Knoxville Regional Transportation Planning Organization

TPO

Air Quality Conformity Determination for

Amendment to TIP Project# 2014-075

Adopted

September 23, 2015

Air Quality Conformity

Determination Report for September 2015 Amendment to the:

FY 2014-2017 Transportation Improvement Program

Prepared by:

Knoxville Regional TPO Staff

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

A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION (TPO)
FINDING THE 2014-2017 TRANSPORTATION IMPROVEMENT PROGRAM AS AMENDED
MEETS AIR QUALITY CONFORMITY REQUIREMENTS

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

WHEREAS, the Knoxville Region is currently designated as a Maintenance Area for the 2008 8-Hour Ozone Standard and a Nonattainment Area for the 1997 Annual PM2.5 Standard and 2006 Daily PM2.5 Standard by the United States Environmental Protection Agency (EPA); and,

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

WHEREAS, conformity was demonstrated using the required emissions tests applicable to the 2008 8-hour Ozone Standard and through a reliance on a previous regional emissions analysis for the PM2.5 standards; and,

WHEREAS, the conformity determination addresses the planned transportation improvements included in the Long Range Regional Mobility Plan 2040 and covers the entire Knoxville Ozone and PM2.5 Maintenance/Nonattainment Areas; and,

WHEREAS, the Knoxville Regional TPO Amended FY 2014-2017 Transportation Improvement Program is a subset of the Amended Long Range Regional Mobility Plan 2040; and,

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

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

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

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

That the Amended 2014-2017 Transportation Improvement Program has been found to conform to air quality requirements of the Tennessee SIP in accordance with the Clean Air Act as Amended.

September 23, 2015
Date

Madeline Rogero

Mayor Madeline Rogero
City of Knoxville
TPO Executive Board Chair

Jeffrey A. Welch
TPO Director

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

U.S. Department of Transportation
Federal Highway Administration

Tennessee Division

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

October 19, 2015

In Reply Refer To:
HPP-TN

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

Subject: Air Quality Conformity Determination for Knoxville, TN Region

Dear Ms. Hall:

The Federal Highway Administration Tennessee Division and Federal Transit Administration Region IV, in coordination with the Environmental Protection Agency Region IV, have reviewed the Air Quality Conformity Redetermination adopted by the Knoxville Regional Transportation Planning Organization (KRTPO) Policy Board.

The Air Quality Conformity Determination covers the 1997 Annual PM-2.5, 2006 24-hour PM2.5 Standard nonattainment areas and 2008 8-hour Ozone maintenance area in the Knoxville Region and addresses the planned transportation improvements from the CHCNGA TPO's FY 2014 – 2017 Transportation Improvement Program (TIP).

Based on our review, we find the documents conform to the National Ambient Air Quality Standards for the 1997 Annual PM-2.5, 2006 24-hour PM2.5, and 2008 8-hour Ozone in the Knoxville Region.

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

Sincerely,

Scott Allen
Planning & Air Quality Specialist

cc: Ms. Dianna Smith, Environmental Scientist, EPA Region 4
Ms. Kelly Sheckler, Environmental Scientist, EPA Region 4
Ms. Elizabeth Martin, Community Planner, FTA Region 4
Ms. Angela Midgett, MPO Program Manager, TDOT
Mr. Jeff Welch, Director, Knoxville Regional Transportation Planning
Mr. Jack Qualls, Community Planner, TDOT
Mr. Nick Weander, Community Planner, TDOT

Executive Summary

The Knoxville Regional Transportation Planning Organization (KRTPO) is conducting a conformity demonstration for an amendment to an existing, air quality non-exempt project in its current FY 2014-2017 Transportation Improvement Program (TIP). The affected project amendment details are as follows:

- Amend TIP Project #2014-075, Alcoa Hwy (US-129/SR-115) Widening from 4-lane to 6-lane from north of Maloney Rd to Woodson Dr – Amend the project by increasing FY 2016 NHPP funding for the Construction Phase in the amount of $23,400,000 total ($18,720,000 federal and $4,680,000 state) for an amended FY 2016 total of $54,100,000 ($43,280,000 federal and $10,820,000 state). Amend the total project cost from $15,200,000 to $32,900,000.

The purpose of this report is to document that the amended TIP conforms to federal regulations from the latest surface transportation act known as "Moving Ahead for Progress in the 21st Century (MAP-21) and the Clean Air Act Amendments of 1990.

An Air Quality Conformity Determination for transportation plans and programs within the Knoxville Region is required since it has been designated as a "Nonattainment Area" for the 1997 and 2006 Particulate Matter 2.5 (PM2.5) Standards and as a "Maintenance Area" for the 2008 8-Hour Ozone 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 air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone.

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

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

There are portions of counties designated as Maintenance or Nonattainment that lie outside of the KRTPO Metropolitan Planning Area. The KRTPO compiles a single overall transportation plan that encompasses the entire Nonattainment and Maintenance areas for the purposes of demonstrating conformity for the entire region.

Conformity Determination Summary

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

PM2.5 Standards

The Knoxville Region has been designated as nonattainment for both the daily and annual measurement periods (same geographic area for both as noted above). The designation as a nonattainment area under the Annual PM2.5 Standard became effective on April 5, 2005 and the designation as a nonattainment area for the Daily PM2.5 Standard became effective on December 14, 2009.

A conformity determination with a full regional emissions analysis for both the annual and daily PM2.5 standards was most recently conducted for a set of major amendments to the Mobility Plan and TIP that was adopted by the TPO Executive Board on March 10, 2015. The conformity determination was approved by the U.S. DOT on March 26, 2015. A copy of the most recent full Air Quality Conformity Determination Report can be found at:
http://www.knoxtrans.org/plans/mobilityplan/airqualconform_2015.pdf

Since the current action involves a project already included in the current FY 14-17 TIP and 2040 Mobility Plan, the TPO is able to rely on a previous regional emissions analysis to demonstrate conformity for the proposed TIP Amendment. Documentation of the ability to rely on a previous regional emissions analysis for PM2.5 is included in Chapter 2 of this report.

2008 Ozone Standard

The nonattainment designation for the 2008 8-hour Ozone Standard became effective on July 20, 2012. A re-designation 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 previous regional emissions analysis that was described in the section above regarding the PM2.5 standards was completed just prior to the submission and subsequent approval of the Maintenance/State Implementation Plan (SIP) for the 2008 Ozone Standard and therefore utilized "interim emissions tests" to demonstrate conformity. The EPA published a notice announcing a finding that the 2011 and 2026 Motor Vehicle Emissions Budgets (MVEB) for NOx 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. Therefore, unlike with PM2.5, the TPO cannot rely on a previous regional emissions analysis to demonstrate conformity for the 2008 Ozone Standard since the MVEB's are now effective and must be used in any subsequent conformity analysis.

A revised regional emissions analysis was conducted using inputs consistent with both the SIP and previous regional emissions analysis where necessary, which is documented in Chapter 3 of this report. The computed emissions from on-road mobile sources compared against the MVEB in the 2008 Ozone Area for the required analysis years of 2024, 2026, 2034 and 2040 are shown in Table E-1.

Table E-1: MVEB Test for 2008 Ozone Standard

	Analysis Year			
Volatile Organic Compounds (VOC):	**2024**	**2026**	**2034**	**2040**
MVEB	19.71	10.49	10.49	10.49
Projected Emissions	8.52 ✓	7.80 ✓	4.91✓	4.72 ✓
Oxides of Nitrogen (NOx):	**2024**	**2026**	**2034**	**2040**
MVEB	41.62	17.69	17.69	17.69
Projected Emissions	11.00 ✓	10.05 ✓	6.26 ✓	7.20 ✓

(emissions in tons per day)

In summary, the KRTPO has demonstrated conformity of the proposed TIP Amendment based on reliance of a previous regional emissions analysis for the applicable PM2.5 standards and with a revised regional emissions analysis for the 2008 8-Hour Ozone Standard.

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

Chapter 1 - Introduction and Background Information

1.0 Introduction

The primary purpose of this document is to demonstrate that a proposed amendment to the Knoxville Regional Transportation Planning Organization (KRTPO) FY 2014-2017 Transportation Improvement Program (TIP) meets Transportation/Air Quality Conformity requirements of the Clean Air Act and Moving Ahead for Progress in the 21st Century (MAP-21). Section 1.1 describes other requirements that are being met by this conformity determination.

1.1 Background on Need for the Proposed Action

Federal Transportation Planning Regulations (23 CFR 450) require Metropolitan Planning Organizations to prepare a comprehensive Long Range Transportation Plan (LRTP) that covers a minimum 20-year horizon. The LRTP is required to be updated every four years in order to ensure that the underlying planning assumptions are still valid. The current LRTP is known as the "Knoxville TPO Long Range Regional Mobility Plan 2040 (KRMP)". The TPO is also required to prepare a four-year program of projects known as a Transportation Improvement Program (TIP) that must be consistent with the approved LRTP. Both the LRTP and TIP must meet transportation conformity requirements (described in Section 1.3). Periodically, as needs and conditions change, it becomes necessary to amend the TIP and/or LRTP to reflect updates to proposed projects. If a project amendment is determined to be "non-exempt" with respect to air quality conformity then a transportation conformity determination is required to ensure compliance with federal regulations from the Clean Air Act.

The Tennessee Department of Transportation (TDOT) has requested to amend a current project in the TPO LRTP and TIP in order to increase the fiscal year 2016 construction funding that has been obligated. Since the particular project in question is considered an air quality non-exempt project it therefore requires an updated conformity determination. This report documents the assumptions, model inputs and procedure used to conduct the conformity analysis to demonstrate transportation conformity for the Plan amendments.

1.2 Summary of Proposed TIP Amendment

Periodically, as needs and conditions change, it becomes necessary to modify the Plans described above. The current action involves amending additional funding to currently programmed phases of work for a project in the existing FY 2014 – 2017 TIP. The project is also included as Project ID #09-627 in the 2024 Horizon Year of the current Mobility Plan. The

original timeframe for project implementation is not being affected as it is believed that the project will be completed sometime between the horizon year window of 2016 – 2024, and should therefore remain in the original programmed Horizon Year of 2024.

Following is additional information regarding the proposed amendment:

Amend TIP Project #2014-075, Alcoa Hwy (US-129/SR-115) Widening from 4-lane to 6-lane from north of Maloney Rd to Woodson Dr – Amend the project by increasing FY 2016 NHPP funding for the Construction Phase in the amount of $23,400,000 total ($18,720,000 federal and $4,680,000 state) for an amended FY 2016 total of $54,100,000 ($43,280,000 federal and $10,820,000 state). Amend the total project cost from $15,200,000 to $32,900,000.

The "before" and "after" TIP Profile Pages are included in Appendix D.

Below is an excerpt from the Mobility Plan Project List showing this project:

KRMP ID #	Route	Termini	Jurisdiction	Length (miles)	Type of Improvement	New Horizon Year	Exempt Status	Regionally Significant
Knox County Projects								
09-620	Cessna Road RR Crossing	Cessna Rd RR crossing	Knoxville	0.0	Improve the at-grade RR crossing at Cessna Rd	2024	Exempt	No
09-624	Cedar Bluff Road	Cross Park Dr to Peters Rd	Knoxville	0.4	Intersection and Operational Improvements	2024	Exempt	No
09-625	Schaad Road	Oak Ridge Hwy (SR 62) to Pleasant Ridge Rd	Knoxville/ Knox County	1.5	Widen 2-lane to 4-lane	2024	Non-Exempt	Yes
NEW 09-626a	Chapman Highway (SR 71) (US 441)	Blount Ave to Gov John Sevier Hwy	Knoxville/ Knox County	5.9	Operational and Safety Improvements including center-turn lanes at various locations	2024	Non-Exempt	No
NEW 09-626b	Chapman Highway (SR 71) (US 441)	Evans Rd to Burnett Ln	Knox County/Blount County	0.9	Add Center-Turn Lane	2024	Non-Exempt	No
NEW 09-626c	Chapman Highway (SR 71) (US 441)	Gov John Sevier Hwy to Macon Ln	Knox County/Blount County/Sevier	4.4	Operational and Safety Improvements including center-turn lanes at various locations	2024	Non-Exempt	No
09-627	Alcoa Highway (SR 115) (US 129)	North of Maloney Rd to Woodson Dr	Knoxville	1.4	Widen 4-lane to 6-lane	2024	Non-Exempt	Yes

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

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

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

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.

EPA again strengthened the ozone standard in 2008 based on an updated review of scientific and medical data to ensure that air quality standards are set at an appropriate level to protect the environment and human health. This standard is known as the "2008 8-hour Ozone Standard" and it was set at 75 ppb. A formal designation of nonattainment areas for this standard became effective on July 20, 2012 and included the counties of Blount and Knox plus a portion of Anderson County surrounding the TVA Bull Run Fossil Plant. The area demonstrated attainment with this standard effective in August 2015.

The current Knoxville Region Maintenance Area for the 2008 8-Hour Ozone Standard is shown in Exhibit 1-1 below:

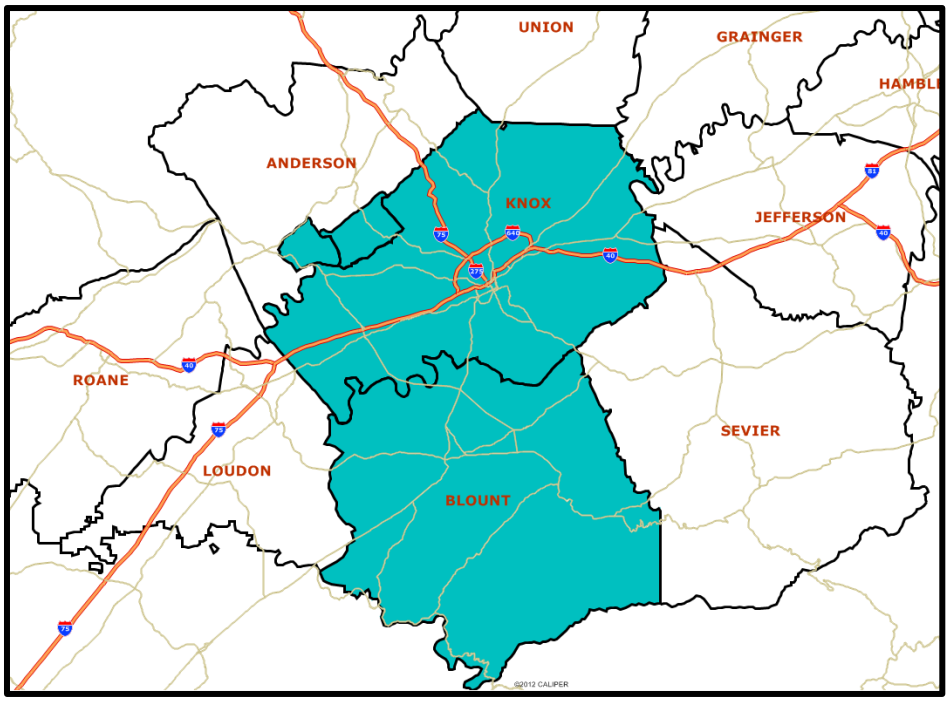


Exhibit 1-1: Knoxville 8-Hour Ozone Maintenance Area

PM2.5

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

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

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

The current Knoxville Region Nonattainment Areas for the 1997 and 2006 PM2.5 Standards is shown in Exhibit 1-2 below:

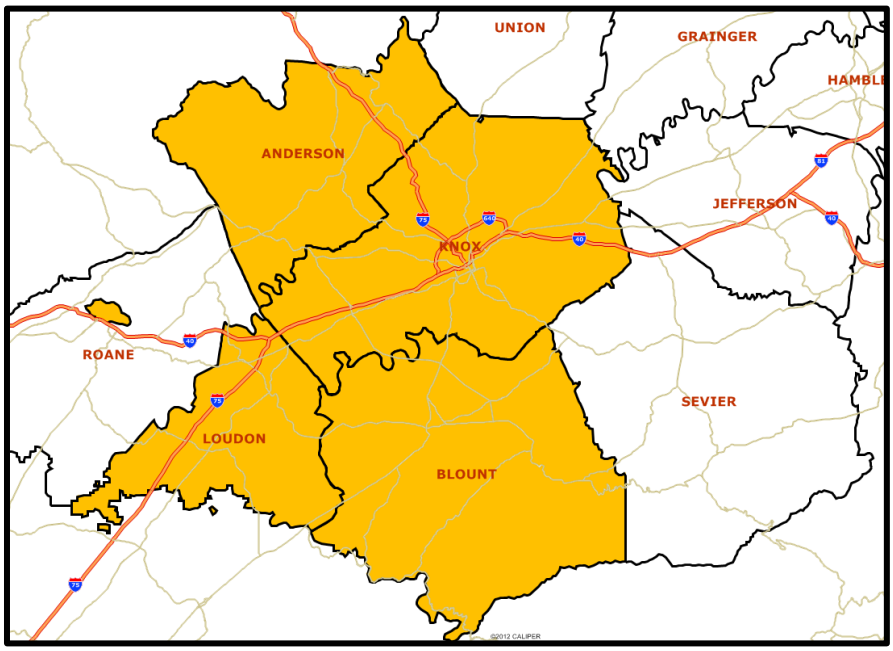


Exhibit 1-2: Knoxville PM2.5 Nonattainment Area

1.4 Transportation Conformity Background

Transportation Conformity is required in nonattainment and maintenance areas by federal regulations (40 CFR Parts 51 and 93) and is the mechanism through which on-road mobile source emissions are addressed in the area's goals for cleaner air. The air quality conformity process is used to ensure that federal funds will not be spent on projects that cause or contribute to any new violations of the National Ambient Air Quality Standards (NAAQS); increase the frequency or severity of NAAQS violations; or delay timely attainment of the NAAQS or any required interim milestone. The CAA requires that metropolitan transportation plans, metropolitan transportation improvement programs (TIPs) and Federal projects conform to the purpose of the State Implementation Plan (SIP), which details the emissions levels from each sector including mobile sources needed to regain or maintain compliance with the air quality standard. If conformity is not demonstrated then the area may enter what is known as a conformity "lapse" period, which can trigger highway sanctions by the EPA under the authority of the Clean Air Act (CAA) meaning only very specific projects may move forward, while funding is essentially frozen for most new roadway construction or widening projects. Under section 179(b)(1) of the CAA, once EPA imposes highway sanctions the FHWA may not approve or award any grants in the sanctioned area except those that are specifically exempted such as safety and air quality improvement projects that do not encourage single occupancy vehicle capacity. The conformity regulations in 40 CFR 93.104(f) allow for a 12-month lapse grace period during which projects that were in the most recent conforming plan and TIP can continue to move forward, but new non-exempt projects cannot be added.

1.5 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 or maintain the air quality standard. Different types of emissions are involved in the production of Ozone and PM2.5 pollution as described below:

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

1.6 Emissions Analysis Procedure

The emissions analysis is performed primarily using two different models – a Travel Demand Forecasting Model (TDFM), developed by the KRTPO and the MOVES mobile emissions model, which was developed by the EPA and allows the user to input localized parameters. The TDFM provides outputs of the estimated Vehicle Miles of Travel (VMT) on the transportation system and associated average speeds by functional classification. The MOVES model uses the activity data from the TDFM and combines it with other inputs describing the analysis area to derive an overall emissions amount. This procedure is known as the "Inventory Mode" of MOVES, which was chosen for this analysis as opposed to the "Emission Rate Mode" of MOVES, which produces emissions rates that must be subsequently post processed with the TDFM activity data.

Appendix B of this document describes the MOVES input structure that was used in the emissions analysis.

Finally, the emissions analysis must also be performed for different years throughout the life of the KRMP. Since the timeframe covered by the KRMP is from 2013-2040, 40 CFR part 93.118 requires the following analysis years based on whether there is an approved MVEB or not as shown in the following table:

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

Since the current action involves a project already included in the current FY 14-17 TIP and 2040 Mobility Plan, the TPO is able to rely on a previous regional emissions analysis to demonstrate conformity for the proposed TIP Amendment for PM2.5. Documentation of the ability to rely on a previous regional emissions analysis for PM2.5 is included in Chapter 2 of this report.

A revised regional emissions analysis is required for Ozone since a new MVEB was approved subsequent to the previous regional emissions analysis which instead relied on "interim emissions tests" to demonstrate conformity.

Since the Attainment Year for the 2008 8-Hour Ozone Standard has been determined to be 2014 for the Knoxville Region it no longer applies as an analysis year since it is now in the past. Therefore the applicable analysis years for the Ozone emissions analysis to demonstrate

conformity for the 2008 8-Hour Ozone Standard for the Knoxville Region have been determined to be as follows:

2024 – First Analysis Year

2026 – Maintenance Plan Horizon Year – interpolation between 2024 and 2034 Analysis Years

2034 – Year no greater than 10 years apart

2040 – Final Year of Long Range Plan

Chapter 2 – Conformity for PM2.5 Standards – Reliance on Previous Regional Emissions Analysis

2.0 Background:

The particular project involved in the TIP amendment in this case is already included in both the current LRTP and TIP for the Knoxville Regional TPO and was fully accounted for in a previously approved regional emissions analysis and conformity determination. Since there have been no other changes involved with PM2.5 requirements or new MVEBs adopted the TPO can rely on a previous regional emissions analysis to demonstrate PM2.5 conformity for this amendment as documented in the remaining sections of this chapter.

2.1 Determination of Ability to Rely on Previous Regional Emissions Analysis

Following are the requirements from 40 CFR 93.122(g) for relying on a previous regional emissions analysis and findings for how such have been met for this amendment:

i.) The new plan and/or TIP contains all projects which must be started in the plan and TIP's timeframes in order to achieve the highway and transit system envisioned in the transportation plan.

Finding: This project is already included in the existing Mobility Plan as Project ID # 09-627 in the 2024 Horizon Year. The air quality horizon years analyzed for the Mobility Plan were:

- 2015
- 2024
- 2034
- 2040

This amendment to the TIP is consistent with the horizon years in the Mobility Plan in terms of the implementation timeframes as the project should be open to traffic at some point following the 2015 horizon year and prior to the 2024 horizon year. The project is funded for the Construction Phase in federal FY 2016, i.e. the period between October 1, 2015 – September 30, 2016. An exact construction start date has not yet been determined.

ii.) All plan and TIP projects which are regionally significant are included in the transportation plan with design concept and scope adequate to determine their contribution to the transportation plan's and/or TIP's regional emissions at the time of the previous conformity determination.

Finding: The project has been adequately described in order to determine its contribution to the regional emissions through the use of the Knoxville Regional TPO's travel demand forecasting model. The project was determined to be non-exempt with respect to air quality

conformity since it involves construction of additional travel lanes and partial access control. The improvements were included in the travel demand model to determine impacts on motor vehicle emissions for the Horizon Year of 2024, which is believed to still be the correct timeframe for implementation of this project.

iii.) The design concept and scope of each regionally significant project in the new plan and/or TIP are not significantly different from that described in the previous transportation plan.

Finding: This amendment only affects funding allocation for the project and does not change any of the design scope for the proposed project.

iv.) The previous regional emissions analysis is consistent with the requirements of 40 CFR 93.118 (including that conformity to all currently applicable budgets is demonstrated) and/or 40 CFR 93.119, as applicable.

Finding: The previous regional emissions analysis followed the requirements of 40 CFR 93.118 and 93.119. This amendment was modeled and formally included as currently described within the previous regional emissions analysis that was approved by US DOT on March 26, 2015.

Chapter 3 – Planning Assumptions for Ozone Regional Emissions Analysis

3.0 Background:

The previous regional emissions analysis was completed just prior to the submission and subsequent approval of the Maintenance/State Implementation Plan (SIP) for the 2008 Ozone Standard and therefore utilized "interim emissions tests" to demonstrate conformity. The EPA published a notice announcing a finding that the 2011 and 2026 Motor Vehicle Emissions Budgets (MVEB) for NOx 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. Therefore, unlike with PM2.5, the TPO cannot rely on a previous regional emissions analysis to demonstrate conformity for the 2008 Ozone Standard since the MVEB's are now effective and must be used in any subsequent conformity analysis. The following sections of this chapter describe the revised regional emissions analysis that was conducted to demonstrate conformity to the 2008 8-hour Ozone Standard.

3.1 Planning Assumptions for developing Travel Demand Forecasts:

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

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

3.2 Latest Emissions Model:

The EPA has officially released a new emissions factor model known as "MOVES2014" through a Federal Register Notice of Availability on October 7, 2014, which set a 2-year grace period for its use instead of the prior version known as "MOVES2010b". Even though the current time frame is still within the 2-year grace period, the TPO must use MOVES2014 since the Maintenance Plan SIP utilized this model. The specific version of MOVES2014 used for this analysis was database version 20141021CB6v2.

3.3 Emissions Tests:

As noted previously, an MVEB for years 2011 and 2026 was recently established for the 2008 8-hour Ozone Standard effective on July 13, 2015. Following are the 2011 and 2026 MVEB for both VOC and NOx that the TPO must demonstrate conformity against:

Motor Vehicle Emissions Budgets for NOx and VOC for2011 and 2026

	2011	2026
	----- tons/day -----	
VOC	19.71	10.49
NO_x	41.62	17.69

The emissions tests are performed for the analysis years previously identified in Section 1.6 of this report of 2024, 2026, 2034 and 2040. Analysis years prior to 2025 must compare expected on-road emissions against the 2011 MVEB while analysis years of 2026 and beyond must use the 2026 MVEB.

3.4 MOVES Inputs and Runspec Development:

For this particular regional emissions analysis there was a major reliance on inputs that were developed for the previous regional emissions analysis since the project amendment does not change any parameters of the transportation system from what was modeled previously. There are two types of possible modification needed for this analysis based on: (1) the MOVES2014 requirements for certain inputs have changed and (2) there is a need for direct consistency with inputs used for the Maintenance Plan SIP in terms of the meteorological conditions.

In setting up a MOVES run, first there are a number of parameters that need to be established to define the timespan, geographic bounds, vehicle and road types, pollutants and output options for the run, which is known as a "runspec". A separate runspec will need to be developed for each individual analysis year and each county. Subsequent to the runspec, the user provides locality-specific data for several parameters that can affect the amount of emissions being produced including: meteorology, source type population, vehicle age, vehicle

miles of travel (VMT), average speeds, fuel type, etc… Some of these inputs stay constant for each analysis year, while others will be different particularly those related to the changes in the transportation network such as speed and VMT.

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

MOVES2014 Runspec Parameters

1. Scale:

County level scale – Inventory mode

2. Time Span:

Time Aggregation Level – Hour

- Analysis years – 2024, 2034, 2040

Note that 2026 is also an analysis year, however it is not required to be separately modeled in either the travel demand forecasting model or in MOVES. It is instead evaluated using a linear interpolation between the emissions volume outputs for 2024 and 2034.

Months – July

Days – Weekdays

Hours – All Hours

3. Geographic Bounds:

Anderson (Partial), Blount, Knox counties

4. Vehicles/Equipment:

Gasoline, ethanol (E85), compressed natural gas (CNG) and diesel fuels, all vehicle combinations (the AVFT file has been edited to remove CNG from the transit bus fleet).

5. Road Type:

All road types

6. Pollutants and Processes:

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

7. Strategies:

This panel involves ability to compute rate-of-progress emissions and is not applicable to regional emissions analyses.

8. Output:

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

MOVES2014 County Data Manager Input Development

An initial review of available County Data Manager inputs available from the previous regional emissions analysis and the 2008 8-hour Ozone SIP were reviewed for applicability in this analysis since many can be used directly. The following chart summarizes the inputs needed along with whether SIP or the previous Conformity Determination Report (CDR) was used and also whether any conversions were needed to go from MOVES2010 to MOVES2014 format.

	Input	Source	Notes (data needs or conversion from MOVES2010 to MOVES2014
1	Meteorology	Use SIP Inputs	No conversion needed
2	Source Type Population	Use CDR Inputs	No conversion needed
3	Age Distribution	Use SIP/CDR Inputs	SIP and CDR used same input
4a	Vehicle Type VMT (HPMSVtypeYear)	Use CDR Inputs	Will need to combine ST 20 and 30 to fit MOVES2014 format
4b	Vehicle Type VMT (MonthVMTFraction)	Use CDR Inputs	Will need to modify files (remove leap year) to fit MOVES2014 format
4c	Vehicle Type VMT (DayVMTFraction)	Use CDR Inputs	No conversion needed
4d	Vehicle Type VMT (HourVMTFraction)	Use CDR Inputs	No conversion needed
5	Average Speed Distribution	Use CDR Inputs	No conversion needed
6	Road Type Distribution	Use CDR Inputs	No conversion needed
7	Ramp Fractions	Use CDR Inputs	No conversion needed
8	Fuel Type and Technology	Develop New - TDEC	Develop these for 2024, 2034 and 2040 in MOVES2014 format
9	Fuel Formulation and Supply	Develop New - TDEC	Develop these for 2024, 2034 and 2040 in MOVES2014 format

The following general information is being provided for how each County Data Manager input was developed and where it comes from, additional technical details and example input files are provided in Appendix B and the actual input files and MOVES databases are available upon request.

CDM 1.) Meteorology – Conformity regulations require that meteorology inputs that are used in conformity analyses must match the inputs that were used in the relevant SIP that sets out the required MVEBs being tested against. The inputs utilized in the SIP were obtained from TDEC and they represent average temperatures and humidity in the Knoxville Region over a 3-year period between 2009 to 2011.

CDM2.) Source Type Population – This input comes directly from the previous CDR and is documented therein.

CDM3.) Age Distribution – This input was developed previously by the University of Tennessee using 2011 vintage registration data obtained from the Tennessee Department of Revenue, and used for both the SIP and previous CDR and is still the latest information that is available.

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:

a. HPMSVTypeYear – This is the total amount of VMT estimated for each of the analysis years by Source Type. A base year value was developed by UT for 2011 and growth factors by source type provided by the KRTM are used to develop the future year estimates. Since the project amendment involved in this analysis was previously modeled in the appropriate horizon year, the TPO was able to directly utilize this input from the previous CDR.

b. 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. As noted in the above table, there is a slight change from the MOVES2010 format for this input to MOVES2014 in terms of how leap years are handled. The inputs for 2024 and 2040 (both leap years) were modified to remove the “Is Leap Year” field that was included in the MOVES2010 input file.

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

d. Hour – This input accounts for the hourly variation in travel and is provided by the KRTM using a post processing software tool known as PPSUITE. Again, no updates were needed to the file used in the previous CDR.

CDM5.) Average Speed Distribution – This input is derived from the Knoxville Regional Travel Demand Model and the PPSUITE post-processor, but again remains unchanged for each required analysis year from what was utilized in the most recent CDR.

CDM6.) Road Type Distribution – this input provides the distribution of VMT on each road type by source type. This input was developed by UT for 2011 and was held constant for the future year analyses.

CDM7.) Ramp Fractions – This input is derived from the Knoxville Regional Travel Demand Model and the PPSUITE post-processor, but again remains unchanged for each required analysis year from what was utilized in the most recent CDR.

CDM8.) Fuel Type and Technology – This input was developed by TDEC and utilized in the SIP. This input was formerly known as "Alternative Vehicle Fuels & Technology" (AVFT) and is based on local information collected on the Knoxville Area Transit (KAT) bus fleet fuels mix.

CDM9.) Fuel Formulation and Supply – This input was provided by TDEC based on EPA guidance to reflect fuels used in the Knoxville Region. TDEC provided necessary inputs in MOVES2014 format for the required analysis years of 2024, 2034 and 2040 by following EPA's guidance on use of MOVES in SIPs and Conformity Determinations which suggests changing the values that reflect RVP properties to reflect the regulatory requirements in the area being modeled.

Chapter 4 – Statement of Conformity

4.0 Introduction

This section of the report covers the conformity requirements for the Knoxville Region under both the 8-Hour Ozone Standard as well as the PM2.5 Standard. The conformity report complies with all applicable requirements found in the State Implementation Plan (SIP), Clean Air Act, Tennessee Transportation Conformity Regulation and the MPO Planning Regulations from MAP-21 (23 CFR 450.322).

4.1 Statement of Conformity – 1997 Annual PM2.5 Standard and 2006 Daily PM2.5 Standard

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

Based on an ability to rely on a previous regional emissions analysis as documented in Chapter 2, the KRTPO staff has determined that the KRTPOFY 2014-2017 TIP demonstrates conformity for both the 1997 Annual PM2.5 Standard and 2006 Daily PM2.5 Standard. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated.

4.2 Statement of Conformity – 2008 Ozone Standard

The nonattainment designation for the 2008 Ozone Standard became effective on July 20, 2012 and included the counties of Blount, Knox and the portion of Anderson County surrounding the TVA Bull Run Fossil Plant (2000 Census Tracts 202 and 213.02). A re-designation 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 2024, 2026, 2034 and 2040, with year 2026 being interpolated between 2024 and 2034. Table 4-1 below summarizes the MVEB test for all analysis years:

Table 4-1: MVEB Test for 2008 Ozone Standard

Volatile Organic Compounds (VOC):	Analysis Year			
	2024	2026	2034	2040
MVEB	19.71	10.49	10.49	10.49
Projected Emissions	8.52 ✓	7.80 ✓	4.91✓	4.72 ✓

Oxides of Nitrogen (NOx):	2024	2026	2034	2040
MVEB	41.62	17.69	17.69	17.69
Projected Emissions	11.00 ✓	10.05 ✓	6.26 ✓	7.20 ✓

(emissions in tons per day)

4.2.1 Summary of 2008 8-Hour Standard Conformity Analysis

Based on the quantitative conformity analysis the KRTPO staff has determined that the KRTPOFY 2014-2017 TIP demonstrates conformity for the 2008 8-Hour Ozone Standard using the necessary emissions tests. Compliance with the regulations of the Clean Air Act, 40 CFR Parts 51 and 93 (Transportation Conformity Rule) and 23 CFR Part 450 (Metropolitan Planning Regulations established by MAP-21) has also been demonstrated.

Chapter 5 – Interagency Consultation

5.0 Introduction

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

5.1 Participating Agencies

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

a. Knoxville Regional TPO
b. Knox County Department of Air Quality Management
c. Tennessee Department of Transportation
d. Tennessee Department of Environment & Conservation
e. Federal Highway Administration
f. United States Environmental Protection Agency
g. Federal Transit Administration
h. Lakeway Area Metropolitan TPO
i. Great Smoky Mountains National Park Service

A list of participant names is included in Appendix C.

5.2 Overview of Consultation Process

The conformity analysis process was coordinated with the Interagency Consultation partners with a 29-day review period conducted between August 10, 2015 and September 7, 2015. A conference call was conducted on August 20, 2015 to present the draft report and obtain initial comments. Appendix C contains the minutes of each of the interagency meetings as well as comments and responses to the draft Conformity Determination Report.

5.3 IAC Comments and Response

The following comments were received from IAC members on the draft Conformity Determination Report(s):

From Marc Corrigan, TDEC Air Pollution Control Division via email on 8/26/15 -
I noticed that in Vehicles/Equipment section on page 15, as compared to the Vehicles/Equipment section on page 26, as compared to the inputs in the runspec, there were some differences. On page 24 of the

Technical Guidance it is stressed to be sure to select E-85 and CNG. I vaguely recall being told that if these are not included here (you can eliminate them in the AVFT and/or the sourcetype population files) you may end up with 'missing' VMT.

I wanted to test this. The problem is that I have an earlier version of the MOVES database installed. Although the MOVES website indicates that emissions are the same, the databases are different. This caused some problems with me using the runspecs you developed. I recreated the runspecs (attached) largely based on your documentation. You can probably look at them, but when you go to execute them they may be pointing to a different default database. I tried to edit your runspec to make it work, without success.

The results I obtained are attached. The emissions were a bit higher, as well as the VMT. Of course, this assumes I used the same runspec parameters (other than the Vehicles/Equipment options) and input files.

Response – The selection of E85 and CNG vehicles was improperly omitted from the MOVES runspecs that were developed for the draft regional emissions analysis as there is a difference in how this is handled in MOVES2014 versus MOVES2010b. The result of the omission was missing VMT and subsequently emissions. A revised runspec was developed with the proper selections made in the Vehicles/Equipment section and the CDR was updated with the new results. Both VMT and emissions have increased from the first draft although the resulting totals are still well below the required MVEB levels and the change has not affected the previous conclusions that conformity has been demonstrated.

Chapter 6 – Conclusion and Summary of Comments Received

6.0 Conclusion

The analysis included in this report has demonstrated that the Knoxville Regional Long Range FY 2014-2017 Transportation Improvement Program as Amended is in conformity with air quality regulations found in the Clean Air Act Amendments of 1990 and MAP-21. Furthermore, the "before and after" TIP financial tables are included in Appendix D and demonstrate that the FY2014 – 2017 TIP still meets financial constraint for all fiscal years.

6.1 Transportation Control Measures

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

6.2 Public Involvement Summary

The Knoxville Regional TPO conducted a 15-day comment period between September 8, 2015 and September 23, 2015 to allow for public review and comment on the proposed Plan amendments and the accompanying Air Quality Conformity Determination. The Knoxville Regional TPO held two formal public hearings as part of regularly scheduled Technical Committee and Executive Board meetings that were held on September 8, 2015 and September 23, 2015 respectively.

Copies of the Conformity Determination Report were made available on the KRTPO web site. Public notice and advertisements for the hearings and locations to view the draft conformity determination report were placed in newspapers.

6.3 Public Comment and Response

No comments were received

Appendix A – Emissions Summaries by County for Ozone Analysis

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

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

	VOC Emissions (tons per day)			
	Analysis Year			
	2024	2026	2034	2040
Anderson (partial)	0.28	0.24	0.13	0.12
Blount	2.25	2.04	1.21	1.14
Knox	6.00	5.52	3.57	3.46
Total	**8.52**	**7.80**	**4.91**	**4.72**

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

	NOx Emissions (tons per day)			
	Analysis Year			
	2024	2026	2034	2040
Anderson (partial)	0.28	0.24	0.10	0.09
Blount	1.96	1.74	0.89	0.88
Knox	8.76	8.06	5.27	6.23
Total	**11.00**	**10.05**	**6.26**	**7.20**

Appendix B – MOVES2014 Input Development Documentation (Ozone)

B.1 Background

The MOVES2014 model requires several locality-specific input parameters as described in more detail in the remainder of this appendix, however where local data is not available oftentimes default values are available. Generally, the EPA requires the use of local data whenever possible as it will better represent the characteristics of the area being modeled.

A combination of inputs from previous efforts of the most recent Conformity Determination Report for the Knoxville 2040 Mobility Plan Amendments conducted in early 2015 and TDEC's development of the re-designation request to Attainment for the 2008 8-hour Ozone Standard were utilized for this analysis.

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

B.1 MOVES Runspec Parameters

As described in Chapter 3 of this report, a MOVES run begins with setting the parameters for the analysis through developing a run specification or "runspec". The options chosen for the ozone analyses are as follows:

a. Scale: County level scale – Inventory mode
b. Time Span: year (2024, 2034 and 2040), by hour, for a for July weekday, all hours
c. Geographic bounds: Blount, Knox, Anderson Counties
d. Vehicles/Equipment: Gasoline, ethanol (E85) and diesel fuels, all valid vehicle Combinations (the AVFT file has been edited to remove CNG from the transit bus fleet).
e. Road type: All
f. Pollutants and Processes: NOx and VOC and all other required supporting prerequisite pollutants. Unchecked the "Refueling Displacement Vapor Loss" and "Refueling Spillage Loss" to exclude refueling emissions as these emissions are captured in the Area source emissions inventory
g. Output options:
   General:

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

B.2 MOVES County Data Manager Input Data Sources

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

B.2.1 Meteorology

The meteorology inputs were developed by TDEC for the re-designation request and Maintenance Plan SIP for the Knoxville Region. It is required that subsequent conformity analyses must be consistent with the inputs used in the SIP, which was utilized for this analysis. Documentation is included in the final re-designation request report titled "Eight-Hour Ozone Re-designation Request, Base Year Emission Inventory, and Maintenance Plan for the Knoxville, Tennessee Eight-Hour Ozone Nonattainment Area (2008 Ozone NAAQS)", prepared by Tennessee Department of Environment and Conservation, Division of Air Pollution Control, November 14, 2014.

B.2.2 Source Type Population

Source type (i.e., vehicle type) population is used by MOVES to calculate start and evaporative emissions. In MOVES, start and resting evaporative emissions are related to the population of vehicles in an area. Since vehicle type population directly determines start and evaporative emission, users must develop local data for this input. MOVES classifies vehicles based on the way vehicles are classified in the Federal Highway Administration's HPMS (Highway Performance Monitoring System) rather than on the way they are classified in the EPA's emissions regulations. MOVES categorizes vehicles into 13 source types, which are subsets of 6 HPMS vehicle types.

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

derived from vehicle registration data. Source type population for the remaining source types was grown using employment growth projections from the travel demand model.

Anderson County is a partial area included in the 2008 8-hour Ozone Nonattainment Area 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 develop the partial area source type populations, the 2010 Census data was reviewed to determine the percentage of both population and household vehicle ownership for the partial areas versus the entirety of each county. This review demonstrated that generally both people population and vehicle population percentages were relatively consistent so the most conservative values were chosen. A value of 21% was used for the Anderson County partial area.

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

	Vehicle Type	MOVES sourceType ID	Source Type Population 2011	Yearly Growth Rate (%)[a]	Source Type Population 2024	Yearly Growth Rate (%)[a]	Source Type Population 2034	Yearly Growth Rate (%)[a]	Source Type Population 2040
Anderson County (partial)	Motorcycle	11	694	0.63	751	0.78	819	0.78	851
	Passenger Car	21	6,945	0.63	7,514	0.78	8,191	0.78	8,516
	Passenger Truck	31	8,009	0.63	8,665	0.78	9,446	0.78	9,821
	Light Commercial Truck	32	536	1.39	633	1.43	712	1.45	761
	Intercity Bus	41	15	1.39	18	1.43	20	1.45	21
	Transit Bus	42	-	1.39	-	1.43	-	1.45	-
	School Bus	43	21	1.39	25	1.43	28	1.45	30
	Refuse Truck	51	2	1.39	2	1.43	3	1.45	3
	Single Unit Short-haul Truck	52	111	1.39	131	1.43	148	1.45	158
	Single Unit Long-haul Truck	53	34	1.39	40	1.43	45	1.45	48
	Motor Home	54	60	1.39	71	1.43	80	1.45	85
	Combination Short-haul Truck	61	106	1.39	125	1.43	141	1.45	151
	Combination Long-haul Truck	62	130	1.39	153	1.43	173	1.45	185
			16,663		**18,128**		**19,806**		**20,630**
Blount County	Motorcycle	11	5,657	2.21	7,282	2.26	8,598	2.3	9,430
	Passenger Car	21	58,614	2.21	75,454	2.26	89,082	2.3	97,710
	Passenger Truck	31	66,826	2.21	86,025	2.26	101,562	2.3	111,399
	Light Commercial Truck	32	4,471	1.26	5,203	1.35	5,859	1.41	6,299
	Intercity Bus	41	59	1.26	69	1.35	77	1.41	83
	Transit Bus	42	-	1.26	-	1.35	-	1.41	-
	School Bus	43	188	1.26	219	1.35	246	1.41	265
	Refuse Truck	51	44	1.26	51	1.35	58	1.41	62
	Single Unit Short-haul Truck	52	902	1.26	1,050	1.35	1,182	1.41	1,271
	Single Unit Long-haul Truck	53	191	1.26	222	1.35	250	1.41	269
	Motor Home	54	334	1.26	389	1.35	438	1.41	471
	Combination Short-haul Truck	61	384	1.26	447	1.35	503	1.41	541
	Combination Long-haul Truck	62	470	1.26	547	1.35	616	1.41	662
			138,140		**176,958**		**208,471**		**228,462**
Knox County	Motorcycle	11	10,738	2.01	13,544	2.21	16,196	2.16	17,464
	Passenger Car	21	174,194	2.01	219,711	2.21	262,737	2.16	283,309
	Passenger Truck	31	177,717	2.01	224,154	2.21	268,051	2.16	289,039
	Light Commercial Truck	32	11,891	1.68	14,488	1.73	16,622	1.75	17,926
	Intercity Bus	41	445	1.68	542	1.73	622	1.75	671
	Transit Bus	42	217	1.68	264	1.73	303	1.75	327
	School Bus	43	426	1.68	519	1.73	596	1.75	642
	Refuse Truck	51	105	1.68	128	1.73	147	1.75	158
	Single Unit Short-haul Truck	52	2,605	1.68	3,174	1.73	3,642	1.75	3,927
	Single Unit Long-haul Truck	53	1,013	1.68	1,234	1.73	1,416	1.75	1,527
	Motor Home	54	1,778	1.68	2,166	1.73	2,485	1.75	2,680
	Combination Short-haul Truck	61	3,221	1.68	3,924	1.73	4,503	1.75	4,856
	Combination Long-haul Truck	62	3,941	1.68	4,802	1.73	5,509	1.75	5,941
			388,291		**488,650**		**582,829**		**628,467**

B.2.3 Age Distribution

The EPA strongly recommends the use of local specific data for vehicle age distribution as it can vary greatly for various areas based on a number of factors. This input is important because of the fact that older vehicles generally exhibit higher emissions than newer vehicles due to fewer controls required to meet newer emissions standards and deterioration of other emissions control systems components. The Age Distribution inputs for this regional emissions analysis were obtained from U.T. as developed based on year 2011 motor vehicle registration data for each county, which were used for all analysis years of 2015 and beyond.

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.

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

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

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

Knox County

HPMS Vtype Year 2011 (Original From UT):

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

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

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

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

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

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

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

In order to more simply document the projected growth in VMT for each analysis year covered in this conformity determination, the following table (Table B-3) depicts only the total county-level Daily VMT for each analysis year. Table B-4 shows the VMT that has been seasonally adjusted to represent an average Summer weekday that is used for the ozone season analysis. The seasonal adjustment factors were derived based on permanent count stations operated by TDOT which collect traffic volumes continuously throughout the year. These factors account for the fact that traffic volumes are higher on an average Summer weekday relative to an annual average daily traffic volume that includes weekends and other lower traffic volume periods throughout the year.

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

	Average Annual Daily Vehicle Miles Travelled (AADVMT)		
	Analysis Year		
	2024	2034	2040
Anderson (partial)	671,105	764,931	825,736
Blount	3,965,584	4,678,730	5,204,921
Knox	17,738,596	20,460,523	22,441,186
Total	**22,375,286**	**25,904,184**	**28,471,842**

Table B-4 – Average Summer Weekday VMT by County

	Average Summer Weekday VMT		
	Analysis Year		
	2024	2034	2040
Anderson (partial)	733,562	836,120	902,583
Blount	4,330,393	5,109,145	5,683,741
Knox	19,469,925	22,457,519	24,631,502
Total	**24,533,880**	**28,402,783**	**31,217,826**

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

B.2.5 Average Speed Distribution

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

B.2.6 Road Type Distribution

Road type distribution is the distribution of VMT on each roadtype by sourcetype. Road type distribution data was provided by TDOT for the base year 2011. Road type distribution was held constant between the base and future year analyses. The off-network road type represents areas where start and idling activity occur. No VMT is assigned to this road type.

B.2.7 Ramp Fractions

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

B.2.8 Fueltype and Technologies

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

Fuel Type and Technology was formerly called Alternative Vehicle Fuels & Technology (AVFT). This data is now entered in the County Data Manager in MOVES 2014. This input allows users to define the split between different fuel types, including gasoline, diesel and CNG (compressed natural gas) for each vehicle type and model year.

EPA's guidance recommends the use of local data where available. Default information can be used where no local information is available. The default information for transit buses (sourceType 42) includes CNG buses as part of the fleet mix. In most areas of Tennessee there

are no transit buses fueled with CNG. Therefore, at a minimum, these buses should be allocated to diesel fuel.

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

Table B-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-5).

Table B-6. Overall KAT Fleet Statistics.

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

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

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

Table B-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

B.2.9 Fuel

The fuel input was also developed and provided by TDEC based on EPA guidance. Essentially the fuels inputs reflect the maximum regulatory RVP levels by month for Tennessee. In addition, since EPA anticipates (based on the 2012 fuel formulations and supply information in MOVES) that essentially all gasoline sold in Tennessee in 2012 and later will contain at least nine percent ethanol, an additional 1.0 PSI waiver applies to the RVP values. Therefore, the RVP values developed are 1.0 PSI above the listed regulatory maximum as allowed by the 1.0 PSI waiver. Additionally, the fuels input provided by TDEC to the TPO includes the appropriate "fuel region" for Knoxville.

B.2.10 I/M Programs

Not applicable to the Knoxville Region

Appendix C – Interagency Consultation

C.1 Interagency Consultation Participants

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

Table C-1 Knoxville IAC Participants

Agency	Representative(s)
Knoxville Regional Transportation Planning Organization (TPO) 400 Main Street, Suite 403 Knoxville, TN 37902 (865) 215-2500 | FAX: (865) 215-2068	Jeff Welch, TPO Director Mike Conger, Transportation Engineer
Knox County Department of Air Quality Management 140 Dameron Avenue Knoxville, TN 37917 (865) 215-5900 | FAX: (865) 215-5902	Lynne Liddington, Director Steve McDaniel, Engineer Brian Rivera, Engineer
Tennessee Department of Transportation (TDOT) 505 Deaderick Street Nashville, TN 37243 (615) 741-2848 | FAX: (615) 532-8451	Angie Midgett, Transportation Specialist Alan Jones, Air Quality Policy Supervisor Deborah Fleming, MPO Program Manager
Tennessee Department of Environment and Conservation (TDEC), **Air Pollution Control Division** 401 Church Street, 9th floor L&C Annex Nashville, TN 37243-1531 (615) 532-0554 | FAX: (615) 532-0614	Quincy Styke, Deputy Director Marc Corrigan, Environmental Specialist
Federal Highway Administration, Tennessee Division 404 BNA Drive, Building 200, Suite 508 Nashville, TN 37217 (615) 781-5767 | FAX: (615) 781-5773	Scott Allen, Planning & Air Quality Specialist
Federal Highway Administration (FHWA), Southern Resource Center 61 Forsyth Street Atlanta, GA 30303 (404) 562-3570 | FAX: (404) 562-3700	Michael Roberts, Air Quality Specialist
U.S. Environmental Protection Agency (EPA), Region 4 61 Forsyth Street Atlanta, GA 30303 (404) 562-9077 | FAX: (404) 562-9019	Kelly Sheckler, Environmental Planner Dianna Myers, Environmental Scientist Richard Wong, Environmental Planner

Agency	Representative(s)
Federal Transit Administration (FTA), Region 4 (Atlanta) 61 Forsyth Street Atlanta, GA 30303 (404) 562-3500 | FAX: (404) 562-3505	Elizabeth Martin, Community Planner
Lakeway Area Metropolitan Transportation Planning Organization (TPO) 100 W. 1st North Street Morristown, TN 37814 (423)581-0100 | FAX: (423) 585-4679	Rich DesGrosseillers, MTPO Director
Great Smoky Mountains National Park (GSMNP), Resource Management & Science Division 1314 Cherokee Orchard Road Gatlinburg, TN 37738 (865)436-1708 | FAX: (865) 430-4753	Jim Renfro, Air Quality Branch Chief Teresa Cantrell, Transportation Planner

C.2 Interagency Consultation Meeting Minutes

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

C.2.1 Meeting minutes for IAC Conference Call on 8/20/15

Knoxville Air Quality Interagency Consultation Conference Call

Meeting Minutes for 8/20/15

Call Participants:

Mike Conger, TPO
Kelly Sheckler, EPA Region 4
Dianna Myers, EPA Region 4
Scott Allen, FHWA
Marc Corrigan, TDEC
Angie Midgett, TDOT
Deborah Fleming, TDOT
Steve McDaniel, Knox County AQM
Brian Rivera, Knox County AQM

Discussion Items:

1.) Discussion of the Draft Conformity Determination for KRTPO's FY 2014-2017 Transportation Improvement Program (TIP) Amendment for Alcoa Hwy.

Mike Conger provided an overview of the draft conformity determination report that was submitted to the IAC on August 10th. He mentioned the purpose of today's call was to describe the process and report and to gather any initial comments or questions at this stage of the IAC review period. He noted that the TIP amendment in this case only involved the addition of funds to an existing project and would normally have been handled through a short conformity report process. The TPO was not able to rely on the previous regional emissions analysis in this case however since a new motor vehicle emissions budget became effective for ozone on July 13, 2015 based on the re-designation of the region to attainment for the 2008 8-hour Ozone Standard. Mike described the contents of the report and noted that the revised emissions analysis indicates that the projected emissions are less than the available budgets for each analysis year.

Marc Corrigan pointed out that this conformity determination also would satisfy the requirement of completing a conformity determination within 2 years of the effective date of a new motor vehicle emissions budget. Mike responded that it was likely another conformity determination would have been required within the next 2 years however it was good to go ahead and take care of that requirement now. Mike asked the group whether he should specifically make mention of the satisfaction of the 2-year "clock" in the final report. Kelly Sheckler responded that she didn't think that was absolutely necessary and that since FHWA was responsible for keeping track of the conformity triggers that they could note something in the final approval letter that is issued. Scott Allen agreed that FHWA could document that fact in their letter.

Mike discussed the proposed schedule for this effort with a request for a shortening of the IAC review period by one day from 30 days to 29 days such that he was asking for final IAC comments by September 7, 2015. He noted the main reason for the slightly shortened review period was to allow the public comment period to begin on September 8th when the TPO would have its Technical Committee meeting where the TIP Amendment and conformity determination could be discussed at a public meeting. There was agreement from the IAC group on the shortened review period. Mike noted that following the IAC review there would be a formal 15-day public comment period which meets the requirement of a 14-day period for a TIP Amendment. Following the public review period the TIP Amendment would be heard for adoption at the September 23, 2015 TPO Executive Board meeting. Mike noted that this schedule assumes that there were no significant comments at either the IAC or Public review stages that would necessitate a major revision and additional review time.

There was discussion about whether an expedited final review period was needed. Mike stated that the TPO was looking for final approvals to be in place by October 27th so that the proposed project could stay on its schedule for proposed letting in December. Scott Allen noted that the FHWA was allowed up to a 30-business day review period following receipt of the amendment package from TDOT. He noted that the time period could possibly be expedited and he would work with TDOT and TPO on this. Kelly Sheckler stated that at this time and based on her current schedule she expected to target the second week of October for completing EPA's concurrence requirements as part of the final approval, which should allow enough time for FHWA to complete their review prior to October 27th.

Mike concluded the call by saying that if anyone had any comments or questions during the remainder of the IAC review period to please contact him at any time. He also stated that unless specifically requested that he did not see any need at this time for a follow up IAC conference call on this conformity determination.

Appendix D – TIP Amendment Profile Pages

ORIGINAL

Knoxville Regional Transportation Planning Organization
TRANSPORTATION IMPROVEMENT PROGRAM FY 2014-2017

TIP No.	2014-075	Revision No.	1
TDOT PIN	100241.04	Mobility Plan No.	09-627
Project Name	Alcoa Hwy (US-129/SR-115) Widening		
Lead Agency	TDOT		
Total Project Cost	$43,200,000		

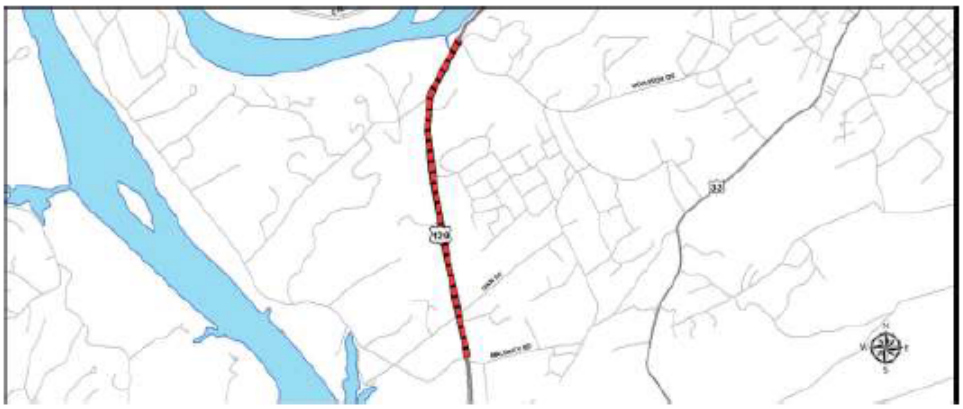
Project Description	Widening from 4-lane to 6-lane		
Termini/Intersection	From north of Maloney Rd to Woodson Dr		
Counties	Knox		
City/Agency	City of Knoxville		
Length	1.4 (miles)	Conformity Status	

Additional Details	

Programmed Funds

FY	Type of Work	Funding Type	Total Funds	Federal	State	Local	Other
2016	CON	NHPP	$30,700,000	$24,560,000	$6,140,000	$0	$0
		Total	$30,700,000	$24,560,000	$6,140,000	$0	$0

Revision Date	5/4/2015
Revision Details	Adjust the project to add $4,000,000 in NHPP funds to FY 2016 for CONST increasing the total funds from $26,700,000 to $30,700,000.
Previous TIP No.	



AMENDED

Knoxville Regional Transportation Planning Organization
TRANSPORTATION IMPROVEMENT PROGRAM FY 2014-2017

TIP No.	2014-075	Revision No.	2
TDOT PIN	100241.04	Mobility Plan No.	09-627
Project Name	Alcoa Hwy (US-129/SR-115) Widening		
Lead Agency	TDOT		
Total Project Cost	$66,600,000		

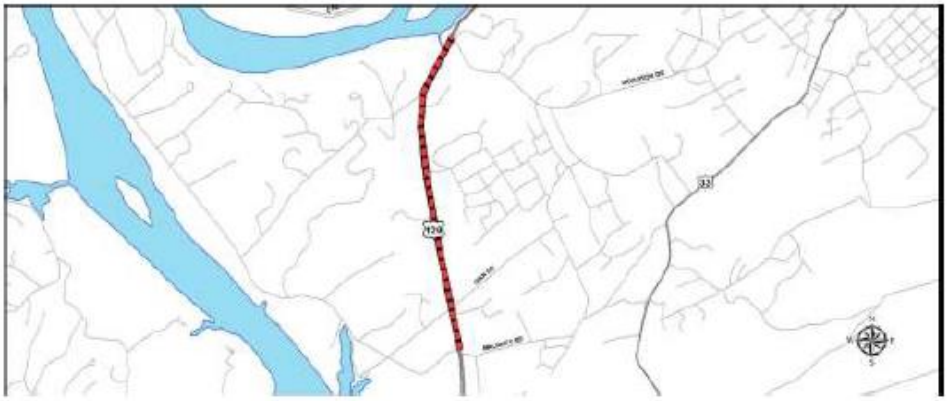
Project Description	Widening from 4-lane to 6-lane		
Termini/Intersection	From north of Maloney Rd to Woodson Dr		
Counties	Knox		
City/Agency	City of Knoxville		
Length	1.4 (miles)	Conformity Status	

Additional Details	

Programmed Funds

FY	Type of Work	Funding Type	Total Funds	Federal	State	Local	Other
2016	CON	NHPP	$54,100,000	$43,280,000	$10,820,000	$0	$0
		Total	$54,100,000	$43,280,000	$10,820,000	$0	$0

Revision Date	7/14/2015
Revision Details	Amend the project by increasing NHPP federal funds for FY 2016 from $24,560,000 to $43,280,000. Increase the total project cost from $43,200,000 to $66,600,000.
Previous TIP No.	



ORIGINAL

KNOXVILLE REGIONAL TPO TRANSPORTATION IMPROVEMENT PROGRAM FY 2014-2017

Table 1. Summary of Programmed Revenues

Funding Source	FY 2014	FY 2015	FY 2016	FY 2017	Total	Share (%)
CMAQ	$1,800,350	$2,686,425	$2,771,113	$241,113	$7,499,001	1.36
CMAQ - PM 2.5	$2,678,189	$0	$0	$0	$2,678,189	0.49
ENHANCE	$4,908,549	$849,978	$0	$0	$5,758,527	1.04
HPP	$8,994,614	$7,314,225	$7,590,163	$0	$23,899,002	4.34
HPP-TN157	$617,061	$0	$0	$0	$617,061	0.11
HSIP	$25,000,000	$3,200,000	$4,050,000	$3,750,000	$36,000,000	6.53
LIC	$0	$642,500	$0	$0	$642,500	0.12
LOCAL	$600,000	$0	$0	$0	$600,000	0.11
L-STP	$20,412,950	$43,991,064	$24,099,390	$7,042,200	$95,545,604	17.33
NHPP	$61,100,000	$87,710,150	$102,430,000	$51,530,884	$302,771,034	54.93
PHSIP	$2,000,000	$2,500,000	$2,500,000	$500,000	$7,500,000	1.36
SECTION 5307	$10,727,831	$9,075,900	$6,550,703	$6,550,703	$32,905,137	5.97
SECTION 5310	$1,389,330	$833,579	$568,535	$533,264	$3,324,708	0.60
SECTION 5339	$1,486,369	$868,938	$731,734	$731,734	$3,818,775	0.69
STP	$17,500,000	$3,000,000	$3,000,000	$3,000,000	$26,500,000	4.81
TAP	$1,133,024	$0	$0	$0	$1,133,024	0.21
Total	**$160,348,267**	**$162,672,759**	**$154,291,638**	**$73,879,898**	**$551,192,562**	**100.00**
Federal	$132,398,910	$131,410,306	$125,081,080	$59,815,048	$448,705,344	81.41
State	$18,223,605	$22,374,398	$27,140,916	$12,170,905	$79,909,824	14.50
Local	$9,725,752	$8,888,055	$2,069,642	$1,893,945	$22,577,394	4.10
Other	$0	$0	$0	$0	$0	0.00

Table 2. Summary of Programmed Expenditures

Funding Source	FY 2014	FY 2015	FY 2016	FY 2017	Total	Share (%)
CMAQ	$1,800,350	$2,686,425	$2,771,113	$241,113	$7,499,001	1.36
CMAQ - PM 2.5	$2,678,189	$0	$0	$0	$2,678,189	0.49
ENHANCE	$4,908,549	$849,978	$0	$0	$5,758,527	1.04
HPP	$8,994,614	$7,314,225	$7,590,163	$0	$23,899,002	4.34
HPP-TN157	$617,061	$0	$0	$0	$617,061	0.11
HSIP	$25,000,000	$3,200,000	$4,050,000	$3,750,000	$36,000,000	6.53
LIC	$0	$642,500	$0	$0	$642,500	0.12
LOCAL	$600,000	$0	$0	$0	$600,000	0.11
L-STP	$20,412,950	$43,991,064	$24,099,390	$7,042,200	$95,545,604	17.33
NHPP	$61,100,000	$87,710,150	$102,430,000	$51,530,884	$302,771,034	54.93
PHSIP	$2,000,000	$2,500,000	$2,500,000	$500,000	$7,500,000	1.36
SECTION 5307	$10,727,831	$9,075,900	$6,550,703	$6,550,703	$32,905,137	5.97
SECTION 5310	$1,389,330	$833,579	$568,535	$533,264	$3,324,708	0.60
SECTION 5339	$1,486,369	$868,938	$731,734	$731,734	$3,818,775	0.69
STP	$17,500,000	$3,000,000	$3,000,000	$3,000,000	$26,500,000	4.81
TAP	$1,133,024	$0	$0	$0	$1,133,024	0.21
Total	**$160,348,267**	**$162,672,759**	**$154,291,638**	**$73,879,898**	**$551,192,562**	**100.00**
Federal	$132,398,910	$131,410,306	$125,081,080	$59,815,048	$448,705,344	81.41
State	$18,223,605	$22,374,398	$27,140,916	$12,170,905	$79,909,824	14.50
Local	$9,725,752	$8,888,055	$2,069,642	$1,893,945	$22,577,394	4.10
Other	$0	$0	$0	$0	$0	0.00

AMENDED

KNOXVILLE REGIONAL TPO TRANSPORTATION IMPROVEMENT PROGRAM FY 2014-2017

Table 1. Summary of Programmed Revenues

Funding Source	FY 2014	FY 2015	FY 2016	FY 2017	Total	Share (%)
CMAQ	$1,800,350	$2,686,425	$2,771,113	$241,113	$7,499,001	1.31
CMAQ - PM 2.5	$2,678,189	$0	$0	$0	$2,678,189	0.47
ENHANCE	$4,908,549	$849,978	$0	$0	$5,758,527	1.00
HPP	$8,994,614	$7,314,225	$7,590,163	$0	$23,899,002	4.16
HPP-TN157	$617,061	$0	$0	$0	$617,061	0.11
HSIP	$25,000,000	$3,200,000	$4,050,000	$3,750,000	$36,000,000	6.27
LIC	$0	$642,500	$0	$0	$642,500	0.11
LOCAL	$600,000	$0	$0	$0	$600,000	0.10
L-STP	$20,412,950	$43,991,064	$24,099,390	$7,042,200	$95,545,604	16.63
NHPP	$61,100,000	$87,710,150	$125,830,000	$51,530,884	$326,171,034	56.77
PHSIP	$2,000,000	$2,500,000	$2,500,000	$500,000	$7,500,000	1.31
SECTION 5307	$10,727,831	$9,075,900	$6,550,703	$6,550,703	$32,905,137	5.73
SECTION 5310	$1,389,330	$833,579	$568,535	$533,264	$3,324,708	0.58
SECTION 5339	$1,486,369	$868,938	$731,734	$731,734	$3,818,775	0.66
STP	$17,500,000	$3,000,000	$3,000,000	$3,000,000	$26,500,000	4.61
TAP	$1,133,024	$0	$0	$0	$1,133,024	0.20
Total	**$160,348,267**	**$162,672,759**	**$177,691,638**	**$73,879,898**	**$574,592,562**	**100.00**
Federal	$132,398,910	$131,410,306	$143,801,080	$59,815,048	$467,425,344	81.35
State	$18,223,605	$22,374,398	$31,820,916	$12,170,905	$84,589,824	14.72
Local	$9,725,752	$8,888,055	$2,069,642	$1,893,945	$22,577,394	3.93
Other	$0	$0	$0	$0	$0	0.00

Table 2. Summary of Programmed Expenditures

Funding Source	FY 2014	FY 2015	FY 2016	FY 2017	Total	Share (%)
CMAQ	$1,800,350	$2,686,425	$2,771,113	$241,113	$7,499,001	1.31
CMAQ - PM 2.5	$2,678,189	$0	$0	$0	$2,678,189	0.47
ENHANCE	$4,908,549	$849,978	$0	$0	$5,758,527	1.00
HPP	$8,994,614	$7,314,225	$7,590,163	$0	$23,899,002	4.16
HPP-TN157	$617,061	$0	$0	$0	$617,061	0.11
HSIP	$25,000,000	$3,200,000	$4,050,000	$3,750,000	$36,000,000	6.27
LIC	$0	$642,500	$0	$0	$642,500	0.11
LOCAL	$600,000	$0	$0	$0	$600,000	0.10
L-STP	$20,412,950	$43,991,064	$24,099,390	$7,042,200	$95,545,604	16.63
NHPP	$61,100,000	$87,710,150	$125,830,000	$51,530,884	$326,171,034	56.77
PHSIP	$2,000,000	$2,500,000	$2,500,000	$500,000	$7,500,000	1.31
SECTION 5307	$10,727,831	$9,075,900	$6,550,703	$6,550,703	$32,905,137	5.73
SECTION 5310	$1,389,330	$833,579	$568,535	$533,264	$3,324,708	0.58
SECTION 5339	$1,486,369	$868,938	$731,734	$731,734	$3,818,775	0.66
STP	$17,500,000	$3,000,000	$3,000,000	$3,000,000	$26,500,000	4.61
TAP	$1,133,024	$0	$0	$0	$1,133,024	0.20
Total	**$160,348,267**	**$162,672,759**	**$177,691,638**	**$73,879,898**	**$574,592,562**	**100.00**
Federal	$132,398,910	$131,410,306	$143,801,080	$59,815,048	$467,425,344	81.35
State	$18,223,605	$22,374,398	$31,820,916	$12,170,905	$84,589,824	14.72
Local	$9,725,752	$8,888,055	$2,069,642	$1,893,945	$22,577,394	3.93
Other	$0	$0	$0	$0	$0	0.00