2848   FAX: (615) 532-8451	Deborah Fleming, MPO Program Manager
<b>Tennessee Department of Environment and Conservation (TDEC), Air Pollution Control Division</b> Tennessee Tower, 15 <sup>th</sup> Floor 312 Rosa L. Parks Ave. Nashville, TN 37243 (615) 532-0616	Marc Corrigan, Environmental Consultant
<b>Federal Highway Administration, Tennessee Division</b> 404 BNA Drive, Building 200, Suite 508 Nashville, TN 37217 (615) 781-5767   FAX: (615) 781-5773	Sean Santalla, Planning & Air Quality Specialist
<b>U.S. Environmental Protection Agency (EPA), Region 4</b> 61 Forsyth Street Atlanta, GA 30303 (404) 562-9077   FAX: (404) 562-9019	Kelly Sheckler, Environmental Planner Dianna Myers, Environmental Scientist Josue Ortiz, Environmental Engineer
<b>Federal Transit Administration (FTA), Region 4 (Atlanta)</b> 61 Forsyth Street Atlanta, GA 30303 (404) 562-3500   FAX: (404) 562-3505	Andres Ramirez, Community Planner



Agency	Representative(s)
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 3/8/2022

#### **Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 3/8/2022**

##### **Roll Call**

##### **Call Participants:**

##### Knoxville TPO:

Mike Conger  
Craig Luebke

##### EPA:

Dianna Myers  
Richard Monteith  
William Carnright  
Sarah Larocca

##### FHWA:

Sean Santalla

##### FTA:

None

##### Tennessee Department of Transportation:

Deborah Fleming



Tennessee Department of Environment & Conservation:  
Marc Corrigan

Knox County Air Quality Management:  
None

Lakeway Area MTPO:  
Rich DesGroseilliers

National Park Service:  
Jim Renfro

### **Discussion Items:**

#### **Discussion of Draft Short Conformity Report for April 2022 TIP Amendment**

- Mike Conger provided a summary of the conformity report background information and the proposed project.
- The project in question was addressed in a previous short conformity report and the amendment is to add funding only.
- There were no questions on the draft conformity report
- Mike noted that the IAC comment period lasts until March 23<sup>rd</sup> with a 30-day public comment period to follow.

#### **Discussion of FY 2023 – 2026 Transportation Improvement Program (TIP) and associated Conformity Determination – Initial Coordination and Timeline**

- Mike advised the group that the TIP development process is underway and presented a general timeline for the required conformity process. It is anticipated that a full regional emissions analysis will be required.
- Mike went through the potential IAC interactions that are foreseen during this process starting with a call to review the planning assumptions. He noted that he is hoping to carry forward several of the same parameters used to develop the fairly recent conformity analysis to support the Mobility Plan that was adopted last year though there is new decennial Census data available which needs to be compared with the travel demand model's assumptions and there are some new statewide MOVES inputs that have recently been developed by TDOT to support the 2020 National Emissions Inventory effort.
- Mike asked Marc Corrigan regarding the status of responding to additional comments on the TDOT MOVES input development since he had recently sent comments but had not heard back yet. Mike also inquired about the ability to still use our own IAC process to determine input source information that we feel is most appropriate for our situation rather than relying solely on the new inputs.
- Marc Corrigan responded that TDEC is compiling comments for further discussion and that he hoped to convene a call in the near future. Marc also confirmed that we have



flexibility to review and decide appropriate inputs for our own situation through the IAC process.

- Mike Conger noted that the next major step will be to review project lists for the TIP and he noted that the TPO's TIP project call is complete and that project prioritization and fiscal constraint are next steps. He asked for any updates regarding the projected timeline for receiving TDOT's projects.
- TDOT projects will be delivered after the state legislature approves them at the end of April per update from Deborah Fleming
- Mike noted that after the project lists were finalized along with determinations of Exempt and Regional Significance that the modeling work would be done to run the emissions analysis and compile the draft conformity report for IAC and public review.
- Mike stated that the goal is to adopt the final TIP at the MPO level in September statewide
- Sean Santalla asked for clarification whether a paired Mobility Plan amendment may be processed as well to align the new TIP and funding with the Mobility Plan.
- Mike Conger confirmed that we anticipate this to be the case
- Improve Act funding in the Mobility Plan, as well as recently announced state funding for two I-40 interchange projects factor into this also.

### **Discussion of Draft update to Conformity Memorandum of Agreement (MOA)**

- Mike Conger reviewed the history of this MOA dating back to 2004 when the region was first designated nonattainment for the 1997 8-Hour Ozone Standard
- Mike noted that additional background language has been added to update the region's current status and which particular standards are still applicable for transportation conformity requirements.
- Mike noted that an MOA is required for areas like Knoxville where the nonattainment/maintenance area is larger than the MPO planning area. He first incorrectly referenced this as a requirement under EPA's conformity regs but was later corrected by Sean Santalla that this is in the FHWA planning regs governing the MPO planning process.
- Sean further noted that the reference in the MOA needed to be updated from 23 CFR 450.310(f) to 23 CFR 450.314(c).
- Jim Renfro inquired about whether reference to the "Limited Maintenance Plan" for the 1997 8-Hour standard should be included. Mike responded that something could be added and would investigate further.
- Jim also asked if this MOA was similar in nature to one that the Park had with its North Carolina counties but Marc Corrigan responded that this was a different situation.
- There was discussion about whether or not the state air agency needed to be added as a signatory to the MOA based on language in the federal regulation about who should be included in the agreement. Marc Corrigan replied that he believed that the state conformity SIP addressed most of those requirements but he will review how the MOA relates to the TN Conformity SIP.
- Marc asked if section (e) from the regulations apply about the situation of more than one MPO serving an urbanized area but Sean noted that does not apply in this situation since Knoxville and Lakeway are two separate urbanized areas.



- Mike mentioned that a new section has been added to address matters related to the 1997 8-Hour (Orphan) Area Conformity Process coming out of the EPA vs South Coast court decision.
  - Mike Conger requested review and suggestions for this section
  - Dianna Myers indicated she has reviewed and will have some suggestions. She suggested clarifying “orphan” and “donut” area references.
  - Sean Santalla suggested that “former maintenance area” may be an appropriate reference
  - Dianna Myers provided a brief summary of the terms “orphan” and “donut” – this illustrates an opportunity to clarify the terms used and may require further discussion
  - Sean also noted that in this case the counties outside of the TPO Planning area were previously a “donut” area and now are potentially what is referred to as an “orphan” area. Mike replied that in looking at the recent EPA conformity guidance for this situation it actually uses the terminology of “donut orphan area” so perhaps this is the most technically correct way to refer to it.
  - Jim Renfro suggested that a map clearly delineating and labeling the areas will be helpful and Mike responded that he can add that.
- Rich DesGroseilliers confirmed that he was on the call and in response to Mike’s question about the MOA signatory he stated Lakeway’s current Executive Board chair is Mark Potts.
- Mark Corrigan inquired about the need to incorporate language reflecting synchronizing timelines of conformity determinations with project actions so that multiple conformity findings would not be necessary months apart from one another. Mike responded that this could be something worth considering but not sure it can be incorporated in this MOA.
- Sean Santalla asked when comments were due, Mike Conger responded to request them within two weeks

### **Other Business/Next Steps**

None



## **C.2.2 MEETING MINUTES FOR IAC CONFERENCE CALL ON 5/10/2022**

### **Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 5/10/2022**

#### **Roll Call**

#### **Call Participants:**

##### Knoxville TPO:

Mike Conger  
Craig Luebke

##### EPA:

Dianna Myers  
Richard Monteith

##### FHWA:

Sean Santalla

##### FTA:

None

##### Tennessee Department of Transportation:

Deborah Fleming

##### Tennessee Department of Environment & Conservation:

Marc Corrigan

##### Knox County Air Quality Management:

None

##### Lakeway Area MTPO:

Rich DesGroseilliers

##### National Park Service:

Jim Renfro

#### **Discussion Items:**

#### **Discussion of Draft update to Conformity Memorandum of Agreement (MOA)**

- Mike Conger summarized the significant changes to the draft MOA based on comments received from the earlier distribution for review.



- TDEC believes the TN Conformity SIP covers their role and responsibilities, so no need for them to be signatory on this MOA.
- Sean Santalla indicated he is inclined to agree with this assessment
- Donut Area/Orphan Area definitions were clarified by Mike Conger and he mentioned that he would add this information to the next version of the MOA
- Donut Area – This is the area specified in EPA regulations as parts of a designated non-attainment area that are outside of an MPO planning area.
- Orphan Area – This area is discussed in the 2018 court decision in the South Coast case related to the revocation of the 1997 8-hour Ozone Standard and is specifically those geographies that were designated as nonattainment/maintenance for the 1997 8-hour Ozone Standard but are attainment for the later 2008 Ozone Standard.
- Mike added that the original MOA was developed to mainly address the situation of major conformity determinations associated with new long-range plans but an additional section would be added specific to TIP/STIP amendments.
- 1997 8-Hour Orphan Area Conformity Process Added – there was discussion about where to best locate this in the document, with the final assessment being that it is ok where shown in draft.
- Sean Santalla provided clarification regarding his comment about adding a bullet for which agency takes the conformity determination.
- Additional clarification may be needed on responsibilities for advertising public comment periods and notices and this can be discussed further after the next version is sent to the IAC group.

### **Discussion of FY 2023 – 2026 Transportation Improvement Program (TIP) and associated Conformity Determination – Planning Assumptions and Timeline**

- Mike Conger discussed the document provided to the IAC group detailing the proposed process and overview of planning assumptions. He noted that the intent is to carry forward as many of the assumptions from the recent 2045 Mobility Plan update into the planning assumptions for the TIP.
- Dianna Myers noted that the fact that a Limited Maintenance Plan was recently approved for the 1997 8-hour Ozone Standard should be properly reflected in Section C regarding current air quality status. Along with that it could be documented that this is the last 10 years of the maintenance period such that this standard will go away completely at its conclusion. Mike Conger said that he would add this information and would confer further with Dianna and Marc to get all of the details correct.
- Marc Corrigan confirmed that the original redesignation date to Maintenance status was March 8, 2011 so that would trigger the 20-year maintenance period and end date of March 8, 2031.
- Mike reiterated that due to possible project horizon year, scope or other changes that it was anticipated that a full regional analysis would be required to demonstrate conformity for the pending TIP.
- Socioeconomic Data – population and household counts from the 2020 Decennial Census has become available since the projections develop for the 2045 Mobility Plan which were assessed for making any necessary planning assumption changes for this analysis.



- Population Projections – new CBER projections release March 2022
- CBER projections do not reflect a significant change from the projections in the 2045 model so TPO is planning to stay with the original projections used for the last conformity analysis.
- Noted four major new industry announcements with substantial employment impacts in the region
- TPO staff recommends adding these to job totals to the applicable TAZ on top of the previous estimated employment.
- MOVES3 discussion and inputs
- Mike again stated that the intent was to utilize the previously developed inputs for the most recent regional emissions analysis to support the 2045 Mobility Plan however each was reviewed to ensure nothing more recent was available that should be used instead.
- He noted that one new data source that had potentially become available was for Source Type Population estimates, which were produced by TDOT for all 95 counties to support the 2020 National Emissions Inventory (NEI) process. He stated that due to additional review and statewide IAC comments still being evaluated that his opinion was that this data was not yet ready for being used in a conformity analysis.
- Marc Corrigan replied that there is an ongoing process to revise the numbers at the state level. With that process ongoing, he supports Mike's approach to stick with the previously developed source type population estimates for the 2018 base year.
- Mike Conger noted that associated with source type population is the source type age distribution which he again prefers to stick with the TPO approach to be consistent. He mentioned however that he is looking further into the age distributions that he developed for the default source type categories to ensure that the correct methodology was previously used.
- Marc Corrigan replied that a more consistent approach is appropriate whenever possible
- Mike noted that the required Fuels inputs for MOVES had previously been provided by TDEC and that he would need to follow up to review that information with Marc Corrigan to verify that it was still up to date.
- Marc Corrigan concurred and can coordinate with Mike to review
- TIP Conformity Process Timeline was reviewed – next IAC call will be to review the project list (Late May/Early June target)

### **Other Business/Next Steps**

None



## **C.2.3 MEETING MINUTES FOR IAC CONFERENCE CALL ON 6/8/2022**

### **Knoxville Air Quality Interagency Consultation Conference Call Meeting Minutes for 6/8/2022**

#### **Roll Call**

#### **Call Participants:**

##### Knoxville TPO:

Mike Conger  
Craig Luebke

##### EPA:

Dianna Myers  
Richard Monteith  
Josue Ortiz

##### FHWA:

Sean Santalla

##### FTA:

None

##### Tennessee Department of Transportation:

Mohammad Molla  
Chris McPhilamy

##### Tennessee Department of Environment & Conservation:

Marc Corrigan

##### Knox County Air Quality Management:

None

##### Lakeway Area MTPO:

None

##### National Park Service:

Jim Renfro

#### **Discussion Items:**

#### **Discussion of Draft Short Conformity Report for TIP Amendment (Washington Pike Widening)**



- Mike Conger introduced the project amendment SCR and described the project area and proposed revised scope, with a request for comments/questions either on today's call or by the IAC review deadline which is June 23<sup>rd</sup>.
- Mohammad Molla asked that the conformity report be shared with the forecasting office.

### **Discussion of Draft update to Conformity Memorandum of Agreement (MOA)**

- Mike Conger presented the revised MOA with the latest comments/edits incorporated and reviewed changes from the previous draft – this will be presented for adoption at the July 27 TPO Exec. Board meeting.
- Sean Santalla responded that he agreed with the addition of a step for the submittal process where the conformity determination is first sent to TDOT and then TDOT officially submits it to FHWA/FTA. There was discussion about the terminology related to EPA's role in that review and Dianna Myers clarified that during the FHWA/FTA review they consult with EPA to obtain their concurrence on the conformity finding.
- Mike proposed a two-week period for any further comments
- Sean Santalla asked if there is a date for TDOT legal review completion. Mike responded that his is not firm.
- Marc Corrigan indicated that legal may make substantial changes, so it may be best to wait on their review prior to TPO adoption. Mike agreed that this may be the best approach and he will see if a deadline can be placed on their review to be able to stay on track for July 27<sup>th</sup> adoption however it is okay to push out further if necessary since there's no official deadline on this.
- Chris McPhilamy noted that he was informed recently that the proper citation of the new TDOT Commissioner for official documents is Howard H. Eley instead of Butch Eley.

### **Discussion of FY 2023 – 2026 Transportation Improvement Program (TIP) and associated Conformity Determination – Planning Assumptions and Timeline**

#### **Planning Assumptions**

- Mike Conger provided a brief summary of the intent to carry forward as many of the assumptions from the recent 2045 Mobility Plan update into the planning assumptions for the TIP. He noted that there were just a few minor comments that were received from Marc Corrigan and that these have been addressed in the current version.
- Mike noted that one outstanding item that he had not yet fully reviewed from the last call was the appropriate source data to use for the national default Source Type Age Distribution for the ones where we are using the national default local data method to derive the population numbers. Mike showed the spreadsheet tool that was used for the most recent conformity analysis which was obtained from the EPA but may not actually be the most appropriate methodology for this.
- Marc responded that he was familiar with that spreadsheet tool and that there is a more current version but that it might be more appropriate to use an approach that provides more consistency with the process used in the development of the SIP.
- A further discussion entailed how best to proceed among various options and the final result was that Mike would coordinate with Marc on how to obtain a 2017 national default data set by running MOVES3 at the national scale to be consistent with the previous base year used to develop the source type population values.



- Mohammad Molla asked for clarification regarding the 2017 data from TDOT which he understood had never been officially finalized, Mike replied that it was one of several sources that were considered in developing base year values but ultimately it was only utilized for one Source Type which was motorcycles.
- Mike will follow up on age distribution matter with additional information and documentation for the IAC group to review.

### **Draft Project List for TIP and Mobility Plan Amendments**

- Mike Conger presented the draft TIP project list and reviewed that TIP is updated every 3 years, covering a 4 year period. He also reviewed the TIP project numbering format.
- No new non-exempt projects are included in the draft project list
- Marc Corrigan – asked about grey shading and Mike Conger responded that these are the transit operating funds and other general project groupings that include projects that don't have to be individually identified such as resurfacing projects and are by definition exempt from air quality conformity.
- Mohammad Molla – asked about implementing a statewide TIP ID system if at all possible and suggested a meeting to discuss, Craig Luebke responded that while he understood the potential benefits of this standardization that it would be virtually impossible to coordinate among the various MPOs, some of which involve multiple states. Craig also noted that one standard unique identifier of the TDOT PIN number was one option for providing this standardization that is being sought for purposes of plugging them into the statewide travel demand model.
- Mike Conger provided a brief overview of proposed project changes list for the Mobility Plan update that was distributed and noted that he had created a separate, condensed listing that only shows the changes which he will provide to the IAC group after this call. He discussed the major categories of changes (new projects /removed projects /horizon year, scope or description changes)
- Discussion of Relocated Alcoa Highway (KRMP ID 09-257/09-258) that is combined, but will be delivered in two construction phases, as well as the matter of keeping the Analysis year in 2026 vs. moving it out to 2035.
- Marc Corrigan asked about possibility of segmenting it with the segments split to the appropriate horizon year. Mike replied that the delivery is not structured in a way to facilitate this approach.
- Mohammad Molla asked for clarification on how the conformity analysis year relates to open to traffic dates.
- Mike stated that he is currently showing this as one overall project for purposes of the Mobility Plan project list and keeping it in its current horizon year of 2026 although the entire project may take a little longer to fully complete based on current schedules from TDOT staff. Some of the rationale for keeping it in the same horizon year is that there is still an unknown with the exact schedule, it provides a more conservative approach with respect to the emissions analysis by increasing emissions in the 2026 horizon year with the project included and finally that there will be an opportunity to update this with the next major Mobility Plan update that will be finalized in 2025.

### **Timeline**

Mike provided a brief overview on the conformity process timeline



## **Other Business/Next Steps**

None

## **C.2.4 MEETING MINUTES FOR IAC CONFERENCE CALL ON 8/30/2022**

### **Knoxville Air Quality Interagency Consultation Conference Call**

#### **Meeting Minutes for 8/30/2022**

#### **Roll Call**

#### **Call Participants:**

##### Knoxville TPO:

Mike Conger

Craig Luebke

##### EPA:

Richard Monteith

Josue Ortiz

##### FHWA:

Sean Santalla

##### FTA:

None

##### Tennessee Department of Transportation:

Troy Ebbert

Michelle Christian

Deborah Fleming

Bob Hayzlett

Mohammad Molla

##### Tennessee Department of Environment & Conservation:

Marc Corrigan

##### Knox County Air Quality Management:

None

##### Lakeway Area MTPO:

None



National Park Service:

Jim Renfro

Others:

None

**Discussion Items:**

**1. Overview of Draft FY 2023-2026 Knoxville TPO Transportation Improvement Program (TIP)**

- Craig Luebke provided a summary report on the status of draft TIP

**2. Overview of Draft Conformity Determination Report for the FY 2023-2026 TIP and 2045 Mobility Plan Amendments**

- Background & CDR Document Information
  - Mike Conger provided an update/background discussion and summary of the CDR including major components of each chapter.
- Overview of Project Amendments
  - Mike Conger provided a summary update on the proposed Mobility Plan amendment, including project list changes.
  - Mike Conger provided specific project details for each of the Non-Exempt projects that were being updated with new descriptions, termini or horizon year changes including two Interstate interchange projects and the major Relocated Alcoa Hwy project.
  - Sean Santalla asked for a clarification on the status of a project in Sevier County, in terms of what was changing. Mike Conger replied that it was just the timeframe reflecting delays in getting the project implemented but no other changes.
  - Mike Conger closed by summarizing the TIP/Mobility Plan project crosswalk list and directing the group to the Before/After Mobility Plan documentation in shared Google Drive.
- Emissions Analysis Results
  - Mike Conger provided an overview of the Emissions Analysis results showing that the TPO was able to demonstrate conformity by meeting the allowable Motor Vehicle Emissions Budgets for each pollutant.
  - Mike Conger also showed a table of the emissions amounts from the most recent conformity analysis that was performed for the 2045 Mobility Plan versus this run which indicated that emissions were relatively unchanged with a few minor decreases, most notably in 2026 which was likely due to removing the large Relocated Alcoa Hwy project from that horizon year.



- MOVES Files
  - Mike Conger provided an update on the location and organization for the MOVES files in the shared Google drive.
  - Marc Corrigan noted that the before/after appendix was helpful for the review process and also commended the emissions comparison table.
  - Marc Corrigan asked about projects shifted from funded to illustrative and whether their impacts were reflected. Mike responded that they were essentially removed from those model years and that would have affected the total amount of emissions.
  - Marc Corrigan remarked that he was glad to see the chart that was provided in today's presentation that showed the difference in emissions from the previous conformity analysis to this one. Mike Conger also noted that one of the changes that might have affected total emissions was the updated vehicle age distribution assumption that was made for the national default source types.
  - Mike and Marc discussed the recent MOVES patch and model run impacts

### **3. Other Business/Next Steps**

- Mike provided a schedule update on the IAC review process and updated on public review dates
- Deborah Fleming indicated that Federal comments on the draft Knoxville TIP are due Sept. 23 and Sept. 26 for Lakeway TIP.
- Discussion clarified that federal comments on the draft TIP (20 business days) are due on Sept. 23 however Sean noted that he was planning to be out of the office that date and therefore was in fact targeting Sept. 22<sup>nd</sup> as the TPO's schedule had assumed.
- Mike reminded the IAC Group again that comments on the draft CDR are due by September 15<sup>th</sup> and to reach out if there were any questions as or assistance needed to find information in what's been provided.



## C.3 Planning Assumptions for IAC Review

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### Knoxville TPO FY 2023-2026 Transportation Improvement Program Update (FY 2023-2026 TIP)

#### Air Quality Conformity Process Overview and Latest Planning Assumptions

For IAC Discussion: May 10, 2022

Version 3 – Created May 25, 2022 (add'l comments from IAC)

#### Section I – Purpose and Background

##### A. Purpose

The intent of this document is to provide the Knoxville-Area Interagency Consultation (IAC) group with background on the proposed process that the Knoxville Regional TPO is planning to conduct to determine air quality conformity for the update of its Transportation Improvement Program (TIP) as well as the TDOT Statewide TIP (STIP) and the Lakeway MTPO TIP to cover fiscal years 2023 through 2026, i.e. the FY 2023-2026 TIP/STIP. This document is provided for discussion purposes during each IAC conference call and updated as appropriate in order to compile a final documentation of agreed-upon assumptions for model inputs and other planning factors.

##### B. TIP Background and Update Schedule

A conformity determination is required for each major update to the TIP which is conducted in every MPO in Tennessee every 3 years. The current FY 2020-2023 TIP needs to be updated to cover the next 4-year period of FY 2023-2026 by the end of calendar year 2022 to ensure a smooth transition between TIP periods and to remain consistent with TDOT's Statewide TIP (STIP) which will be updated concurrently. The projects programmed for funding in the TIP must be consistent with and a direct subset of the projects included in the current conformity Long-Range Transportation Plan (LRTP), known as the 2045 Knoxville Regional Mobility Plan which was adopted in April 2021 with a Conformity approval date of May 31, 2021. A conformity process timeline has been developed showing the major milestones and potential



IAC review stages leading towards adoption of the FY 2023-2026 TIP and associated conformity determination.

### **C. Current Air Quality Attainment Status**

As of the current date (April 2022), the Knoxville Region is currently designated as a Maintenance Area for 3 separate NAAQS –

2008 8-hour Ozone Standard – Blount, Knox and part of Anderson counties

2006 Daily PM<sub>2.5</sub> Standard – Anderson, Blount, Knox, Loudon and part of Roane counties

1997 8-hour Ozone Standard – Jefferson, Loudon, Sevier and parts of Anderson and Cocke counties. This standard had previously been revoked, but maintenance and conformity were found to still apply based on a court decision in a 2018 case known as “South Coast v. EPA”. Since the maintenance area for the 1997 8-hour Ozone Standard is larger than and includes the entirety of the geographic area covered by the 2008 8-hour Ozone Standard, a conformity determination must only be done for the so-called “Orphan Area” that is outside of the 2008 8-hour Ozone Standard area.

For conformity - EPA guidance has been provided that states a regional emissions analysis is not required to demonstrate conformity for the 1997 8-hour Ozone Standard and instead a condensed process of certain key elements such as documentation of IAC consultation and fiscal constraint is sufficient.

For maintenance – maintenance plans are developed for two sequential 10-year periods for a total of 20 years until the standard is no longer applicable. It was originally thought that no 2<sup>nd</sup> 10-year maintenance plan would be needed when the standard was revoked however the court’s ruling determined that maintenance plans still applied. It was determined that the area met the requirements to satisfy the 2<sup>nd</sup> 10-year maintenance period with what is known as a “Limited Maintenance Plan” (LMP) which is allowed when an area has demonstrated that ozone concentrations are well below the NAAQS. TDEC developed the LMP and it was approved in a Federal Register notice (Vol. 86, No. 111/Friday, June 11, 2021). The LMP demonstrates that the region should remain in compliance with this NAAQS through the 2<sup>nd</sup> maintenance period (until 2031) at which time the area will no longer be subject to conformity for this NAAQS.

See Attachment A for maps showing the geographic coverage for each applicable NAAQS.

### **D. Conformity of FY 2023-2026 TIP Update**

The TPO plans to conduct a full regional emissions analysis for the update of its Transportation Improvement Program (TIP) since it is anticipated that there will be changes to project scopes, timeframes and potentially new projects that were not accounted for in the conformity determination for the 2045 Mobility Plan. As stated previously, the TIP and LRTP must always be consistent with one another such that if projects are programmed in the TIP that are not identical to the LRTP then a full update/amendment will be required of the 2045 Mobility Plan including a revised regional emissions analysis and conformity determination. The projects that



are being programmed in the FY2023-2026 TDOT STIP and LAMTPO TIP will also be included in the overall conformity determination report for the entire Knoxville region that is subject to transportation conformity and conducted by the Knoxville TPO staff as per the current Conformity Memorandum of Agreement (MOA).

## E. Current Motor Vehicle Emissions Budgets (MVEB)

### Ozone:

An MVEB is available from the Maintenance Plan approved for the 2008 8-Hour Ozone NAAQS. The Maintenance Plan contains the following MVEBs set for 2011 and 2026:

Table 1: MVEB for 2008 Ozone Standard

<b>Pollutant</b>	<b>2011</b>	<b>2026</b>
	<b>(tons/day)</b>	
VOC	19.71	10.49
NOx	41.62	17.69

### PM2.5:

An MVEB is available from the Maintenance Plan approved for the 2006 Daily PM2.5 NAAQS. The Maintenance Plan contains the following MVEBs set for 2014 and 2028:

Table 2: MVEB for 2006 Daily PM2.5 Standard

<b>Pollutant</b>	<b>2014</b>	<b>2028</b>
	<b>(tons/day)</b>	
PM2.5	1.22	0.67
NOx	42.73	19.65

## Section II – Planning Assumptions for Regional Emissions Analysis

### A. Planning Assumptions Background

This section of the document will establish the “latest planning assumptions” and framework necessary for conducting the technical details used in the regional emissions analysis process to support a conformity determination for the updated TPO FY2023 – 2026 TIP, TDOT FY2023-2026 STIP and LAMTPO FY2023-2026 TIP. The planning assumptions specifically deal with the



travel demand modeling process used to estimate future vehicle miles of travel and impacts of programmed projects for their contribution to mobile source emissions, as well as other aspects of the emissions modeling process that must be established and agreed upon. Since a full regional emissions analysis was conducted for the 2045 Mobility Plan the majority of the planning assumptions will be consistent with that process and updated where necessary based on any major changes since that time.

## B. Analysis Years

Analysis year requirements are described in 40 CFR 93.118 (Motor Vehicle Emissions Budget - MVEB) and 40 CFR 93.119 (Interim Emissions Tests). The analysis years are controlled by the timeframe that is covered by the current LRTP, which is from 2021-2045, and MVEBs are available for both Ozone and PM2.5, 40 CFR part 93.118 establishes the required analysis years and emissions tests. In general, the required analysis years include:

Attainment Year for applicable pollutants – This will not apply as all attainment years are in the past.

Last year of the timeframe of the conformity determination – This is 2045.

Years such that there are no more than 10 years between analysis years

Consistency with motor vehicle emissions budget(s) must be demonstrated for each year where the applicable SIP specifically establishes an MVEB – This means 2026 (for Ozone) and 2028 (for PM2.5) must be assessed, but this can be achieved through linear interpolation between other analysis years.

Following are the previously agreed upon analysis years for the 2045 Mobility Plan conformity determination based on the above requirements:

2026 – Last Year of 2008 Ozone Standard Maintenance Plan and year such that analysis years are no more than 10 years apart. (Test done for Ozone and PM2.5)

2028 – Last Year of the 2006 Daily PM2.5 Standard Maintenance Plan (**interpolated and test only applicable to PM2.5, not Ozone**)

2035 – Year no greater than 10 years apart (both Ozone and PM2.5)

2045 – Last Year of Transportation Plan (both Ozone and PM2.5)

## B. Emissions Tests

Emissions tests will be against the MVEBs shown above and dependent on analysis year. In terms of Ozone, since all analysis years are 2026 and later, the 2026 Ozone MVEBs must be used in all cases. For PM2.5, the 2026 analysis year will be compared against the 2014 PM2.5 MVEBs and the subsequent analysis years will use the 2028 PM2.5 MVEBs.



### C. Socioeconomic Data Planning Assumptions and Forecasts

Population and Employment forecasts were previously documented during the development of the 2045 Mobility Plan and its associated conformity determination process. The source of projections were the Woods & Poole, Inc. “2019 Regional Projections” and are summarized in Attachment B. The TPO staff believes that these projections are still valid and intend to continue their use for this regional emissions analysis process subject to review and approval through the IAC process.

The most significant new source of demographic information that has become available since the time of the previous socioeconomic projections is the release of the population and household counts from the 2020 Decennial Census. The TPO staff reviewed the block-level household counts against the traffic analysis zone (TAZ) level estimates that were developed for the 2018 travel demand model base year and found there to be substantial agreement between the two. An exact comparison is not possible since the 2020 census block boundaries do not align perfectly with TAZ boundaries. Areas where significant differences were found could be attributable to this mismatch of boundaries as well as the fact that new developments have occurred between 2018 and 2020 such as a couple of instances where large apartment complexes were under construction in 2018 that have since become occupied. In the latter instance it was verified that those developments had been accounted for in the future-year projections.

A new source of population projections was released by the University of Tennessee Center for Business and Economic Research (CBER) in March 2022 and was compared against the Woods & Poole projections that were used by the TPO to the horizon year of 2045. The chart below shows that the recently released projections at the county-level are very close to the ones currently used in the TPO travel demand model as county-level control totals. No changes are therefore considered necessary to the TPO’s future forecast of population for this analysis, but will be revisited at the time of the next major LRTP update due in 2025.

	2018 Model	2020 Census	2026 Model	2026 CBER	2035 Model	2035 CBER	2045 Model	2045 CBER
Anderson	76,482	77,123	79,239	79,416	81,472	81,067	82,896	82,529
Blount	131,349	135,280	141,681	142,679	152,873	152,081	164,108	160,918
Jefferson	52,418	54,683	58,627	57,714	63,211	60,265	67,800	62,280
Knox	465,289	478,971	499,998	502,133	535,601	537,742	570,688	577,719
Loudon	53,054	54,886	57,731	59,243	63,236	64,403	68,965	69,483
Roane	53,140	53,404	54,460	53,981	55,334	53,223	55,563	51,945
Sevier	97,892	98,380	110,029	106,941	122,690	116,857	136,336	127,045
TOTAL	929,624	952,727	1,001,765	1,002,107	1,074,417	1,065,638	1,146,356	1,131,919



While there have been no new sources of employment projection data, the TPO staff consulted with the Knoxville Chamber which tracks major job recruitment announcements for the entire region to determine the extent of new business or industrial employers since 2018. It was determined that the majority of these new employers were likely accounted for in the overall growth projections however there were four very large ones in excess of 500 new expected jobs that should be accounted for in the travel demand model as follows:

Amazon Distribution Center – locating new facility at former Knoxville Center Mall site in northeast Knoxville, expected to create 730 new jobs.

Amazon Distribution Center – locating new facility in City of Alcoa near the Pellissippi Parkway, expected to create 800 new jobs.

Smith & Wesson Headquarters and Manufacturing – locating new facility in Blount County off of SR-334, expected to create 750 new jobs.

3M Manufacturing Expansion – located in City of Clinton and adding 600 new jobs.

These new jobs will fall under the “Industrial” category used by the travel demand model and since the overall projection of that sector of jobs was low relative to the other major categories of “Service” and “Retail” the TPO staff have decided to simply add these job totals to the applicable TAZ and not redistribute other Industrial jobs to keep the same control total. It is somewhat likely that future updates of the the regional socioeconomic projections will account for the more recent increase in industrial/manufacturing jobs that previously had been on a significant decline.

#### **D. Travel Demand Forecasting Model Overview**

No changes are being proposed to the 10-county regional travel demand forecasting model that was previously documented for the development of the 2045 Mobility Plan other than the aforementioned increase of industrial jobs based on the site specific locations of major new employment that was previously not envisioned. The travel demand model has a relatively recent 2018 base year of validation/calibration and it is likely that we are still awaiting establishment of what the true “new normal” might look like from an overall travel behavior standpoint as we slowly come out of the global COVID-19 pandemic.

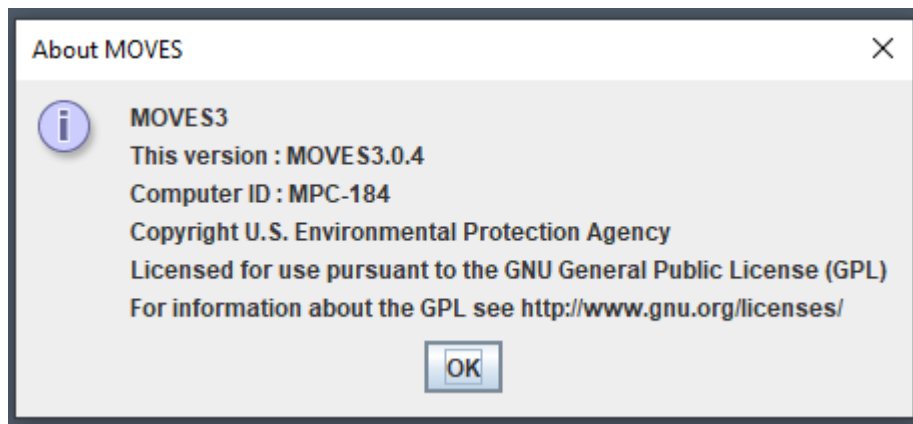
As noted in the prior 2045 Mobility Plan documentation, the current travel demand model is equipped with a newly developed post-processing routine that prepares activity outputs such as vehicle miles of travel and average speeds for use in the EPA MOVES model. Additional documentation is available as needed for the travel demand model and its post processor.

#### **E. Latest Emissions Model**

The latest on-road emissions model from EPA as of this document’s writing is known as MOVES3, version 3.0.4, with default database of “movesdb20220802”– see below for screenshot showing specific release and version information. This is the model that will be



utilized to determine the total on-road emissions of the pollutants of concern related to Ozone and PM2.5 for each required analysis year.



Note, MOVES3 is a relatively recent release, first becoming available for download from EPA in mid-November 2020 and replacing the prior model known as MOVES2014b. The EPA initiated a 2-year grace period starting with the official announcement of MOVES3 being available in the January 7, 2021 Federal Register. The 2-year grace period means that MOVES3 does not have to be used for conformity until January 9, 2023. The TPO staff previously decided to utilize MOVES3 in advance of the required date for the most recent full regional emissions analysis that was performed in support of the update of the Mobility Plan 2045.

## XI. MOVES3 Runspec Parameters

NOTE: The following section is identical to the setup used and documented for the previous regional emissions analysis performed for the Mobility Plan 2045, which was adopted in April 2021.

The MOVES model run is first set up based on a number of parameters to define the appropriate geographic scale and other aspects of the modeling domain to be utilized in the analysis, which is referred to as a “run specification” or runspec for short. Following is a list of the MOVES runspec panels and how they are proposed to be set up for the KRMP conformity analysis and based on appropriate technical guidance documentation from EPA:

### 1.) Scale:

Both Pollutants – County level scale – Inventory mode

### 2.) Time Spans:

Both Pollutants – Year (based on analysis years as ultimately selected, 2026, 2035 and 2045),  
by Hour, all hours

Ozone – July weekday

PM2.5 – All months, all days



3.) Geographic Bounds:

2008 Ozone – Anderson (partial), Blount and Knox counties

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

4.) Onroad Vehicles:

Both Pollutants – Gasoline, CNG, ethanol (E85) and diesel fuels, all valid vehicle combinations

5.) Road Type:

Both Pollutants – All road types

6.) Pollutants and Processes:

Ozone – NOx and VOC and all other required supporting prerequisite pollutants

PM2.5 – Primary PM2.5 (exhaust, brake and tire wear), NOx and all supporting prerequisite pollutants

Note – unchecked the “Refueling Displacement Vapor Loss” and “Refueling Spillage Loss” to exclude refueling emissions that are instead included in the Area source emissions inventory.

7.) Output options:

Both Pollutants –

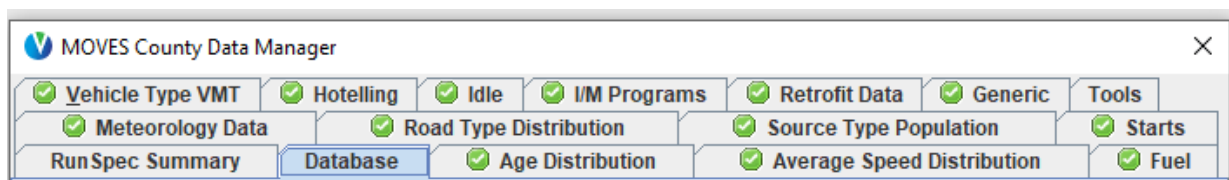
General Output tab: Units = grams, joules, miles; Activity: checked “Distance Traveled” and “Population”

Output Emissions Detail tab: checked “Road Type” and “Source Use Type”

## XII. MOVES3 County Data Manager Input Data Sources and Assumptions

The “County Data Manager” portion of MOVES allows the user to input specific data for several required inputs that effect and are used to compute emissions. Locality-specific data is required for some inputs and is always desired if available rather than using national defaults. For purposes of the pre-analysis consensus plan this document will only cover the general proposed sources for each input and further review of specific inputs will occur as part of the forthcoming analysis.

Below is a screenshot showing the county data manager tabs in the MOVES software where the data is loaded for each input and following that is an overview of each input and its data source.



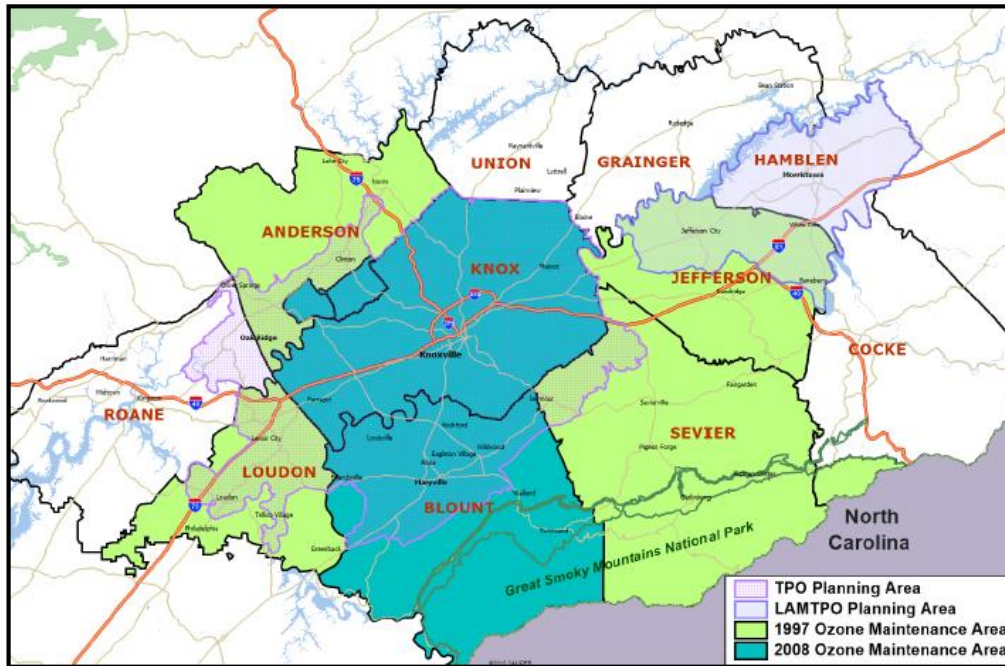


Specific MOVES model input sources are summarized in a separate document “MOVES Input Description for the FY 2023-2026 TIP Update Process” and will be discussed with the IAC for agreement on all assumptions and sources used. It is anticipated that several input sources will carry forward from the relatively recent 2045 Mobility Plan process, however more recent data has become available for certain inputs that was developed as part of the 2020 National Emissions Inventory (NEI) process which will be reviewed for possible use.

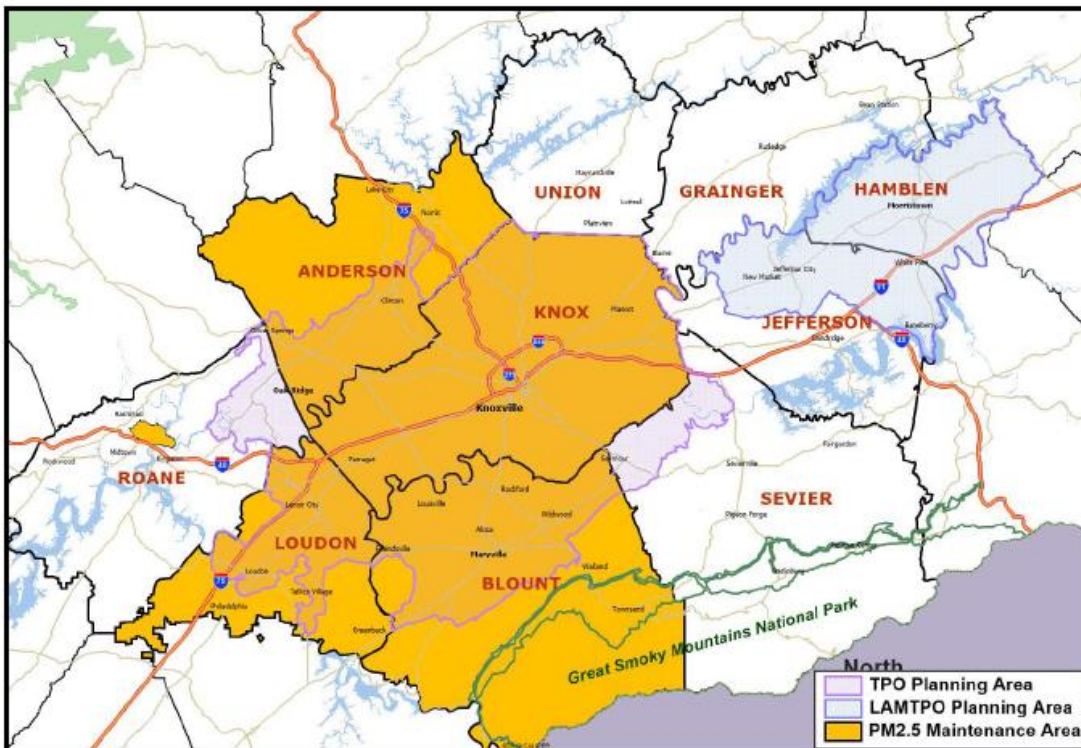


## Attachment A – Maps of Maintenance Areas

### 1997 and 2008 Ozone Maintenance Areas



### 2006 Daily PM2.5 Maintenance Area





## Attachment B – Population and Employment Growth Summary

### I. County-Level Growth

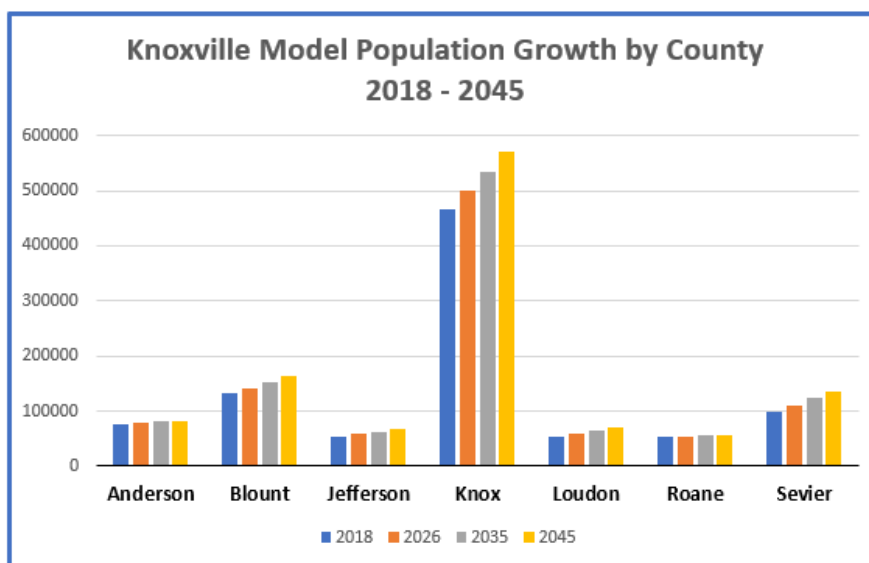
The Knoxville Regional Travel Demand Model (KRTM) contains ten counties altogether and seven of these are subject to transportation conformity – Anderson, Blount, Jefferson, Knox, Loudon, Roane (partial) and Sevier. County-level control totals of population and employment were developed previously as part of the preparation of the most recent regional long-range transportation plan known as the 2045 Mobility Plan. Significant growth in population and employment is expected, which in turn impacts the transportation system in terms of vehicle miles of travel and average speeds which are two of the major factors used to determine total mobile source emissions that are expected to be generated for the conformity analysis. The following tables and charts depict the growth in population and employment by county.

#### A.) Population Growth:

**Population Growth by County 2018 - 2045**

County	2018	2026	2035	2045
Anderson	76,482	79,239	81,472	82,896
Blount	131,349	141,681	152,873	164,108
Jefferson	54,012	58,627	63,211	67,800
Knox	465,289	499,998	535,601	570,352
Loudon	53,054	57,731	63,236	69,028
Roane	53,140	54,460	55,334	55,563
Sevier	97,892	110,029	122,690	136,609
<b>Total</b>	<b>931,218</b>	<b>1,001,765</b>	<b>1,074,417</b>	<b>1,146,356</b>

Total Population Growth      **215,138**  
Growth %      **23%**



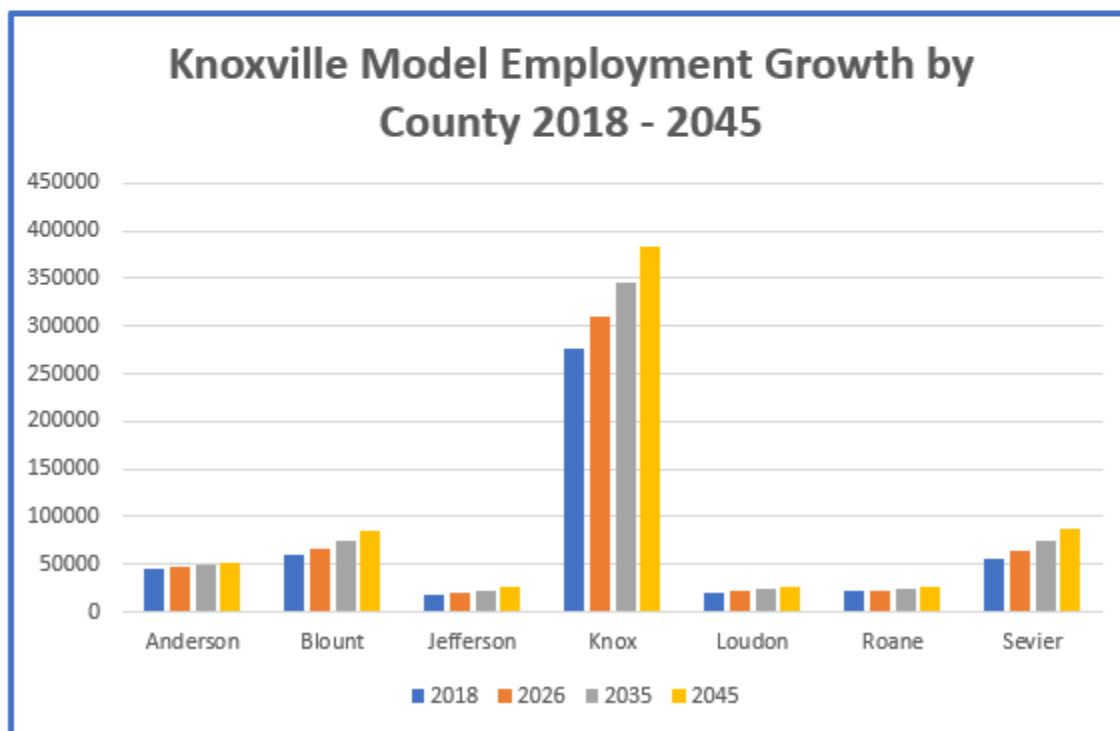


B.) Employment Growth:

***Employment Growth by County 2018 - 2045***

County	2018	2026	2035	2045
Anderson	44,399	47,425	50,274	52,536
Blount	59,662	67,165	75,568	84,839
Jefferson	17,371	19,650	22,404	25,773
Knox	276,450	309,197	345,590	383,318
Loudon	19,993	22,026	24,219	26,507
Roane	21,755	23,154	24,497	25,638
Sevier	55,952	64,365	74,448	86,823
<b>Total</b>	<b>541,611</b>	<b>601,438</b>	<b>667,667</b>	<b>737,863</b>

Total Employment Growth **196,252**  
Growth % **36%**





## II. Growth Allocated to Traffic Analysis Zone (TAZ) Level

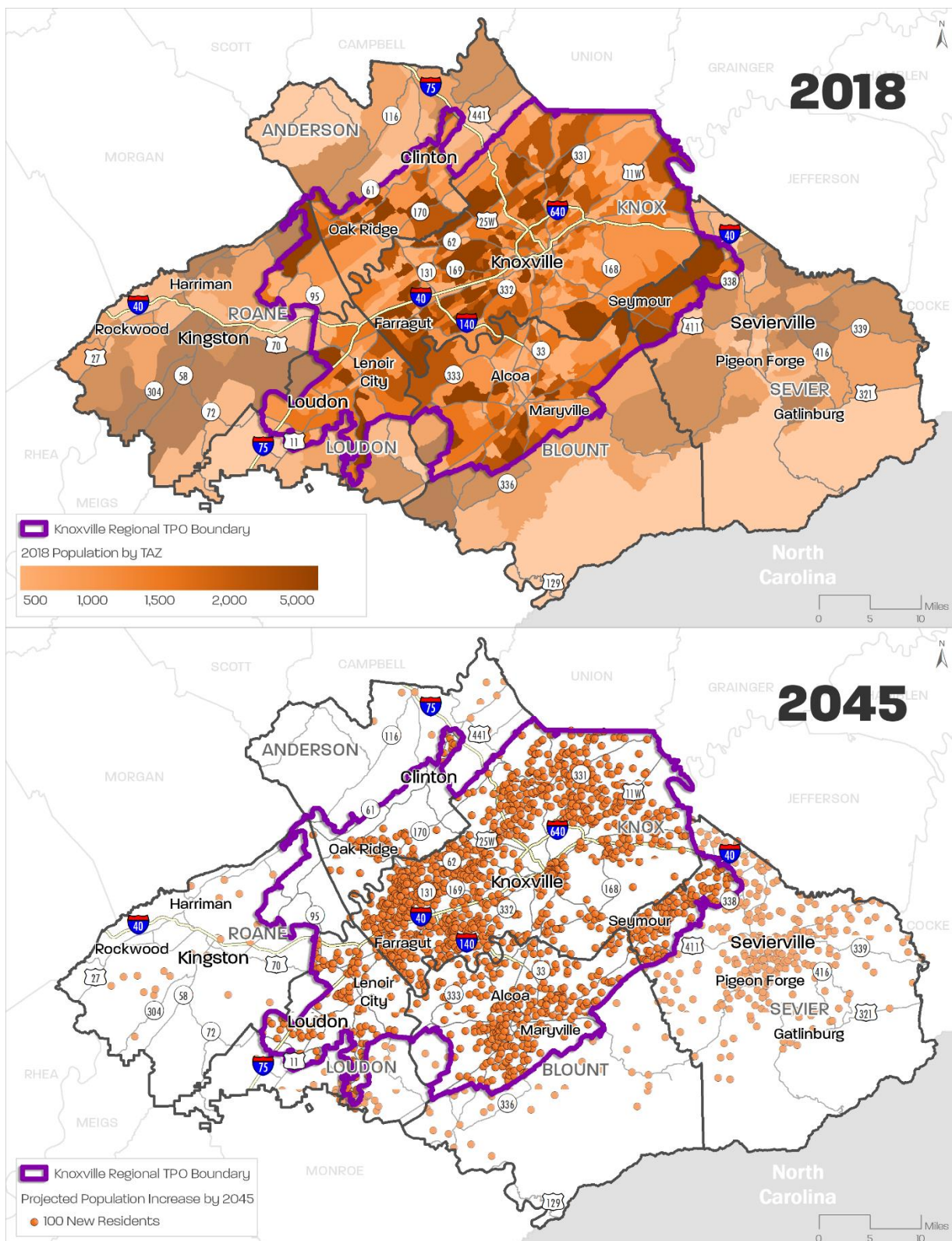
The KRTM utilizes smaller units of geography known as a “Traffic Analysis Zone” with which to generate activity and assign travel to the roadway network. The county level control totals are allocated to TAZs through a process of reviewing land use patterns and available vacant land. Below are depictions of the growth in both population and employment based on the current expectation of growth patterns between the base year 2018 and ultimate horizon year 2045. The ability to forecast growth at these smaller levels of geography is extremely challenging and subject to many market forces and unforeseen circumstances, which is one reason why the long-range transportation plan is updated every 4-years.

The methodology used to allocate both population and employment growth consisted of primarily local input from agency planning staffs from the jurisdictions included in the TPO model area. Those agencies were to provide geographic locations of where known developments were slated to occur, such as already approved subdivisions and shopping centers. This information was coded with other available information such as vacant land by land use type available from state and local tax assessor data to obtain a comprehensive GIS layer of population and employment growth areas.

The figures on the following pages depict the base and future year population and employment allocations. The base year (2018) information is shown in terms of the TAZ-level amounts of population and employment, while the future year (2045) information is shown in terms of just the growth in a dot-density format.



Figure B-1 – Population Growth Maps





[illegible]



## C.4 Partial Area Emissions Methodology

### I. Background:

The purpose of this document is to summarize the methodology used to account for the on-road mobile source emissions that are generated within the partial county areas subject to transportation conformity in the Knoxville Region. There are three separate partial counties as designated by EPA for various NAAQS as follows and shown in the maps at the end of this section:

Anderson County – Partial area designated with 2008 8-Hr Ozone Standard consisting of the area surrounding the TVA Bull Run Fossil Plant and corresponding to 2000 Census Tracts 202 and 213.02. Size of area = 35.0 sq. miles, 2010 Population = 15,372.

Cocke County – Partial area designated with 1997 8-Hr Ozone Standard consisting of the portion within the Great Smoky Mountains National Park boundary and corresponding to 2010 Census Tract 9801. Size of area = 26.5 sq. miles, 2010 Population = 4.

Roane County – Partial area designated with 1997 and 2006 PM<sub>2.5</sub> Annual & Daily Standards consisting of the area surrounding the TVA Kingston Fossil Plant and corresponding to 2000 Census Block Group 471450307002. Size of area = 5.8 sq. miles, 2010 Population = 711.

### II. Specific Input Development for Partial Area Source Type Population:

#### Anderson County Partial Area:

In previous analyses for establishment of the Maintenance Plan and subsequent conformity determinations it was determined that an acceptable assumption would be to base the source type (vehicle) population of the Anderson County partial area on the percent of people residing within that portion of the county. A value of 21% was derived based on the latest (2010) decennial census which has the most reliable estimates of population at both the county and census tract levels. The 2010 total county population was 75,129 and the population of the partial area (census tracts 202.01, 202.02 and 213.02) was 15,553.

#### Roane County Partial Area:

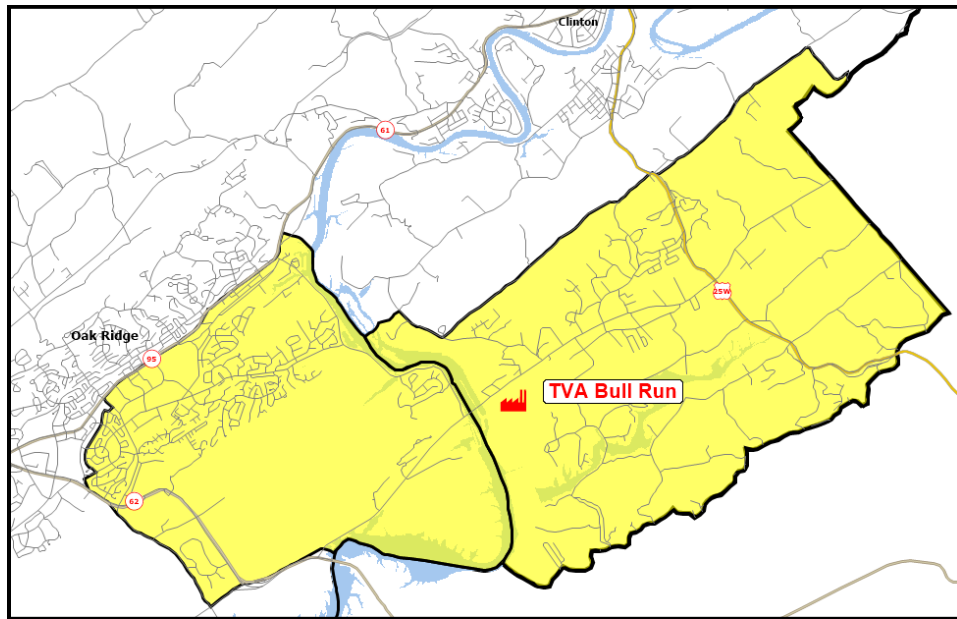
The derivation of inputs for the Roane County Partial Area is essentially identical to that of the Anderson County Partial Area. The Roane County area is much smaller in terms of population however and the source type population is therefore much less. The derivation of the source type population was done using the travel demand model estimation of number of vehicles within the partial area compared with the whole county as being slightly more conservative than the percentage of people population at 1.3%. The table below is copied from the PM<sub>2.5</sub> Maintenance Plan and shows the various metrics looked at for the partial area source type population.

Roane County Nonattainment Area Statistics for 2010: Percentages of Entire County <sup>a</sup>	
Census People Population	1.1%
Census Number of Households	1.1%
Census Household Vehicles <sup>b</sup>	1.0%
Travel Demand Model Predicted Vehicles	1.3%
<sup>a</sup> Census Block Group 471450307002	
<sup>b</sup> 2010 Vehicle ownership is from 2010-2014 ACS 5-year estimate (margin of error +/- 140 for partial area)	

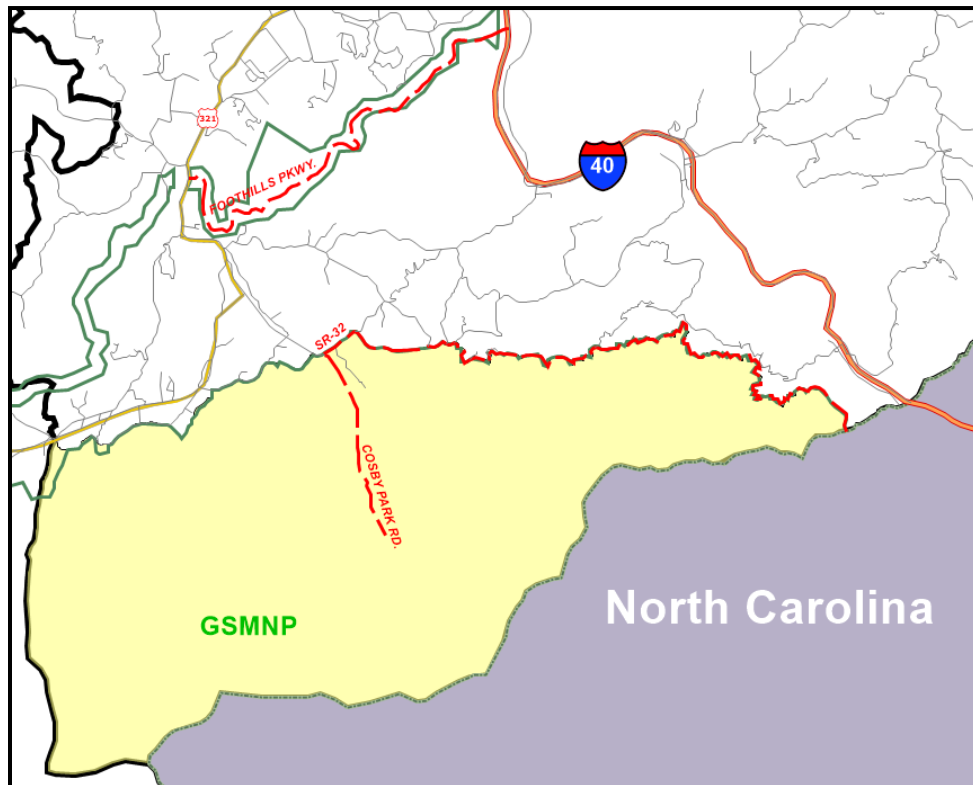
**Cocke County Partial Area:** Since a regional emissions analysis is not required no further input development is needed.



Map 1 – Anderson County Partial Area

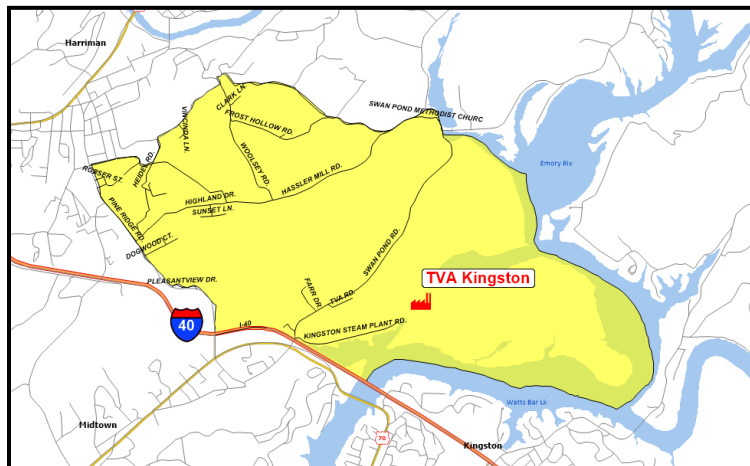
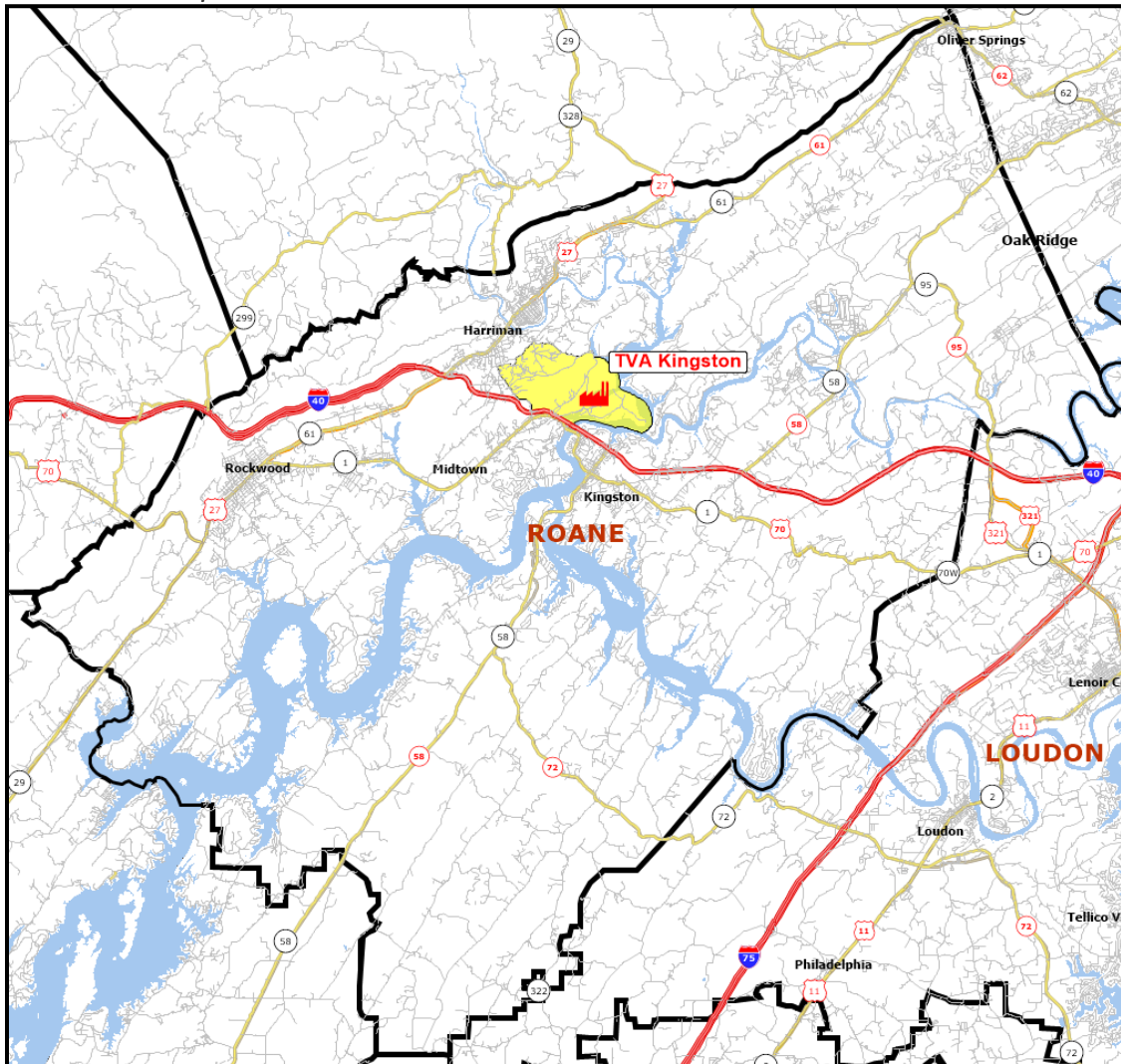


Map 2 – Cocke County Partial Area





Map 3 – Roane County Partial Area





# C.5 Responses to Comments from IAC Participants

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## Comments from TDEC:

- 1.) I noticed the resolution seems to state that the transportation plans must conform in regions in nonattainment. This leaves one to conclude the areas is in nonattainment. Would suggest adding “or maintenance” or similar language.

Response: Updated to add “or maintenance” to this sentence

- 2.) On the bottom of page 31 there is discussion regarding the daily PM NAAQS in the section for the ozone NAAQS.

Response: Corrected to instead reference the 2008 8-Hour Ozone Standard

- 3.) Tables A-3 and A-4 might be mislabeled.

Response: Corrected

- 4.) Page B-1 includes discussion on MOVES inputs for the 1997 ozone NAAQS. MOVES analysis was not conducted for the 1997 ozone NAAQS.

Response: Corrected by deleting this sentence

- 5.) There are a few places where the previous TIP is mentioned instead of the one under development.

Response: Searched and removed any inappropriate reference to the FY2020-2023 TIP



# Appendix D – Summary of 2045 Mobility Plan Amendments to Air Quality Non-Exempt Projects

## D.1 Background

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The list of projects on the following pages (Table D-1) accompany the information provided in Chapter 2 of this report regarding amendments that are necessary to ensure consistency between the 2045 Mobility Plan and the new FY 2023-2026 Transportation Improvement Program. As described in Chapter 2, the amendments are separated into three categories of: New Projects, Removed Projects and Updated Projects.

The 2045 Mobility Plan amendments are also documented separately with Before/After pages of the Mobility Plan and updated financial tables to demonstrate fiscal constraint. Additionally the project information on the TPO's interactive project website at: <https://maps.knoxplanning.org/app/mobility> has been updated with the amended information.



Table D-1 New, Removed and Updated Projects:

KRMP ID	Project Name/Route	Termini	Length (miles)	Project Description/Type of Improvement	Old Horizon Year	New Horizon Year	Exempt Status
New Projects							
13-215	Louisville Rd (SR-334)	Louisville Loop Rd to Topside Rd	1.2	Reconstruct 2-lane roadway	Illustrative	2026	Exempt
22-600	Everett Road LIC	El Camino Ln to Buttermilk Rd	0.8	Widen from 2 to 4 lanes with median and/or center turn lane, including bicycle and pedestrian facilities	N/A	2035	Non-Exempt
Removed Projects							
09-212	Old Knoxville Highway (SR-33) Reconstruction	Wildwood Rd to E. Hunt Rd (SR-335)	1.3	Reconstruct 2-lane roadway with addition of turn lanes	2045	Illustrative	Exempt
09-248	Topside Road (SR-333) Improvements	Wrights Ferry Rd to Alcoa Hwy (SR 115/US-129)	1.3	Reconstruct 2-lane roadway with continuous center turn lane and bicycle/pedestrian facilities	2045	Illustrative	Non-Exempt
09-250	Sevierville Road (SR-35/US-411)	Swanee Dr (Maryville City Limits) to Chapman Hwy (SR-71/US-441)	11.9	Reconstruct 2-lane roadway with addition of turn lanes	2045	Illustrative	Exempt
09-239	Montvale Road (SR-336) Widening	Montvale Station Rd to Maryville South City Limits (Southview Dr)	2.4	Reconstruct 2-lane roadway with continuous center turn lane and bicycle/pedestrian facilities	2045	Illustrative	Non-Exempt
09-645	Northshore Drive (SR-332)	Morell Rd to Ebenezer Rd	3.5	Reconstruct 2-lane roadway with addition of turn lanes and bicycle/pedestrian facilities	2035	Illustrative	Exempt
09-646	Northshore Drive (SR-332)	Pellissippi Pkwy to Concord Rd (SR 332)	4.5	Reconstruct 2-lane roadway with addition of turn lanes and bicycle/pedestrian facilities	2045	Illustrative	Exempt
Updated Projects (Air Quality Non-Exempt Projects Only)							
Project 1 Before/After							
09-629 (BEFORE)	I-40/I-75/Campbell Station Road	Interchange at Campbell Station Road	0	Reconfigure existing interchange to improve capacity, safety and operations	2035	N/A	Exempt
09-629 (AFTER)	I-40/I-75/Campbell Station Road Interchange	Interchange at Campbell Station Road	0.4	Reconstruct existing interchange to a diverging diamond on new alignment to improve capacity, safety and operations. Project includes widening of Campbell Station Road through the interchange from 3 through lanes to 5 through lanes plus turn lanes between Snyder Rd and Campbell Lakes Dr.	N/A	2035	Non-Exempt



Table D-1 New, Removed and Updated Projects (continued):

KRMP ID	Project Name/Route	Termini	Length (miles)	Project Description/Type of Improvement	Old Horizon Year	New Horizon Year	Exempt Status
Project 2 Before/After							
09-651 (BEFORE)	I-40/I-75/Watt Road Interchange	Interchange at Watt Road	0	Reconfigure existing interchange to improve capacity, safety and operations	2026	N/A	Exempt
09-651 (AFTER)	I-40/I-75/Watt Road Interchange	Interchange at Watt Road	0.5	Reconstruct existing interchange to a SPUI to improve capacity, safety and operations. Project includes widening of Watt Road through the interchange from 3-lanes to 4-lanes plus turn lanes between Palestine Ln and Everett Rd.	N/A	2035	Non-Exempt
Project 3 Before/After							
09-615 (BEFORE)	Washington Pike	I-640 to Murphy Rd	1.7	Widen from 2-lanes to 4-lanes including bike/ped facilities	2026	N/A	Non-Exempt
09-615 (AFTER)	Washington Pike	I-640 to Murphy Rd	1.7	Widen from 2-lanes to 3/4 lanes with median/center turn lane and including bike/ped facilities	N/A	2026	Non-Exempt
Project 4 Before/After							
09-232 (BEFORE)	Pellissippi Pkwy (SR-162) Extension	Old Knoxville Hwy (SR-33) to Lamar Alexander Pkwy (US-	4.4	Construct new 4-lane highway	2026	N/A	Non-Exempt
09-232 (AFTER)	Pellissippi Pkwy (SR-162) Extension	Old Knoxville Hwy (SR-33) to Lamar Alexander Pkwy (US-	4.4	Construct new 4-lane highway	N/A	2035	Non-Exempt



Table D-1 New, Removed and Updated Projects (continued):

KRMP	Project Name/Route	Termini	Length (miles)	Project Description/Type of Improvement	Old Horizon Year	New Horizon Year	Exempt Status
Project 5 Before/After							
09-257 (BEFORE)	Relocated Alcoa Hwy (SR-115/US-129) Phase 1	Proposed interchange at Tyson Blvd to Pellissippi Pkwy	2.9	Construct new 4-lane divided highway with auxiliary lanes and new interchanges at McGhee Tyson Airport access, Wright Rd and Pellissippi Pkwy (SR-162)	2026	N/A	Non-Exempt
09-258 (BEFORE)	Relocated Alcoa Hwy (SR-115/US-129) Phase	Pellissippi Pkwy to South Singleton Station Rd	1.3	Construct new 4-lane divided highway with auxiliary lanes and new interchange at Singleton Station Rd	2026	N/A	Non-Exempt
09-257 (AFTER – COMBINED)	Relocated Alcoa Hwy (SR-115/US-129) (Staged Construction)	Old Knoxville Hwy (SR-33) to Lamar Alexander Pkwy (US-321/SR-73)	4.9	Construct new 4-lane divided highway with auxiliary lanes and new interchanges at McGhee Tyson Airport access, Wright Rd, Pellissippi Pkwy (SR-162) and Singleton Station Rd. Project will be constructed in two stages: Stage 1 includes grade, drain, base, pave, signal, lighting, ITS, greenway, retaining wall, natural stream design, and bridge, from South of proposed Wright Road Interchange to North of proposed SR-162 (Pellissippi Parkway) interchange providing local connectivity for existing routes and destinations. Stage 2 completes the entire project with tie-ins at existing SR-115 at Tyson Blvd and proposed interchange at Singleton Station Road as well as all remaining work.	N/A	2035	Non-Exempt
Project 6 Before/After - Project in Regional Area							
100989.00 (BEFORE)	SR-73 (US-321)	Buckhorn Rd to SR-416	1.4	Widen from 2 to 4 lane divided	2026	N/A	Non-Exempt
100989.00 (AFTER)	SR-73 (US-321)	Buckhorn Rd to SR-416	1.4	Widen from 2 to 4 lane divided	N/A	2035	Non-Exempt



# Appendix E – Mobility Plan 2045 project list with exempt and regional significance status

## E.1 Background

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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 Mobility Plan 2045 identifies separate interim horizon years of 2030 and 2040 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.

## E.2 List of Mobility Plan Projects by County and Horizon Year

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The following project lists (Tables E-1 and E-2) represent the final Mobility Plan 2045 and Regional 1997 Ozone “Orphan Area” projects respectively that are being covered by this regional emissions analysis and conformity determination. 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.

The project list is sorted by county and conformity analysis year as follows:

Counties:

Anderson

Blount

Knox

Loudon

Sevier

Transit Capital Projects

TPO Regional Projects

Regional Orphan Area Projects (Table E-2)

Conformity Analysis Years:

2026

2035

2045



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity

Project Name	KRMP ID	FY 2023-2026 TIPID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
<b>Anderson County Projects</b>									
Emory Valley Road at Melton Lake Drive Roundabout	13-101		Intersection		0	Construct roundabout	2026	Exempt	N/A - Exempt
Oak Ridge Signal Timing Optimization Program: Phase 2	13-802		Illinois Ave	Florida Ave	2.85	Continues implementation of Advanced Traffic Management Systems (ATMS) which are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project primarily covers the Oak Ridge Turnpike	2026	Exempt	N/A - Exempt
Oak Ridge Signal Timing Optimization Program: Phase 3	19-100	23-2017-064	Various		3.44	Continues implementation of City's Advanced Traffic Management Systems (ATMS) which are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project primarily covers Illinois Ave and Lafayette Dr	2026	Exempt	N/A - Exempt
Oak Ridge Rails to Trails	13-830	23-2017-046	Melton Lake Rd/Greenway	Scarboro Rd	4.5	Rails to Trails project on abandoned rails from Elza Gate Park at the Oak Ridge Turnpike to the Y-12 National Security Complex on Scarboro Road, and along Belgrade Road, Warehouse Road, Fairbanks Road, and Lafayette Drive.	2026	Exempt	N/A - Exempt
Emory Valley Road at Lafayette Drive Intersection	17-101		Intersection		0	Remove dedicated right turn lane from Emory Valley (west) to Lafayette Drive (north) with standard right turn lane.	2026	Exempt	N/A - Exempt
TVA Bull Run Site Study	19-708				N/A	Study to evaluate the redevelopment opportunities and transportation impacts of the TVA Bull Run Fossil Plant facility following its closure by the end of 2023	2026	Exempt	N/A - Exempt
Edgemoor Road (SR-170) – West Segment	09-101a		Oak Ridge Hwy (SR-62)	Melton Lake Dr	2.6	Widen from 2-lanes to 4-lanes with median and/or center turn lane. Also includes bicycle/pedestrian facilities	2035	Non-Exempt	Regionally Significant
Edgemoor Road (SR-170) – East Segment	09-101b	20-2017-037a	Melton Lake Dr	Clinton Hwy (US-25W/SR-9)	3.6	Widen from 2-lanes to 4-lanes with median and/or center turn lane. Also includes bicycle/pedestrian facilities and a new bridge over the Clinch River.	2035	Non-Exempt	Regionally Significant
Tulane Avenue at Pennsylvania Avenue Roundabout Construction	13-102		Intersection		0	Construct roundabout	2035	Exempt	N/A - Exempt
Lafayette Drive Bicycle and Pedestrian Safety Improvements	21-100		From S Illinois (SR 62)	Oak Ridge Turnpike (SR 95)	1.5	Widen Lafayette Dr to add bicycle lanes on both sides between S. Illinois (SR-62) and Oak Ridge Turnpike (SR-95), construct 1.5 miles of sidewalk with curb along the entire west side of the street, and add one new crosswalk at the Manchester/Hendrix intersection to provide direct connection to the Rails to Trails greenway	2035	Exempt	N/A - Exempt
West End Corridor Intersection Improvements	21-101		Renovare Boulevard	Broadberry Avenue at Gallaher Road (SR 58)	N/A	Intersection improvements along Oak Ridge Turnpike (SR-95/SR-58) at Renovare Blvd, Novus Dr, Heritage Center Blvd, and Broadberry Ave at Gallaher Rd	2035	Exempt	N/A - Exempt
<b>Blount County Projects</b>									
Morganton Road Reconstruction - Phase 1	09-211	23-2014-060	William Blount Dr (SR-335)	Foothills Mall Dr	2.3	Reconstruct 2-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities	2026	Non-Exempt	Not Regionally Significant - Minor Arterial and minor widening



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIPID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Sevierville Rd (SR-35/US-411) Widening	09-214	23-2014-059	Washington St (SR-35)	Walnut St	0.58	Reconstruct from two lanes to three lanes, curb and gutter, and sidewalks with intersection improvements.	2026	Non-Exempt	Regionally Significant
Carpenters Grade Rd Reconstruction and Intersection Improvements	09-223	23-2017-042	Raulston Rd	Cochran Rd	0.89	Reconstruct 2-lane road with addition of turn lanes and sidewalk. Construct a signalized intersection at Peterson Ln, Cochran Rd and Raulston Rd intersection.	2026	Exempt	N/A - Exempt
Pellissippi Pkwy (SR-162) Extension	09-232	23-2014-025	Old Knoxville Hwy (SR-33)	Lamar Alexander Pkwy (US-321/SR-73)	4.4	Construct new 4-lane highway	2035	Non-Exempt	Regionally Significant
Relocated Alcoa Hwy (SR-115/US-129)	09-257	23-2020-012	Proposed Interchange at Tyson Blvd	Singleton Station Rd	4.9	Construct new 4-lane divided highway with auxiliary lanes and new interchanges at McGhee Tyson Airport access, Wright Rd, Pellissippi Pkwy (SR-162) and Singleton Station Rd. Project will be constructed in two stages: Stage 1 includes grade, drain, base, pave, signal, lighting, ITS, greenway, retaining wall, natural stream design and bridge from South of proposed Wright Rd Interchange to North of SR-162 interchange. Stage 2 completes entire project with tie-ins at existing SR-115 at Tyson Blvd and proposed interchange at Singleton Station Rd and all remaining work	2035	Non-Exempt	Regionally Significant
Foothills Mall Drive Extension Phase II	10-260	23-2020-005	Foch Street	McCammon Ave	0.7	Construct new 2-lane road with center turn lane and sidewalks	2026	Non-Exempt	Not Regionally Significant
North Park Blvd & Airbase Rd Safety Improvements	13-210		Intersection		0.3	Realign North Park Boulevard to Airbase Road	2026	Exempt	N/A - Exempt
Old Lowes Ferry Rd at Louisville Rd (SR-333) Intersection Improvements	13-214		Intersection		0	Realign intersection and add turn lanes	2026	Exempt	N/A - Exempt
Maryville to Townsend Greenway - Phase 1 (Brown Creek)	13-833	23-2017-006	Harper Ave Trailhead	US 321	1.2	Construction of a shared use path/Greenway from an existing trailhead at Harper Ave. (near Aluminum Ave.) to Lamar Alexander Pkwy along Brown Creek.	2026	Exempt	N/A - Exempt
US 129 Widening	17-202	23-2017-005	Hall Rd (SR-35)	US 321	2.9	Widen from 4 to 6 lanes	2026	Non-Exempt	Regionally Significant
Alcoa Hwy (SR-115/US-129) ITS	18-200a		I-140	Topside Rd		ITS Smartway Geographic Expansion	2026	Exempt	N/A - Exempt
I-140 ITS Expansion	18-201	23-2017-050	Near MM 2	Near MM 11 (SR-115/US-129/Alcoa Hwy)	9.2	I-140 ITS Expansion to include the installation of a power and communication network and ITS Devices such as CCTV cameras, DMS, and RDS	2026	Exempt	N/A - Exempt
Blount County Greenway Trail - Phase 1	18-202	23-2017-048	US 321 at NW corner of Helton Rd	Perry's Mill Parking Area	3.3	Greenway trail contained completely within US Highway 321 right-of-way from Heritage High School to Perry's Mill Parking area. It will also include additional bike access link to Old Walland Highway across Melrose Station Bridge.	2026	Exempt	N/A - Exempt
Louisville Rd (SR-334)	13-215		Louisville Loop Rd	Topside Rd	1.2	Reconstruct 2-lane roadway	2026	Non-Exempt	Not Regionally Significant
Denso Greenway Trail Extension	19-800		Atchley Dr.	Louisville Rd.	0.7	Construction of multi-modal greenway - Project includes a pedestrian bridge, ADA upgrades and pedestrian lighting	2026	Exempt	N/A - Exempt
Robert C Jackson Dr Extension - Ph I	09-202		Middleselements Rd	Louisville Rd (SR-334)	0.7	Construct new 4-lane roadway	2035	Non-Exempt	Regionally Significant
Alcoa Hwy (SR-115/US-129) Widening	09-216		Pellissippi Pkwy (SR-162)	south of Little River	2.71	Reconstruct SR-115 from 4-lanes to 6-lanes, including a frontage road system with two new interchanges at Singleton Station Road and Topside Road (SR-333), modify the existing SR-115 and SR-162 interchange, and construct a multi-use path.	2035	Non-Exempt	Regionally Significant
Sandy Springs Rd at Montgomery Ln Intersection Improvements	09-240		Intersection		0	Intersection improvements including turn lanes and new traffic signal	2035	Exempt	N/A - Exempt



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIPID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
W Broadway Ave (SR-33/US-411) Improvements	09-242	23-2020-006	S Cedar St	US 321	0.5	Construct additional westbound left turn lane at intersection with Lamar Alexander Pkwy and convert continuous center turn lane to additional westbound through lane along W Broadway Avenue. Project includes construction of new shared use path and other bicycle/pedestrian enhancements	2035	Non-Exempt	Regionally Significant
Montvale Rd (SR-336) Widening	09-262	23-2011-082	Montvale Station Rd	US 321	0.6	Widen existing roadway to 2 - 12 foot travel lanes with a 12 foot center turn lane including curb and gutter, sidewalk and a multiuse path. Close SR-73 EB and WB access to Highland Ave. to construct EB right-turn lane onto SR-336; lengthen WB SR-73 left turn lane near Highland Ave	2035	Non-Exempt	Not Regionally Significant
Sevierville Rd (SR-35/US-411) Widening	09-245		Everett High Rd	Maryville City Limits (Nina Delozier Rd)	2	Reconstruct 2-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities	2035	Non-Exempt	Regionally Significant
Middle settlements Rd at Miser Station Rd Intersection Improvements	13-218		Intersection		0	Realign intersection and add turn lanes	2035	Exempt	N/A - Exempt
Alcoa Hwy (SR-115/US-129) ITS Expansion - Ph 2	18-200b		Topside Rd	Cherokee Trail Interchange	5.55	ITS Smartway Geographic Expansion	2035	Exempt	N/A - Exempt
Old Niles Ferry Road Widening	21-202		Savannah Park Drive	W. Broadway Avenue	1.5	Widen existing 2-lane roadway to include curb, gutter, and sidewalk on both sides	2035	Exempt	N/A - Exempt
W. Broadway Avenue (S.R. 33) Improvements from Old Niles Ferry Road to S. Cedar Street	21-203		Old Niles Ferry Road	S. Cedar Street	0.5	Widen existing 2-lane roadway to include concrete curb, gutter, and sidewalk on both sides of the roadway and installation of auxiliary turning lanes where needed. Modification of an existing traffic signal at Magnolia Ave. Realignment and geometric improvements at the intersection of Old Niles Ferry Rd, which will include Best St	2035	Exempt	N/A - Exempt
Washington Street Improvements from E. Broadway Ave. to U.S. 321	21-204		E. Broadway Avenue (S.R. 33)	E. Lamar Alexander Parkway (U.S. 321/S.R. 73)	0.4	Reconstruction of the existing 5-lane roadway to contain standard width lanes, curb, gutter, and sidewalk, along with a pedestrian buffer along both sides of the roadway	2035	Exempt	N/A - Exempt
Harvest Lane Extension	13-208		Existing Harvest Ln terminus	Louisville Rd (SR-334)	0.2	Construct new 2-lane road with sidewalks	2035	Non-Exempt	Not Regionally Significant
Wrights Ferry Road Center Turn Lane Improvements	09-207		Airbase Rd	Topside Rd	1.4	Reconstruct 2-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities	2045	Non-Exempt	Not Regionally Significant
Ellejoy Rd Reconstruction	09-209		Tuckaleechee Pike	Jeffries Hollow Road	3.7	Reconstruct 2-lane road with addition of turn lanes	2045	Exempt	N/A - Exempt
Old Niles Ferry Road Reconstruction	09-213		Calderwood Hwy (SR-115)	Maryville City Limits	3.3	Reconstruct 2-lane road with addition of turn lanes	2045	Exempt	N/A - Exempt
Home Avenue Extension	09-220		McCammon Ave	Calderwood St	0.2	Construct new 2-lane road with center turn lane to extend Home Ave through existing shopping center to Calderwood St	2045	Non-Exempt	Not Regionally Significant



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Tuckaleechee Pike Reconstruction	09-241		US 321	Grandview Dr	1.1	Reconstruct 2-lane road with addition of turn lanes and sidewalk	2045	Exempt	N/A - Exempt
Wilkinson Pike Widening	09-243		Court Street	Maryville City Limits (Grandview Dr)	0.9	Reconstruct 2-lane road with addition of turn lanes and sidewalk	2045	Exempt	N/A - Exempt
Robert C Jackson Dr Extension - Ph II	13-203		Louisville Rd (SR-334)	US 129 Bypass (SR-115)	0.5	Construct new 4-lane roadway and grade separated interchange connecting US-129 and Associates Boulevard	2045	Non-Exempt	Regionally Significant
Jeffries Hollow Road	21-200		Ellejoy Road	Sevier County Line	2.8	Reconstruct 2-lane roadway with addition of turn lanes	2045	Exempt	N/A - Exempt
Intersection Improvements on U.S. 321 Realign Amerine Road and Grandview Drive	21-201				0	Intersection improvements on Lamar Alexander Pkwy (SR-73/US-321) near Grandview Drive and Amerine Road/Janet Lane to include realignment and signalization	2045	Exempt	N/A - Exempt
<b>Knox County Projects</b>									
Washington Pike	09-615	23-2014-038	I-640	Murphy Rd	1.7	Widen from 2-lanes to 3/4-lanes with median/center turn lane and including pedestrian and bicycle facilities.	2026	Non-Exempt	Regionally Significant
Pleasant Ridge Road	09-616	23-2014-037	Merchant Dr	Knoxville City Limits (Country Brook Dr)	1.6	Reconstruct 2-lane road with addition of turn lanes and bicycle/pedestrian facilities	2026	Exempt	N/A - Exempt
South Knoxville Waterfront Roadway Improvements	09-617	23-2014-032	Davenport Rd	Island Home Ave	0.3	Construct roadway streetscape improvements and utility relocations along Sevier Ave and new roundabout at the intersection of Foggy Bottom/Seiver Ave/Island Home Ave.	2026	Exempt	N/A - Exempt
Schaad Rd Widening	09-625	23-2014-006	Oak Ridge Hwy (SR-62)	Pleasant Ridge Rd	1.5	Widen from 2 to 4 lanes with addition of sidewalks	2026	Non-Exempt	Regionally Significant
Chapman Hwy (US-441/SR-71)	09-626d		Hendron Chapel Rd	Simpson Rd	0.9	Add center turn lane	2026	Exempt	
Virtue Road/Boyd Station Road Improvements (Ph. 2)	09-630	23-2020-002	1200' S of Needlegrass Ln	Willow Cove Way	1.14	Widen Virtue Rd. to two 11' lanes with curb and gutter, and provide shared use path connection to existing and planned bike/ped facilities.	2035	Exempt	N/A - Exempt
Pellissippi Pkwy (SR-162)/Oak Ridge Hwy Interchange	09-649	23-2017-057	Interchange at Oak Ridge Hwy (SR-62)		0.45	Reconstruct interchange to a Single Point Urban Interchange and provide connection to Solway Rd	2026	Non-Exempt	Regionally Significant
I-40/I-75/Watt Rd Interchange	09-651		Interchange at Watt Rd		0.5	Reconstruct existing interchange to a Single Point Urban Interchange (SPUI) to improve capacity, safety and operations. Project includes widening of Watt Road through the interchange from 3-lanes to 4-lanes plus turn lanes between Palestine Ln and Everett Rd.	2035	Non-Exempt	Regionally Significant
I-75 at Emory Rd (SR-131) Interchange	09-652				0	Reconfigure existing interchange to a Diverging Diamond Interchange to improve capacity, safety and operations.	2026	Exempt	N/A - Exempt
Alcoa Hwy (SR-115/US-129) Widening	09-653	20-2014-069	Woodson Dr	Cherokee Trail Interchange	1.6	Widen 4-lane to 6-lane including pedestrian and bicycle facilities.	2026	Non-Exempt	Regionally Significant



**Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)**

Project Name	KRMP ID	FY 2023-2026 TIPID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Union Rd/N Hobbs Rd Reconstruction	13-601	23-2014-082	Everett Rd	Kingston Pike (SR-1)	1	Reconstruct 2-lane road with addition of turn lanes and bicycle/pedestrian facilities	2026	Exempt	N/A - Exempt
Traffic Control Equipment Upgrade - Knoxville (Advanced Traffic Management System - Phase 1)	13-602	23-2014-042	Various		19.5	Advanced Traffic Management Systems (ATMS) are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project covers two primary corridors of Broadway and Kingston Pk	2026	Exempt	N/A - Exempt
Chapman Highway Advanced Traffic Management System	13-1003	23-2014-078	Mountain Grove Dr	Blount Ave	6.3	Advanced Traffic Management Systems (ATMS) are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations	2026	Exempt	N/A - Exempt
Liberty Street Multimodal Project	13-1004	23-2014-080	Middlebrook Pk (SR 169)	Sutherland Ave	1.1	Addition of sidewalks and bicycle facilities along Liberty and Division Streets.	2026	Exempt	N/A - Exempt
Farragut Advanced Traffic Management System - Phase 1	13-813		Various		N/A	Advanced Traffic Management Systems (ATMS) are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project includes the Town's entire signal system.	2026	Exempt	N/A - Exempt
Knoxville Northwest Greenway Connector Ph. 2	13-858		Middlebrook Pk. at Third Creek Rd.	SR 62 Western Ave. pedestrian bridge	1.7	New trail connecting from Middlebrook Pk. At Third Creek Rd. to SR 62 Western Ave. pedestrian bridge. ADA upgrades and pedestrian lighting.	2026	Exempt	N/A - Exempt
Atlantic Avenue Sidewalk	13-880		Pershing St	Broadway	0.6	Construct 3,000 linear feet of sidewalks on Atlantic Ave between Pershing St and Broadway	2026	Exempt	N/A - Exempt
Chapman Highway Multiuse Path	13-884		Young High Pk	Stone Rd	0.8	Construct a new shared use path along Chapman Highway from Young High Pike to Stone Road	2026	Exempt	N/A - Exempt
KAT Express Transit Service Enhancement - Broadway Transit Signal Priority Implementation	17-1006	23-2017-028	Knoxville Station	N Broadway at Colonial Circle	6.5	The project will consist of six BRT bus stops (one for each direction totaling 12 stations), Passenger Information Systems (PIS) at each station, TSP software integrated into the City's ATMS central software, and a number of queue jump locations, which will be determined during preliminary design efforts.	2026	Exempt	N/A - Exempt
First Creek Greenway - Broadway Streetscape	13-838	23-2017-009	Woodland Ave	Cecil Ave	0.3	Construct a new shared use path extending First Creek Greenway from near Cecil Ave to near Woodland Ave	2026	Exempt	N/A - Exempt
Magnolia Avenue Streetscape - Phase 3	17-608a	23-2017-017	N. Bertrand St	N. Kyle St	0.2	Construct streetscape improvements in the existing right of way that include raised medians replacing center left-turn lane, signal improvements, bike lanes, improved sidewalks, bus pull-offs, and amenities	2026	Exempt	N/A - Exempt
Magnolia Avenue Streetscape - Phase 4	17-608b		N. Kyle St	Spruce St	0.3	Construct streetscape improvements in the existing right of way that include raised medians replacing center left-turn lane, signal improvements, bike lanes, improved sidewalks, bus pull-offs, and amenities	2026	Exempt	N/A - Exempt
South Waterfront Greenway - East of Suttree	17-850	23-2017-049	Suttree Landing Park	Island Home Ave Riverwalk	0.6	Construct riverwalk trail connecting the 0.10 mile section of cantilevered riverwalk along Island Home Avenue to Suttree Landing Park riverwalk that is just east of Foggy Bottom Street along the Tennessee River.	2026	Exempt	N/A - Exempt



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
East Knox Greenway - Phase 1	17-901	23-2017-011	Willow Ave	Knoxville Botanical Gardens	1.6	Construct a new shared use path connecting First Creek Greenway to Knoxville Botanical Gardens and Arboretum	2026	Exempt	N/A - Exempt
Tyson Fort Sanders Bike Connection	17-911	23-2020-305	Fort Sanders Neighborhood	Tyson Park	0.5	Construct new shared use path between Fort Sanders Neighborhood and Tyson Park	2026	Exempt	N/A - Exempt
I-75 ITS Expansion	18-600		MM 109.6	SR-61 (Exit 122)	13.03	ITS expansion includes the deployment of CCTV cameras at critical interchanges. Install power and communications infrastructure and at Least 2 CCTV Cameras at each Interchange.	2026	Exempt	N/A - Exempt
Middlebrook Pike (SR-169) ATMS Expansion	18-603	23-2017-051	College St	Joe Hinton Rd	6.5	Advanced Traffic Management Systems (ATMS) are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations.	2026	Exempt	N/A - Exempt
Traffic Signal Improvements for the U.T. Area	19-603	23-2017-061	Various		N/A	Includes Advanced Traffic Management Systems (ATMS) which are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. Project covers several roadways in and around UT campus	2026	Exempt	N/A - Exempt
Knox County Advanced Traffic Management System - Phase II	19-604	23-2017-063	Various		N/A	Continues implementation of County's Advanced Traffic Management Systems (ATMS) which are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project primarily covers E. Emory Rd, Norris Freeway and Maynardville Pk	2026	Exempt	N/A - Exempt
Woodland Ave. Complete Street	19-606	23-2020-004	N. Broadway	Glenwood Ave	0.5	Install bike lanes, sidewalks, and pedestrian crossing improvements. Project connects a greenway to existing bike lanes.	2026	Exempt	N/A - Exempt
Jamestowne Boulevard Study	19-703		SR-1 (Kingston Pike)	Campbell Station Road	N/A	Feasibility and planning study to determine needed improvements to Jamestowne Boulevard in Farragut to provide additional route for motorists and pedestrians to bypass intersection of Kingston Pike at Campbell Station Road	2026	Exempt	N/A - Exempt
County-wide Transportation Study (Knox)	19-707				N/A	Prepare a countywide transportation plan in conjunction with the General Plan update in order to determine priorities for transportation improvements that address existing and proposed land use	2026	Exempt	N/A - Exempt
Intersection Improvement at Beaver Ridge Road and West Emory Road	21-602				0	Installation of turn lanes and signalization at Beaver Ridge Rd and W. Emory Rd in Karns	2026	Exempt	N/A - Exempt
Tazewell Pike and Fairview Road Intersection Realignment	21-604				0	Tazewell Pk and Fairview Rd Intersection Realignment (Intersection improvement with turn lanes and traffic signal)	2026	Exempt	N/A - Exempt
James White Parkway Roadway Improvements	21-606		Sevierville Pk	Bridge over TN River	1.2	This project will relocate the two northbound travel lanes to share the existing pavement for the southbound lanes while maintaining 2 travel lanes in each direction. This will allow the current northbound travel lanes and adjacent excess land to be repurposed to a linear park.	2026	Exempt	N/A - Exempt
South Knoxville Bridge Greenway	21-800		Anita Dr	Morningside Greenway at Riverside Dr	0.6	Construct multi-modal path along James White Pkwy	2026	Exempt	N/A - Exempt



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Gibbs Schools Pedestrian Bridge	21-801				N/A	Pedestrian Bridge over Tazewell Pk to serve Gibbs Elementary, Middle, and High Schools	2026	Exempt	N/A - Exempt
Chapman Hwy (SR-71/US-441) Operational and Safety Improvements	09-626	23-2017-040	SR-338 (Boyd's Creek Hwy)	Blount Ave	10.3	Corridor safety and operational improvements, including intersection improvements and/or driveway improvements and/or left turn lanes at various locations throughout the project area	2035	Exempt	
I-40/I-75/Campbell Station Road Interchange	09-629				0.4	Reconstruct existing interchange to a diverging diamond on new alignment to improve capacity, safety and operations. Project includes widening of Campbell Station Road through the interchange from 3 through lanes to 5 through lanes plus turn lanes	2035	Non-Exempt	Regionally Significant
Lovell Rd Widening (SR-131)	09-637	23-2014-002	Cedardale Ln	Middlebrook Pk	1.7	Widen 2-lane to 4-lane, including pedestrian and bicycle facilities.	2035	Non-Exempt	Regionally Significant
Oak Ridge Hwy (SR-62)	09-638		Schaad Rd	Byington Beaver Ridge Rd	4.2	Widen from 2 to 4 lanes	2035	Non-Exempt	Regionally Significant
Emory Rd (SR-131)	09-643	23-2017-036	Maynardville Hwy (SR-33)	Tazewell Pk (SR-331)	4.8	Widen from 2 to 4 lanes with median and/or center turn lane, including bicycle and pedestrian facilities	2035	Non-Exempt	Regionally Significant
Gov John Sevier Hwy (SR-168)	09-644		Alcoa Hwy (SR-115/US-129)	Chapman Hwy (US-441/SR-71)	6.5	Widen from 3 to 4-lane divided roadway	2045	Non-Exempt	Regionally Significant
Pellissippi Pkwy (SR-162)	09-647		Edgemoor Rd (SR-170)	Dutchtown Rd	6	Corridor safety and capacity improvements to include access control, interchange reconstruction, frontage roads, additional/auxiliary lanes and provision for a shared use path	2035	Non-Exempt	Regionally Significant
I-75/I-640/I-275 Interchange	09-654	23-2017-038	Interchange at I-640/I-275 (Sharps Gap).		0.57	Interchange reconstruction along with the addition of auxiliary lanes in each direction on I-75.	2035	Non-Exempt	Regionally Significant
Northshore Drive at Kingston Pike Intersection Improvements	09-658		Intersection		0.5	Intersection improvements including additional turn lanes and sidewalk extensions. Replace bridge over Fourth Creek on Kingston Pike.	2035	Exempt	N/A - Exempt
Oak Ridge Hwy (SR-62)	09-673		Byington Beaver Ridge Rd (SR-131)	Pellissippi Pkwy (SR-162)	4.2	Widen from 2 to 4 lanes	2035	Non-Exempt	Regionally Significant
Papermill Drive Complete Street	09-689		Weisgarber Rd	Kingston Pike (SR-1)	0.6	Reconstruct 2-lane road with addition of turn lanes and bicycle/pedestrian facilities	2035	Exempt	N/A - Exempt
I-40/75 Widening	09-691		I-40/75 Interchange	Campbell Station Rd Interchange	5.3	Widen from 6 to 8 lanes	2035	Non-Exempt	Regionally Significant
I-75 Widening	09-692	23-2017-056	Emory Rd (SR-131)	Raccoon Valley Rd (SR-170)	4.85	Widen from 4 to 6 lanes	2035	Non-Exempt	Regionally Significant
Campbell Station Rd Improvements	10-700		I-40	Hardin Valley Road	3.3	Widening and realignment of Campbell Station Rd from I-40 to Hardin Valley Rd	2035	Non-Exempt	Regionally Significant
I-40/75 Auxiliary Lanes	13-603		Campbell Station Rd Interchange	Lovell Rd Interchange	1.4	Construct eastbound and westbound auxiliary lanes between interchanges	2035	Non-Exempt	Regionally Significant
First Creek Greenway - Downtown East	13-844		Caswell Park	Morningside Park	1.4	Construct a new shared use path along First Creek connecting Caswell Greenway to Morningside Greenway	2035	Exempt	N/A - Exempt
First Creek Greenway - North Knox	13-855		Edgewood Park	Mineral Springs Ave	1.3	Construct a new shared use path along First Creek connecting Edgewood Park to the proposed First Creek Greenway - Old Broadway segment at Mineral Springs Avenue	2035	Exempt	N/A - Exempt



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Magnolia Avenue Streetscape - Phase 5	17-608c		Spruce St	N. Cherry St	0.4	Construct streetscape improvements in the existing right of way that include raised medians replacing center left-turn lane, signal improvements, bike lanes, improved sidewalks, bus pull-offs, and amenities	2035	Exempt	N/A - Exempt
Knoxville Advanced Traffic Management System - Phase 2	17-801				N/A	Additional upgrades of the City traffic signal system following Phase 1.	2035	Exempt	N/A - Exempt
Tazewell Pike Sidewalk	17-910		Old Broadway	Jacksboro Pk	0.6	Construct sidewalk along Tazewell Pike from Old Broadway to Jacksboro Pike	2035	Exempt	N/A - Exempt
Magnolia Ave/Rutledge Pike/Asheville Hwy Interchange Improvements	21-600				0	Construct interchange improvements to consist of intersection improvements, bike lanes and enhanced sidewalks	2035	Exempt	N/A - Exempt
James White Parkway corridor improvements	21-605				1.2	Address vehicular, pedestrian, and cyclist needs in local roadway network adjacent to James White Pkwy. Includes: Hillwood Ave from Anita Dr to Island Home Ave, Anita Dr from Sevier Ave to Hillwood Ave and Sevierville Pk from Woodlawn Pk to Sevier Ave	2035	Exempt	N/A - Exempt
Adair to Old Broadway Connection	21-802		Old Broadway	N Broadway	0.2	Construct new multiuse path to connect existing path on Old Broadway to north of Adair Drive	2035	Exempt	N/A - Exempt
Everett Road LIC	22-600		El Camino Ln	Buttermilk Rd	1.2	Widen from 2 to 4 lanes with median and/or center turn lane, including of bicycle/pedestrian facilities	2035	Non-Exempt	Regionally Significant
Kingston Pike (SR-1) Widening	09-668		Smith Rd	Campbell Station Rd	1.4	Widen from 4 to 6 lanes with addition of bicycle/pedestrian facilities	2045	Non-Exempt	Regionally Significant
Everett Road Improvements	09-669		Watt Rd	Split Rail Lane	2.5	Reconstruct 2-lane road with addition of continuous center turn lane and bicycle/pedestrian facilities	2045	Non-Exempt	Not Regionally Significant
Baker Creek Greenway	13-854		Maynard Glenn Park	Island Home Ave	1	Construct a new shared use path along Baker Creek, connecting Maynard Glenn Park, Mary James Park, to the proposed South Waterfront Greenway	2045	Exempt	N/A - Exempt
South Waterfront Greenway -West of Cityview (A riverwalk connector from the existing CityView Public Riverwalk to Scottish Pike Park)	17-859		City View Public Greenway	Scottish Pk Park	1.9	A riverwalk connector from the existing CityView Public Riverwalk to Scottish Pike Park	2045	Exempt	N/A - Exempt
I-40 Westbound Interchange at I-275	21-601		I-275	Near I-640	2	Interchange access improvements and extension of two existing lanes from US129 entrance ramp to WB mainline such that one lane continues through on I-40 mainline	2045	Non-Exempt	Regionally Significant
<b>Loudon County Projects</b>									
US 11 at Industrial Park Drive Intersection Improvement	17-407		Intersection of US 11 at Industrial Park Dr		0.2	Intersection improvements including turn lanes and new traffic signal	2026	Exempt	N/A - Exempt
Muddy Creek Road Intersection Realignment	17-416		Intersection		0.1	Realign intersection and add turn lanes	2026	Exempt	N/A - Exempt
Lenoir City CMAQ ITS Phase 2 (missing from original list)	19-400	23-2017-062	Various		8.6	Continues implementation of Advanced Traffic Management Systems (ATMS) which are a component of Intelligent Transportation Systems (ITS) that integrate various technologies specifically related to the traffic signal system to improve overall operations. This project primarily covers major corridors of US 321 and US 11	2026	Exempt	N/A - Exempt



Table E-1 – Projects from Knoxville TPO 2045 Mobility Plan Subject to Conformity (continued)

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
I-75 Widening	21-400		Pond Creek Rd (SR-323)	I-40/I-75 Junction	16.1	Widen from 4 to 6 lanes	2045	Non-Exempt	Regionally Significant
<b>Sevier County Projects</b>									
Boyds Creek Highway (SR 338) at Old Knoxville Highway Intersection Improvements	18-500	23-2017-044	at Old Knoxville Highway Intersection		0	Reconfigure existing intersection to improve safety and operations through geometric layout changes, addition of turn lanes, and installation of a new traffic signal.	2026	Exempt	N/A - Exempt
<b>Transit Capital Projects</b>									
Knoxville-Knox County CAC Transit Capital Project	21-1000	23-2020-204			N/A	Purchase of demand response transit vehicles for fleet replacement	2026	Exempt	N/A - Exempt
Knoxville-Knox County CAC Transit Volunteer Assisted Transportation	21-1001				N/A	Purchase of vehicles for assisted demand response transit services	2026	Exempt	N/A - Exempt
ETHRA Transit Vehicle Replacement Project	21-1002	23-2020-203			N/A	Purchase of demand response transit vehicles for fleet replacement	2026	Exempt	N/A - Exempt
Purchase KAT Vehicles - Fixed Route Buses	21-1003	23-2020-205			N/A	Purchase of fixed-route buses for fleet replacement or minor expansion	2026	Exempt	N/A - Exempt
KAT Bus Engine Overhauls	21-1004	23-2020-210			N/A	Mid-life engine overhauls on 46 transit buses. An engine "overhaul" is a mid-life action on a major component that enables an asset to achieve its useful life and is an FTA-eligible activity under Circular 5010.1E	2026	Exempt	N/A - Exempt
<b>TPO Projects</b>									
Smart Trips	21-700		TPO Planning Area		N/A	Continuation of Smart Trips program that encourages alternatives to driving alone through an online ridematching and logging database, incentives, marketing and outreach. Operations funds are used for rideshare operations.	2026	Exempt	N/A - Exempt
Bike Parking	21-701		TPO Planning Area		N/A	Provide convenient and secure bike parking destinations by reducing cost for businesses and agencies to provide bike parking for employees and customers.	2026	Exempt	N/A - Exempt
Resurfacing Program	21-702	23-2020-307	TPO Planning Area		N/A	Projects for preservation, rehabilitation, resurfacing and restoration of federal aid roadways	2026	Exempt	N/A - Exempt
Safety Improvements Program	21-703		TPO Planning Area		N/A	Projects for preservation, rehabilitation, resurfacing and restoration of federal aid roadways	2026	Exempt	N/A - Exempt



Table E-2 – Projects from the Regional “Orphan Area” Subject to 1997 8-Hour Ozone Standard Conformity

Project Name	KRMP ID	FY 2023-2026 TIP ID	From	To	Length (miles)	Final Description	Conformity Analysis Year	Exempt Status	Regional Significance
Regional Projects (In 1997 Ozone Maintenance Area but Outside TPO Planning Area)									
Intersection of US11E and SR 92/Old Andrew Johnson Hwy	LAMTPO-17	3016	Intersection		0	Realign the intersection of US 11E and SR 92/Old Andrew Jackson Hwy; extend Overlook Rd	2026	Non-Exempt	Not Regionally Significant
Chucky Pike	LAMTPO-2008		Intersection		0	Reconstruct Chucky Pike with signal modifications at US 11E intersection	2026	Exempt	N/A - Exempt
SR 34/US 11E	LAMTPO-2051		Russell Rd	Odyssey Rd	1.9	Intersection and access management improvements along SR 34/US 11E from Russell Ave to Odyssey Rd	2026	Exempt	N/A - Exempt
Intersection of SR 32 (State St) and SR 113 (Main St)	LAMTPO-2052		Intersection		0	Intersection improvements at SR 32 (State St) and SR 113 (Main St): add left turn lanes on SR 32 (State St) and a left turn lane on	2026	Exempt	N/A - Exempt
Intersection of SR 341 (Roy Messer Hwy) and SR 113 (Main St)	LAMTPO-6003		Intersection		0	Signalize the intersection of SR 341 (Roy Messer Hwy) and SR 113 (Main St)	2026	Exempt	N/A - Exempt
Intersection of SR 34/US 11E and George Ave	LAMTPO-2060		Intersection		0	Intersection improvements at SR 34/US 11E and George Avenue: add NB right turn lane extending to Elmwood St.	2026	Exempt	N/A - Exempt
SR-73 (US-321)	100989.00	23002073075	Buckhorn Rd	SR-416	1.4	Widen from 2 to 4 lane divided	2035	Non-Exempt	Regionally Significant
Intersection of SR 34/US 11E and Russell Ave	LAMTPO-2043		Intersection		0	Intersection improvements at SR 34/US 11E and Russell Ave: add right turn lanes on SR 34/US 11E, pedestrian signals and sidewalks on all approaches	2035	Exempt	N/A - Exempt
Intersection of SR 34/US 11E and George Ln	LAMTPO-2044		Intersection		0	Intersection improvements at SR 34/US 11E and George Lane: add right turn lanes on SR 34/US 11E, pedestrian signals and sidewalks on all approaches	2035	Exempt	N/A - Exempt
Intersection of SR 34/US 11E and E. Old Andrew Johnson Hwy and Municipal Dr	LAMTPO-2007		Intersection		0	Intersection improvements at SR 34/US 11E and E Old Andrew Jackson Highway: signalize the intersection	2035	Exempt	N/A - Exempt
Intersection of E. Old Andrew Johnson Hwy and Municipal Dr	LAMTPO-2009		Intersection		0	Intersection improvements at E Old Andrew Jackson Hwy and Municipal Dr: Add turn lanes	2035	Exempt	N/A - Exempt
I-81	LAMTPO-2049		Approximately 1 mile west of I-40 Interchange (Exit 1)	Near SR 341 (Roy Messer Hwy) - Exit 4	3.6	Widen I-81 from 4 to 6 lanes and add acceleration lane on I-40 WB	2045	Non-Exempt	Regionally Significant
Intersection of Old Andrew Johnson Hwy and E. Main St/N. Chucky Pike	LAMTPO-2012		Intersection		0	Intersection improvements at Old Andrew Jackson Hwy and E Main St/N Chucky Pike: realign offset intersection	2045	Exempt	N/A - Exempt
SR-35 (US-411)	TDOT-101401.01		near Sims Rd in Sevier County	near SR-92 in Jefferson County	4.5	Widen from 2-lanes to 5-lanes on existing and new alignment	2026	Non-Exempt	Regionally Significant
SR-449 Ext	TDOT-124788.00	23002449074	SR-35	Robert Henderson Rd	0.4	Construct new 5-lane Facility	2026	Non-Exempt	Regionally Significant
Jake Thomas Connector	TDOT-124789.00		SR-71	SR-449 (Veterans Blvd)	2	Pavement Marking between SR-73 and Teaster Ln. Widen from 2-lane to 4-lane divided between Teaster Ln and New Ripkin Experience Ballpark. Construct new 5-lane from Ballpark to SR-449 (Veterans Blvd)	2026	Non-Exempt	Regionally Significant
SR-35 (US-411)	TDOT-121620.00	23782035107	SR-448 (North Parkway)	Eastgate Rd	1.13	Capacity and Operational Improvements at the intersection of SR-35 and SR-449 with left turn lane restrictions between project limits	2026	Exempt	N/A - Exempt
Veterans Blvd (SR-449) Extension Phase 2	09-509		Henderson Rd	SR-66 at Gists Creek Rd	3.2	Construct new 4-lane Road	2035	Non-Exempt	Regionally Significant
Great Smoky Mountains National Park Road Access to Proposed Mountain Bike Trails	NPS-1		U.S. 321 (Wears Valley Rd)	Dead End at Parking Area	1	Construct New Dead End Access Road(s) for Proposed Mountain Bike Trails within the footprint of the unbuilt portion of Foothills Parkway (Section 8D) in Wears Valley part of Sevier County	2026	Non-Exempt	Not Regionally Significant



# Appendix F – FY 2023-2026 Transportation Improvement Program

## Project List Crosswalk

### F.1 Background

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The purpose of the listing in this appendix is to document all of the projects being programmed in the updated FY 2023-2026 Transportation Improvement Program (TIP) and to identify their corresponding project ID in the 2045 Mobility Plan so that scope, termini and phase of work can be compared for consistency. Table F-1 includes the projects being programmed in the Knoxville TPO FY 2023-2026 TIP while Table F-2 includes the “regional area” projects that are within the boundary of the 1997 8-hour Ozone Standard that are still subject to conformity and are included in either the Lakeway Area MTPO FY 2023-2026 TIP or the TDOT FY 2023-2026 STIP.



Table F-1 Knoxville Regional TPO FY 2023-2026 TIP Project List Crosswalk

New TIP #	Project Name	Description	Termini	Length	Mobility Plan #	MP Horizon Year	Exempt Status	Reg. Significant	Lead Agency	Year	Work
23-2011-082	Montvale Road (SR-336)	Widen existing roadway to 2 – 12 foot travel lanes with a 12 foot center turn lane including curb and gutter, sidewalk, and a multiuse Path. Close SR-73 EB and WB access to Highland Ave to construct EB right-turn lane on to SR-336; Lengthen WB SR-73 left-turn lane near Highland Ave	(Montvale Rd) Montvale Station Road to SR-73(Lamar Alexander Parkway) (IA)	0.6	09-262	2030	Non-Exempt	No	TDOT	2023	ROW
23-2014-002	Lovell Rd. (SR-131) Widening	Widen 2-lane to 4-lane, including pedestrian and bicycle facilities.	Cedardale Ln. to Middlebrook Pk. (SR-169)	1.7	09-637	2030	Non-Exempt	Yes	Knox County	2024	ROW
23-2014-006	Schaad Road Widening	Widen 2-lane to 4-lane	Oak Ridge Hwy. (SR-62) to Pleasant Ridge Rd.	1.5	09-625	2026	Non-Exempt	Yes	Knox County	2023	CON
23-2014-025	Pellissippi Pkwy. (SR-162) Extension	Construct new 4-Lane	SR-33 To SR-73 (US-321)	4.5	09-232	2030	Non-Exempt	Yes	TDOT	2025	CON
23-2014-032	Sevier Avenue - South Knoxville Waterfront Roadway Improvements	Roadway streetscape improvements and utility relocations along Sevier Avenue and will include a new roundabout constructed at the intersection of Foggy Bottom/Sevier Avenue/Island Home Avenue. No additional lanes will be constructed.	Davenport Rd. to Island Home Ave.	0.32	09-617	2026	Exempt	No	Knoxville	2023	CON
23-2014-037	Pleasant Ridge Rd.	Reconstruct 2-lane road with addition of turn lanes at the intersections of Pleasant Ridge Road, Sullivan Road, and Murray Drive. Project also includes the addition of bicycle and pedestrian facilities.	Merchant Dr. to City Limits	1.6	09-616	2026	Exempt	No	Knoxville	2023	CON
23-2014-038	Washington Pike	Widen from 2-lanes to 3/4-lanes with median/center turn lane and including bike/pedestrian facilities.	North of I-640 to Murphy Rd.	1.7	09-615	2026	Non-Exempt	Yes	Knoxville	2024	CON
23-2014-042	Traffic Control Equipment Upgrade - Knoxville Advanced Traffic Management System - Phase 1	Purchase, installation and integration of signal controllers, signal monitors, closed loop equipment and software. Project also includes development of new signal timing plans for the new equipment and software.	Broadway from Foley to Jackson and Kingston Pike from Lovell Rd. to Metron Center Way	19	13-602	2026	Exempt	No	Knoxville	2023	CON
23-2014-059	Sevierville Rd.	Reconstruct Sevierville Rd. (SR-35) from 2 lanes to 3, curb and gutter, and sidewalks with intersection improvements	Washington St. to Walnut St.	0.4	09-214	2026	Non-Exempt	Yes	Maryville/ TDOT	2023	ROW
23-2014-060	Morganton Road roadway improvement	Reconstruction of Morganton Rd. to include new 12 ft. lanes, center turn lane, deceleration lane, new shoulders and ditches, new curve radii at all intersections, new warning signage, striping, vertical curve improvements, and sight distance improvements.	Foothills Mall Dr. to William Blount Dr. (SR-335)	2.3	09-211	2026	Non-Exempt	No	Blount County	2026	CON
23-2014-069	Alcoa Hwy. (SR-115 / US-129)	Widening from 4-Ln to 6-Ln including pedestrian and bicycle facilities.	From Woodson Drive to Cherokee Trail interchange (IA)	1.6	09-653	2026	Non-Exempt	Yes	TDOT	2023	CON
23-2014-078	Chapman Highway Advanced Traffic Management System	Advanced Traffic Management Systems (ATMS) is a component of the Intelligent Transportation Systems (ITS) integrates technology to improve the flow of traffic and improve safety.	Blount Ave. to Mountain Grove Dr.	6.3	13-1003	2026	Exempt	No	Knoxville	2023	ROW
23-2014-080	Liberty Street Multimodal Project	Install sidewalks and bicycle lanes	Liberty St., from Sutherland Ave. to Division St	0.2	13-1004	2026	Exempt	No	Knoxville	2023	CON
23-2014-082	Union Road/N. Hobbs Road Improvements	Reconstruct 2-lane road with addition of turn lanes and bicycle/pedestrian facilities.	Union Road from N. Hobbs Road to Everett Road (approx. 4,500 ft); N. Hobbs Road from Kingston Pike (SR-11) to Union Road (approx. 750 ft)	1.0	13-601	2026	Exempt	No	Farragut	2023	CON
23-2017-005	SR-115 (US-129) Widening	Widen from four to six lanes	US-129 Bypass from SR-73 (Lamar Alexander Parkway) to SR-35 (Hall Road)	2.9	17-202	2026	Non-Exempt	Yes	TDOT	2023	PE-D
23-2017-006	Maryville to Townsend Greenway - Phase 1 (Brown Creek)	Shared use path/Greenway from an existing trailhead at Harper Ave. (near Aluminum Ave) to Lamar Alexander Pkwy along Brown Creek.	Harper Ave. trailhead to East Lamar Alexander Pkwy.	1.25	13-833	2026	Exempt	No	Maryville	2024	ROW
23-2017-009	First Creek Greenway - Broadway Streetscape	Construct a new shared use path extending First Creek Greenway from near Cecil Ave to near Woodland Ave	Near Cecil Ave to near Woodland Ave	0.3	13-838	2026	Exempt	No	Knoxville	2023	CON
23-2017-011	East Knox Greenway - Phase 1	Construct a new shared use path connecting First Creek Greenway to Knoxville Botanical Gardens and Arboretum	Willow Ave. to Knoxville Botanical Gardens	1.6	17-901	2026	Exempt	No	Knoxville	2024	CON



Table F-1 Knoxville Regional TPO FY 2023-2026 TIP Project List Crosswalk (continued)

New TIP #	Project Name	Description	Termini	Length	Mobility Plan #	MP Horizon Year	Exempt Status	Reg. Significant	Lead Agency	Year	Work
23-2017-017	Magnolia Ave Streetscape - Phase 3	Streetscape improvements in the existing ROW that include raised medians replacing center left-turn lane, signal improvements, bike lanes, improved sidewalks, bus pull-offs and amenities.	N. Bertrand St. to Cherry St.	0.2	17-608A	2026	Exempt	No	Knoxville	2023	ROW
										2024	CON
23-2017-028	Accelerated Bus Corridor Stops/Passenger Information Systems Install	Accelerated Bus Corridor Stops/Passenger Information Systems/Transit Signal Priority Install	Modified KAT Route 22 which includes portions of Church St., Henley St., N. Broadway, Garden Dr., Jacksboro Pk., Essary Dr., Knox Dr., Fair Dr. The south terminus is Knoxville Station and north terminus is the Fountain City Superstop	8.1	17-1006	2026	Exempt	No	Knoxville	2023	PE-D
										2024	ROW
										2024	CON
23-2017-036	Emory Rd (SR-131)	Widening 2 lanes to 4 lanes with median and/or center turn lane, including bicycle/pedestrian facilities	(East Emory Road), from near SR-33 to near SR-331 (IA)	4.9	09-643	2030	Non-Exempt	Yes	TDOT	2023	PE-D
23-2017-037a	Edgemoor Road (SR-170)	Widening 2 Lanes To 4 Lanes with median and/or Center Turn Lane. Also includes bicycle/pedestrian facilities and a new bridge over the Clinch River.	From near Melton Lake Drive to SR-9 (US-25W, Clinton Highway)	6.2	09-101b	2030	Non-Exempt	Yes	TDOT	2023	PE-D
										2024	ROW
23-2017-038	I-640/ I-275/ I-75 Interchange	Interchange reconstruction along with addition of auxiliary lanes in each direction on I-75	Interchange at I-640/I-275 (Sharps Gap)	0.57	09-654	2035	Non-Exempt	Yes	TDOT	2024	PE-N
23-2017-040	Chapman Hwy (SR-71/US-441) Operational and Safety Improvements	Intersection improvements and/or driveway improvements and/or left turn lanes at various locations throughout the project area.	(Chapman Hwy), from near Blount Avenue to near SR-338 (Boyd's Creek Hwy) in Seymour (IA)	10.3	09-626	2035	Exempt	No	TDOT	2023	PE-D
23-2017-042	Carpenters Grade Road Widening and Intersection Improvements	Reconstruct 2-lane road with addition of turn lanes and sidewalk. Construct a signalized intersection at Peterson Ln, Cochran Rd and Raulston Rd intersection.	Raulston Rd./Peterson Ln. to Cochran Rd.	0.89	09-223	2026	Exempt	No	Maryville	2024	CON
23-2017-044	Boyd's Creek Highway (SR 338) at Old Knoxville Hwy. Intersection	Reconfigure existing intersection to improve safety and operations through geometric layout changes, addition of turn lanes, and installation of a new traffic signal.	Boyd's Creek Highway (SR 338) at Old Knoxville Hwy. Intersection	0	18-500	2026	Exempt	No	Sevierville	2023	ROW
										2024	CON
23-2017-046	Oak Ridge Rails to Trails	This Rails to Trails project on abandoned rails from Elza Gate Park at the Oak Ridge Turnpike to the Y-12 National Security Complex on Scarboro Road, and along Belgrade Road, Warehouse Road, Fairbanks Road, and Lafayette Drive.	Melton Lake Rd./Greenway to Scarboro Rd./Y-12 National Security Complex	2.3	13-830	2026	Exempt	No	Oak Ridge	2026	CON
23-2017-048	Blount County Greenway Trail - Ph. 1	Construction of 3.3 mile greenway.	Maryville city limits on US 321 at NW corner of Helton Rd. to Perry's Mill with additional bike access link to Old Walland Hwy.	3.3	18-202	2026	Exempt	No	Blount County	2023	CON
23-2017-049	South Waterfront Greenway - East of Suttree	Construct greenway trail along the Tennessee River connecting the cantilevered riverwalk section along Island Home Avenue to Suttree Landing Park riverwalk.	Suttree Landing Park to Island Home Ave.	0.6	17-850	2026	Exempt	No	Knoxville	2025	ROW
23-2017-050	I-140 ITS Expansion	I-140 ITS expansion to include the installation of a power and communication network and ITS devices such as CCTV cameras, DMS, and RDS.	From near MM 2 to near MM 11 (SR-115/US-129/Alcoa Hwy)	9.2	18-201	2026	Exempt	No	TDOT	2023	CON
23-2017-051	Middlebrook Pike (SR-169) ATMS Expansion	Purchase, installation and integration of fiber optics, signal controllers, signal monitors, closed loop equipment, enhanced detection, DSRC, traffic signal cable and software. Project also includes development of new signal timing plans for the new equipment and software.	Western Ave. to Joe Hinton Rd.	6.5	18-603	2026	Exempt	No	Knoxville	2023	CON
23-2017-056	I-75	Widen From 4 to 6 Lanes	From SR-131 (Emory Road) to SR-170 (Raccoon Valley Road)	4.85	09-692	2035	Non-Exempt	Yes	TDOT	2023	PE-D
23-2017-057	Pelissippi Pkwy (SR-162) Interchange at Oak Ridge Hwy (SR-62) in Solway (IA)	Reconstruct interchange to a Single Point Urban Interchange (SPUI) and provide connection to Solway Road	Pelissippi Pkwy (SR-162) Interchange at Oak Ridge Hwy (SR-62) in Solway	0.45	09-649	2026	Non-Exempt	Yes	TDOT	2023	PE-D
										2023	ROW
23-2017-061	Traffic Signal Improvements for	Addition of following elements: an ATMS data server, DSRC capable ATC controllers, high speed wireless network, and radio equipment. This proposal will increase ATMS capabilities and decrease traffic delay.	A total of 39 signals will be upgraded along Cumberland Ave, Neyland Dr, 17th St/Ailor, Western Ave and Joe Johnson Dr. Signal improvements along	6.5	19-603	2026	Exempt	No	Knoxville	2023	PE-D



Table F-1 Knoxville Regional TPO FY 2023-2026 TIP Project List Crosswalk (continued)

New TIP #	Project Name	Description	Termini	Length	Mobility Plan #	MP Horizon Year	Exempt Status	Reg. Significant	Lead Agency	Year	Work
	the U.T. Area	by being better able to sense traffic flow and provide SPaT and related data sharing features	Henley St will connect two ongoing projects between Broadway and Chapman Highway.							2025	CON
23-2017-062	Lenoir City CMAQ ITS Phase II	The proposed project is a Phase II to the Lenoir City CMAQ ITS. It includes additional features not included in Phase I to enhance traffic flow and to reduce emissions. DSRC with Advanced Traffic Controllers with cellular modems / batteries will be installed along with radar detection devices.	US-321 / SR-73 / SR-2 US-321 at US-70 US-321 at I-40 Ramps. (22 Traffic signals)	8.6	19-400	2026	Exempt	No	Lenoir City	2023	CON
23-2017-063	Knox County Advanced Traffic Management System - Phase II	Installation of DSRC, video detection, and battery backups at all ten intersections from Phase I, and five new intersections; retime all 15 intersections; and install new signal cabinets and wireless interconnect at four new signals.	Phase II - E. Emory Rd. (SR131) at Andersonville Pike, Norris Freeway (SR71/US4 441) at Sam Walton Way, Watt Rd I-40 EB and WB ramps, Maynardville Pk (SR 33/US 441) at Andersonville Pk. Phase I Additions - Maynardville Pk (9) and Norris Fwy (1)	N/A	19-604	2026	Exempt	No	Knox County	2023	CON
23-2017-064	Oak Ridge Signal Timing Optimization Program: Phase III	Installation of: advanced traffic controllers, wireless interconnect, radar detection and DSRC	Project is primarily located along Illinois Ave (SR 62) and Lafayette Dr. The project includes the following (11) signalized intersections: Illinois Ave (SR 62) at Robertsville Rd; Illinois Ave (SR 62) at Ivanhoe Rd/Ivanhoe Lane; Illinois Ave (SR 62) at ORAU Way/Tulsa Rd; Illinois Ave (SR 62) at East Tulsa Rd; Illinois Ave (SR 62) at South Rutgers Ave; Illinois Ave (SR 62) at Woodland Terrace; Illinois Ave (SR 62) at Lafayette Dr/Scarboro Rd; Lafayette Dr at Manchester Rd/Hendrix Dr; Lafayette Dr at Emory Valley Rd; Lafayette Dr at Laboratory Rd	3.44	19-100	2026	Exempt	No	Oak Ridge	2023	PE-D
										2024	CON
23-2020-002	Virtue Road Improvements Ph. 2	Reconstruct 2-lane road with addition of turn lanes and bike/ped facilities.	Willow Cove Way to 1200' S of Needlegrass Ln	1.14	09-630	2030	Exempt	No	Farragut	2023	PE-D
										2025	ROW
23-2020-004	Woodland Avenue Complete Street	Install bike lanes, sidewalks, and pedestrian crossing improvements. Project connects a greenway to existing bike lanes.	N. Broadway to West Glenwood Ave.	0.5	19-606	2026	Exempt	No	Knoxville	2023	ROW
										2024	CON
23-2020-005	Foothills Mall Dr. Extension Ph. 2	Construct new 2-lane road with center turn lane and sidewalks.	Foch St. to McCammon Ave.	0.66	10-260	2026	Non-Exempt	No	Maryville	2023	PE-D
										2024	ROW
										2025	CON
23-2020-006	SR-33 West Broadway Ave. Widening	Widening and intersection improvements along US 411/SR-33	US 321 (Lamar Alexander Pkwy.) to South Cedar St.	0.45	09-242	2030	Non-Exempt	Yes	Maryville	2023	PE-D
										2024	ROW
23-2020-011	I-75 at Emory Road (SR-131) Interchange	Reconfigure existing interchange to a Diverging Diamond Interchange to improve capacity, safety and operations.	I-75 at Emory Rd (SR-131) Interchange	0	09-652	2026	Exempt	No	TDOT	2023	PE-D
										2023	ROW
										2024	CON
23-2020-012	SR 115 / US 129 (Relocated Alcoa Hwy.)	Stage construction including grade, drain, base, pave, signal, lighting, ITS, greenway, retaining wall, natural stream design, and bridge, from South of proposed Wright Road Interchange to North of proposed SR-162 (Mississippi Parkway) interchange providing local connectivity for existing routes and destinations.	Proposed Interchange at Tyson Blvd to Existing SR-115 at South Singleton Station Road-Stage 1	2.9	09-257	2030	Non-Exempt	Yes	TDOT	2023	CON
23-2023-200	Section 5307 Funds	5307 formula transit funding	N/A	N/A	13-860	N/A	Exempt	No	Knoxville	2023-2026	PUR
23-2023-201	Section 5310 Funds	5310 formula transit funding	N/A	N/A	13-869	N/A	Exempt	No	TPO	2023-2026	PUR
23-2023-202	Section 5339 Funds	5339 formula transit funding	N/A	N/A	13-871	N/A	Exempt	No	Knoxville	2023-2026	PUR
23-2023-203	ETHRA Transit Vehicle Replacement	ETHRA will purchase transit vehicles to replace medium duty 10 passenger vehicles and wheelchair cutaway vehicles that have met their useful life guidance of 5 years and/or 150,000 miles.	N/A	N/A	21-1002	2024	Exempt	No	ETHRA	2023	PUR



Table F-1 Knoxville Regional TPO FY 2023-2026 TIP Project List Crosswalk (continued)

New TIP #	Project Name	Description	Termini	Length	Mobility Plan #	MP Horizon Year	Exempt Status	Reg. Significant	Lead Agency	Year	Work
23-2023-204	Knox CAC Transit Vehicle Replacement	CAC will purchase replacement vehicles for demand response service.	N/A	N/A	21-1000	2024	Exempt	No	CAC	2023	PUR
23-2023-205	KAT Purchase Transit Vehicles (7 buses and 4 trolleys)	KAT purchase of heavy-duty transit vehicles (buses and trolleys) that have exceeded their useful life.	N/A	N/A	21-1003	2024	Exempt	No	KAT	2023	PUR
23-2023-210	KAT Bus Mid-Life Overhauls	In order to maintain the KAT fleet in a state of good repair, KAT is requesting funding for mid-life overhauls on 46 transit buses. An "overhaul" is a mid-life action on a major component that enables an asset to achieve its useful life and is an FTA-eligible activity under Circular 5010.1E (Award Management).	N/A	N/A	21-1004	N/A	Exempt	No	KAT	2023	PUR
23-2023-301	HSIP Grouping	Any strategy, activity or project on a public road that is consistent with the state strategic highway plan (SHSP) and corrects or improves a hazardous road location or feature or addresses a highway safety problem. Including workforce development.	N/A	N/A	21-705	N/A	Exempt	No	TDOT	2023-2026	CON
23-2023-302	STBG Grouping	Resurfacing, guardrail, slide repair, signs, signals, marking, intersection/interchange modifications, noise walls, wetland or stream mitigation, safety improvements, bridge replacement, repair.	N/A	N/A	Consistent w/ Goal 1	N/A	Exempt	No	TDOT	2023-2026	CON
23-2023-303	NHPP Grouping	Resurfacing, guardrail, slide repair, signs, signals, marking, intersection/interchange modifications, noise walls, wetland or stream mitigation, safety improvements, bridge replacement, repair.	N/A	N/A	21-704	N/A	Exempt	No	TDOT	2023-2026	CON
23-2023-305	STBG/STBG-TA Bike/Pedestrian and Transportation Alternatives Grouping	This grouping will be used to fund greenways, sidewalks, bike/pedestrian amenities, streetscaping, and to fund STBG - Transportation Alternatives projects, which provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects throughout the Knoxville TPO area.	N/A	N/A	17-911	N/A	Exempt	No	Various	2023-2026	CON
23-2023-306	Planning and Studies Grouping	This grouping will be used to fund planning reports and studies throughout the Knoxville TPO planning area.	N/A	N/A	Consistent w/ Goal 1	N/A	Exempt	No	Various	2023-2026	Study
23-2023-307	Maintenance and Repair Grouping	Funds will be used for operation, maintenance, repair, or resurfacing works.	N/A	N/A	21-702	N/A	Exempt	No	Various	2023-2026	CON



Table F-2 Regional Area (TDOT FY 2023-2026 STIP and Lakeway MTPO FY 2023-2026 TIP) Project List Crosswalk

TIP ID #	Project Name	Description	Termini	Length	Mobility Plan #	MP Horizon Year	Exempt Status	Reg. Significant	Lead Agency	Year	Work
STIP # 23002073075, Sevier County	SR-73 (US-321)	Widen 2-Ln to 4-Ln Divided	Buckhorn Road to SR-416	1.4	100989.00	2026	Non-Exempt	Yes	Sevier County	2024	ROW
STIP # 23002449074, Sevier County	SR-449 Extension (Veterans Boulevard)	Construct New 5-Ln Facility	SR-35 to Robert Henderson Road	0.4	124788.00	2026	Non-Exempt	Yes	Sevier County	2023	PE-D
										2023	ROW
										2024	CON
STIP # 23782035107, Sevier & Jefferson County	SR-35 (US-411)	Construct rural 5-lane Highway on new alignment	(Newport Hwy) From Near Sims Road in Sevier County to Near SR-92 in Jefferson County (IA)	3.78	101401.01	2026	Non-Exempt	Yes	Sevier & Jefferson County	2023	CON
LAMTPO # 2010, Jefferson County	Agricultural Park Blvd Resurfacing	Resurface Agricultural Park Blvd, including milling, grading, repaving, sidewalk ADA compliant if needed, striping, signage	Witt Boundary Rd to US Hwy 25E	0.75	Consistent	2026	Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2024	CON
LAMTPO # 3016, Jefferson County	Old AJ Hwy Realignment/ SR92/Overlook Rd Extension	Construct New 2-Ln road with curb and gutter, ADA compliant sidewalks, street signs, traffic signalization, striping, ROW (if needed), ITS traffic signal improvements (tied into fiber-wired system, with cabinets and/or controllers, mast arms, radar, video and/or loop detection, new signal heads (if needed) and pedestrian signals (if needed)	SR-92 at Old Andrew Johnson Hwy to US 11E/ W.Broadway Blvd	0.46	LAMTPO-17	2026	Non-Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2024	ROW
										2026	CON
LAMTPO # 3018, Jefferson County	Branner Ave Resurfacing	Resurface Branner Ave, including milling, grading, repaving, sidewalk ADA compliant if needed, striping, signage	Ken Sparks Way to Old AJ Hwy	0.33	Consistent	2026	Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2023	CON
LAMTPO # 3020, Jefferson County	Municipal Ave Resurfacing	Resurface Municipal Ave, including milling, grading, repaving, sidewalk ADA compliant if needed, striping, signage	Old Andrew Johnson Hwy to Black Oak Road	0.59	Consistent	2026	Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2023	CON
LAMTPO # 3021, Jefferson County	Fate Rankin Rd Resurfacing	Resurface Fate Rankin Rd, including milling, grading, repaving, sidewalk ADA compliant if needed, striping, signage	US 11E towards Night St (to city's corporate boundary) for a distance of 3,000 linear feet	0.57	Consistent	2026	Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2023	CON
LAMTPO # 3022, Jefferson County	Old Andrew Johnson Hwy Resurfacing	Resurface Old Andrew Johnson Hwy, including milling, grading, repaving, sidewalk ADA compliant if needed, striping, signage	SR 92 to Odyssey Rd/City Corporation Boundary	2.43	Consistent	2026	Exempt	No	Jefferson County	2023	PE-N
										2023	PE-D
										2023	CON
LAMTPO # 6000	Public Transportation Operations FTA Section 5307	Public Transportation Operations	Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	ETHRA, Lakeway Transit	2023	OPER
										2024	OPER
										2025	OPER
										2026	OPER
LAMTPO # 6001	Public Transportation Capital Purchases FTA Section 5307	Public Transportation Capital Purchases	Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	ETHRA, Lakeway Transit	2023	PUR
										2024	PUR
										2025	PUR
										2026	PUR
LAMTPO # 6002	FTA Section 5310 purchase of equipment/ vehicles/ transit facility	Purchase ADA compliant vehicles, replacement parts, new equipment (computers, GPS, radios, lifts, etc)	Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	ETHRA, Lakeway Transit	2023	PUR
										2024	PUR
										2025	PUR
										2026	PUR
LAMTPO # 6003	FTA Section 5339 capital expenses purchase of equipment/ vehicles/ transit facility	Purchase ADA compliant vehicles, replacement parts, new equipment (computers, GPS, radios, lifts, etc)	Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	ETHRA, Lakeway Transit	2023	PUR
										2024	PUR
										2025	PUR
										2026	PUR
LAMTPO # 20232060	National Highway Performance Program (NHPP) Grouping		Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	TDOT	2023-2026	CON
LAMTPO # 20232065	MAINTENANCE/ CONSTRUCTION (STBG-STATE)		Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	TDOT	2023-2026	CON
LAMTPO # 20232095	SAFETY (HIGHWAY HAZARD ELIMINATION) (HSIP)		Within the LAMTPO Region; Hamblen and Jefferson Counties	N/A	Consistent	N/A	Exempt	No	TDOT	2023-2026	CON