

Conformity Analysis and Determination Report

2045 Metropolitan Transportation Plan:

- Rocky Mount Urban Area Metropolitan Planning Organization

Projects from the FY 2018-2022 Transportation Improvement Program:

- The portions of Nash and Edgecombe Counties that are within the Rocky Mount Urban Area Ozone Maintenance Area

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In cooperation with:

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TABLE OF CONTENTS

OVERVIEW	6
1. INTRODUCTION	12
2. AIR QUALITY PLANNING	15
3. METROPOLITAN TRANSPORTATION PLAN	16
3.1 CONSULTATION.....	16
3.2 FINANCIAL CONSTRAINT ASSUMPTIONS	17
3.3 LATEST PLANNING ASSUMPTIONS.....	17
3.4 FUTURE YEAR ROADWAY PROJECTS	18
3.5 TRANSIT NETWORKS.....	19
3.6 CONGESTION MITIGATION/AIR QUALITY (CMAQ) PROJECTS.....	19
3.7 TRAVEL DEMAND MODEL.....	19
3.8 TRIP DISTRIBUTION	20
3.9 MODE CHOICE	20
3.10 HIGHWAY ASSIGNMENT AND VEHICLE MILES TRAVELED	20
3.11 METHOD OF REPORTING VMT AND SPEED.....	20
4. REGIONAL EMISSIONS BUDGET TESTS	20
4.0.1 EMISSIONS ANALYSIS SOURCE	21
4.0.2 EMISSIONS COMPARISON YEARS (OZONE)	22
4.1 EMISSIONS MODEL.....	22
4.1.1 DEVELOPMENT OF VMT MIX BY VEHICLE TYPE	23
4.1.2 VEHICLE AGE DISTRIBUTIONS.....	23
4.2 TRANSPORTATION CONTROL MEASURES	23
5. PUBLIC INVOLVEMENT AND INTERAGENCY CONSULTATION	25
6. CONCLUSION	26

List of Tables and Figures

TABLE 1. STATUS OF CONFORMITY REQUIREMENTS
(√ INDICATES THE CRITERION IS MET)..... 10

TABLE 2. EDGECOMBE COUNTY NOX EMISSIONS COMPARISON SUMMARY 10

TABLE 3. NASH COUNTY NOX EMISSIONS COMPARISON SUMMARY 11

FIGURE 1. ROCKY MOUNT URBAN AREA OZONE MAINTENANCE AREA..... 14

TABLE 5. ROCKY MOUNT URBAN AREA TRANSPORTATION CONFORMITY
ANALYSIS MATRIX..... 22

TABLE 6. EMISSIONS TEST AND RESPONSIBILITY FOR CONFORMITY FINDINGS 24

TABLE 7. EDGECOMBE COUNTY NOX EMISSIONS COMPARISON..... 25

TABLE 8. NASH COUNTY NOX EMISSIONS COMPARISON 25

TABLE 9: SUMMARY OF CONFORMITY STATUS OF ROCKY MOUNT URBAN AREA
TRANSPORTATION PLAN..... 26

List of Appendices

APPENDIX A: FEDERAL REGISTER NOTICE

APPENDIX B: LIST OF ROADWAY PROJECTS (WITHIN MAINTENANCE AREA)

- ROCKY MOUNT URBAN AREA MPO 2045 MTP PROJECTS
- UPPER COASTAL PLAIN RPO (NASH AND EDGEcombe) 2018-2022 TIP PROJECTS

APPENDIX C: 2018-2022 TRANSPORTATION IMPROVEMENT PROGRAMS

APPENDIX D: INTERAGENCY CONSULTATION

- MEETING NOTES
- AGENCY COMMENTS
- PRE-ANALYSIS CONSENSUS PLAN

APPENDIX E: COMMENTS AND RESPONSES FROM THE AGENCY REVIEW AND PUBLIC INVOLVEMENT PROCESS

APPENDIX F: NEWSPAPER ADVERTISEMENTS AND AFFIDAVITS

APPENDIX G: MPO/NCDOT CONFORMITY DETERMINATIONS AND TIP/MTP ADOPTIONS

APPENDIX H: US DOT CONFORMITY DETERMINATIONS

APPENDIX I: MOVES2014, RURAL SPREADSHEET, AND REGIONAL EMISSIONS ANALYSIS FILES

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Overview

Transportation Conformity ("conformity") ensures that Federal funding and approval is distributed to those transportation activities that are consistent with air quality goals. Conformity applies to Metropolitan Transportation Plans (MTPs), Transportation Improvement Programs (TIPs), and projects funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) in areas that do not meet or previously have not met air quality standards for ozone, carbon monoxide, particulate matter, or nitrogen dioxide.

These areas are known as "nonattainment areas" or "maintenance areas," respectively. A conformity determination demonstrates that the total emissions projected for a plan or program are within the emissions limits ("budgets") established by the air quality plan or State Implementation Plan (SIP) for air quality, and that transportation control measures (TCMs) – specific projects or programs enumerated in the SIP that are designed to improve air quality – are implemented in a timely fashion.

Conformity Determination

Regional emissions are estimated based on highway and transit usage according to MTPs and TIPs. The projected emissions for the MTPs and the TIPs must not exceed the emissions limits (or "budgets") established by the SIP (or less than baseline emissions where no SIP budgets have been approved or found adequate). Where TCMs are included, responsible Metropolitan Planning Organizations (MPOs) and the North Carolina Department of Transportation (NCDOT) are required to demonstrate that TCMs are implemented in a timely fashion to obtain conformity.

The Decision Process

A formal interagency consultation process involving the Environmental Protection Agency (EPA), FHWA, FTA and State and Local transportation and air quality

agencies is required in developing SIPs, TIPs, MTPs, and in making conformity determinations. MPO policy boards make initial conformity determinations in metropolitan areas, while NCDOT makes this determination in areas outside of MPOs, in consultation with affected Rural Planning Organizations (RPOs).

Two organizations are responsible for making the conformity determinations in two distinct parts of the Rocky Mount Urban Area Ozone Non-attainment Area:

- a. The Rocky Mount Urban Area MPO within the metropolitan area boundary.
- b. The NCDOT in a rural (donut) area that is comprised of those portions of Nash and Edgecombe Counties that remains outside of the MPO metropolitan area boundary.

Each of these responsible organizations must make a conformity determination for its respective area in order for all of the areas to be designated in conformity.

Conformity determinations must also be made at the Federal level by FHWA/FTA. These determinations must be made at least every four years, or when transportation plans or TIPs are updated, or within one year of the effective date of a non-attainment designation.

Conformity analysis is made available to the public as part of the MPO and/or State DOT planning processes. MPOs are required to make MTPs, TIPs, and conformity determinations available to the public, accept and respond to public comments, and provide adequate notice of relevant public meetings. Project sponsors of specific transportation projects within the transportation plans and TIPs must also include appropriate public involvement during project development.

Emissions Budgets

On June 19, 2006, the State of North Carolina, through the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Air Quality, submitted a final request to re-designate the Rocky Mount 8-hour ozone nonattainment area to attainment for the 8-hour ozone National Ambient Air Quality Standard (NAAQS). The Rocky Mount 8-hour ozone nonattainment area is comprised of two counties, Edgecombe and Nash. EPA approved the 8-hour ozone maintenance plan on November 6, 2006 (with an effective date of January 5, 2007). On February 7, 2011, NCDAQ submitted a SIP revision to increase the motor vehicle emissions budgets (MVEB) safety margins. EPA approved the SIP revision on September 27, 2012 (with an effective date of November 26, 2012). . See Appendix A for the Federal Register Notices.

This approval was based on EPA's determination that the State of North Carolina has demonstrated that the Rocky Mount area has met the criteria for re-designation to attainment specified in the Clean Air Act (CAA), including the determination that

the entire Rocky Mount 8-hour ozone nonattainment area has attained the 8-hour ozone standard.

In this action, EPA also found adequate and approved the 2008 and 2017 motor vehicle emissions budgets (MVEBs) for nitrogen oxides (NOx) (for both Edgecombe and Nash counties) that are contained in the 8-hour ozone maintenance plan for the Rocky Mount nonattainment area. North Carolina has established subarea MVEBs at the county level so each county must consider its individual subarea MVEBs for the purposes of implementing transportation conformity. Further, in this action, EPA found adequate and approved the insignificance determination for volatile organic compounds' (VOCs) contribution from motor vehicle emissions to the 8-hour ozone pollution in the Rocky Mount, North Carolina area.

Projected emissions from highway and transit usage must be less than or equal to the emissions limits for on-road mobile vehicles that are established by the SIP. The SIP places limits on emissions of each pollutant for each source type (mobile, stationary and area sources). These emissions limits for motor vehicle emissions sources are called "budgets". Budgets are developed as part of the air quality planning process by State air quality/environmental agencies, and approved by EPA. Transportation agencies participate in this process.

Edgecombe and Counties 8-Hour Ozone Maintenance Area MVEBs for NOx

Counties	2008 NOx Budget In Kg/Day	2017 NOx Budget In Kg/Day
Edgecombe	4,157	2,251
Nash	10,444	6,141

(Assuming that 1 ton/day equals 907.1847 kg/day)

Transportation Control Measures (TCMs)

Areas can include TCMs in their SIPs. TCMs are specific programs designed to reduce emissions from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. The Rocky Mount MPO 8-hour ozone SIP does not contain any TCMs. These programs can include:

- Developing high occupancy vehicle (HOV) facilities
- Ordinances to promote non-motor vehicle travel
- Transit improvements
- Signal timing
- Bicycle and pedestrian facilities
- Land use planning

Executive Summary

The purpose of this report is to comply with the provisions of the Clean Air Act Amendments of 1990 and Fixing America's Surface Transportation (FAST) Act. This report demonstrates that the activities resulting from the implementation of the fiscally constrained Metropolitan Transportation Plans (MTPs) will not "cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area" of the following jurisdictions:

- The Rocky Mount Urban Area Metropolitan Planning Organization
- The portions of the Upper Coastal Plain Rural Planning Organization (UCPRPO) which are in the Rocky Mount Urban Area Ozone Maintenance Area (Nash and Edgecombe Counties)

This conformity determination is based on a regional emissions analysis that uses the transportation network approved by the above-named Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) for the 2045 Metropolitan Transportation Plan and the emissions developed by the North Carolina Department of Environmental Quality (DEQ). Based on this analysis, the 2045 Metropolitan Transportation Plan for Rocky Mount Urban Area MPO, and its respective Transportation Improvement Program conform to the purpose of the North Carolina SIP. The FY 2018-2022 TIP is a direct subset of the 2045 Metropolitan Transportation Plan. The conformity analysis for the relevant portion of the RPO during the TIP years is specifically addressed by the North Carolina Department of Transportation (NCDOT). The NCDOT analysis also showed the Transportation Improvement Program conforms to the purpose of the North Carolina SIP.

The USEPA designated Nash and Edgecombe Counties, in their entirety, as well as the Rocky Mount Urban Area, as a "marginal" non-attainment area for eight-hour ozone with an effective date of June 15, 2004. On November 6, 2006 (effective date January 5, 2007), the maintenance plan for Rocky Mount Urban Area (that designated it from a non-attainment area to a maintenance area) for the 8 hour ozone standard was approved. On September 27, 2012 (effective date November 26, 2012), the USEPA approved an update to the Rocky Mount Motor Vehicle Emissions Budgets (MVEBs) to increase the MVEB safety margins.

The conformity determination is based on the 2045 Metropolitan Transportation Plan for the Rocky Mount Urban Area MPO. This MTP along with projects from the most recent TIP in the rural (donut) area outside of the urban area, form in effect a Regional Transportation plan. The plan has three analysis years: 2027, 2035 and 2045. Each analysis year includes expected population and employment data and roadway projects that should be open. The plan is fiscally constrained: funding sources for roadway projects are identified.

NCDAQ provided vehicle emissions for all analysis years using MOVES2014a. Speed and VMT (inputs to the MOVES2014a model) were provided by NCDOT and are a combination of TDM model results for the Metropolitan Area as well as results using the Non-modeled Area Analysis (NMAA) Spreadsheet for the area outside the MPO.

Table 1 summarizes the conformity requirements of 40 CFR Part 51 and 93 and gives the status of the MTP in relation to each of these requirements. Tables 2 and 3 contain results from the emission analysis. In every horizon year in each geographical area, the emissions expected from the implementation of MTP and TIP are less than the emissions budgets established in the SIP.

Table 1. Status of Conformity Requirements (√ indicates the criterion is met)

Criteria	Rocky Mount MPO	Rural Area of the Edgecombe and Nash Counties
Less than or equal to MVEBs	√	√
TCM Implementation	N/A	N/A
Interagency Consultation	√	√
Latest Emissions Model	√	NMAA spreadsheet
Latest Planning Assumptions	√	√
Fiscal Constraint	√	√

Table 2. Edgecombe County NOx Emissions Comparison Summary

Analysis Year	Model (Urban) (Kg/Day)	Spreadsheet (Rural) (Kg/Day)	Total Comparison Amount(Kg/Day)	Budget Amount (Kg/Day)	
2027	131	460	591	2,251	OK
2035	69	318	387	2,251	OK
2045	55	307	362	2,251	OK

Table 3. Nash County NOx Emissions Comparison Summary

Analysis Year	Model (Urban) (Kg/Day)	Spreadsheet (Rural) (Kg/Day)	Total Comparison Amount (Kg/Day)	Budget Amount (Kg/Day)	
2027	981	499	1,480	6,141	OK
2035	681	334	1,015	6,141	OK
2045	648	287	935	6,141	OK

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1. Introduction

The Clean Air Act requires the United States Environmental Protection Agency (USEPA) to set limits on how much of a particular pollutant can be in the air anywhere in the United States. National Ambient Air Quality Standards (NAAQS) are the pollutant limits set by the USEPA; they define the allowable concentration of pollution in the air for six different pollutants – Carbon Monoxide, Lead, Nitrogen Dioxide, Particulate Matter, Ozone, and Sulfur Dioxide.

The Clean Air Act specifies how areas within the country are designated as either “attainment” or “non-attainment” of an air quality standard, and provides USEPA the authority to define the boundaries of non-attainment areas. For areas designated as non-attainment for one or more NAAQS, the Clean Air Act defines a specific timetable to attain the standard and requires that non-attainment areas demonstrate reasonable and steady progress in reducing air pollution emissions until such time that an area can demonstrate attainment. Each state must develop and submit a State Implementation Plan (SIP) that addresses each pollutant for which it fails to meet the NAAQS. Individual state air quality agencies are responsible for defining the overall regional plan to reduce air pollution emissions to levels that will enable attainment and maintenance of the NAAQS. This strategy is articulated through the SIP.

In North Carolina, the agency responsible for SIP development is the North Carolina Department of Environmental Quality, Division of Air Quality (NC DEQ/DAQ). The delineation and implementation of strategies to control emissions from on-road mobile sources is a significant element of the state plan to improve air quality, thereby creating a direct link between transportation and air quality planning activities within a non-attainment area. The process of ensuring that a region’s transportation planning activities contribute to attainment of the NAAQS, or “conform” to the purposes of the SIP, is referred to as transportation conformity. In order to receive federal transportation funds within the non-attainment area, the area must demonstrate through a federally mandated conformity process that the transportation investments, strategies and programs, taken as a whole, contribute to the air quality goals defined in the state air quality plan.

In order to ensure the conformity requirements are met, Section 176 (c) of the Clean Air Act authorizes the USEPA Administrator to “promulgate criteria and procedures for demonstrating and assuring conformity in the case of transportation plans, programs, and projects.” This is accomplished through the Transportation Conformity Rule, developed by the USEPA to outline all federal requirements associated with transportation conformity. The Transportation Conformity Rule in conjunction with the Metropolitan Planning Regulations direct transportation plan and program development as well as the conformity process.

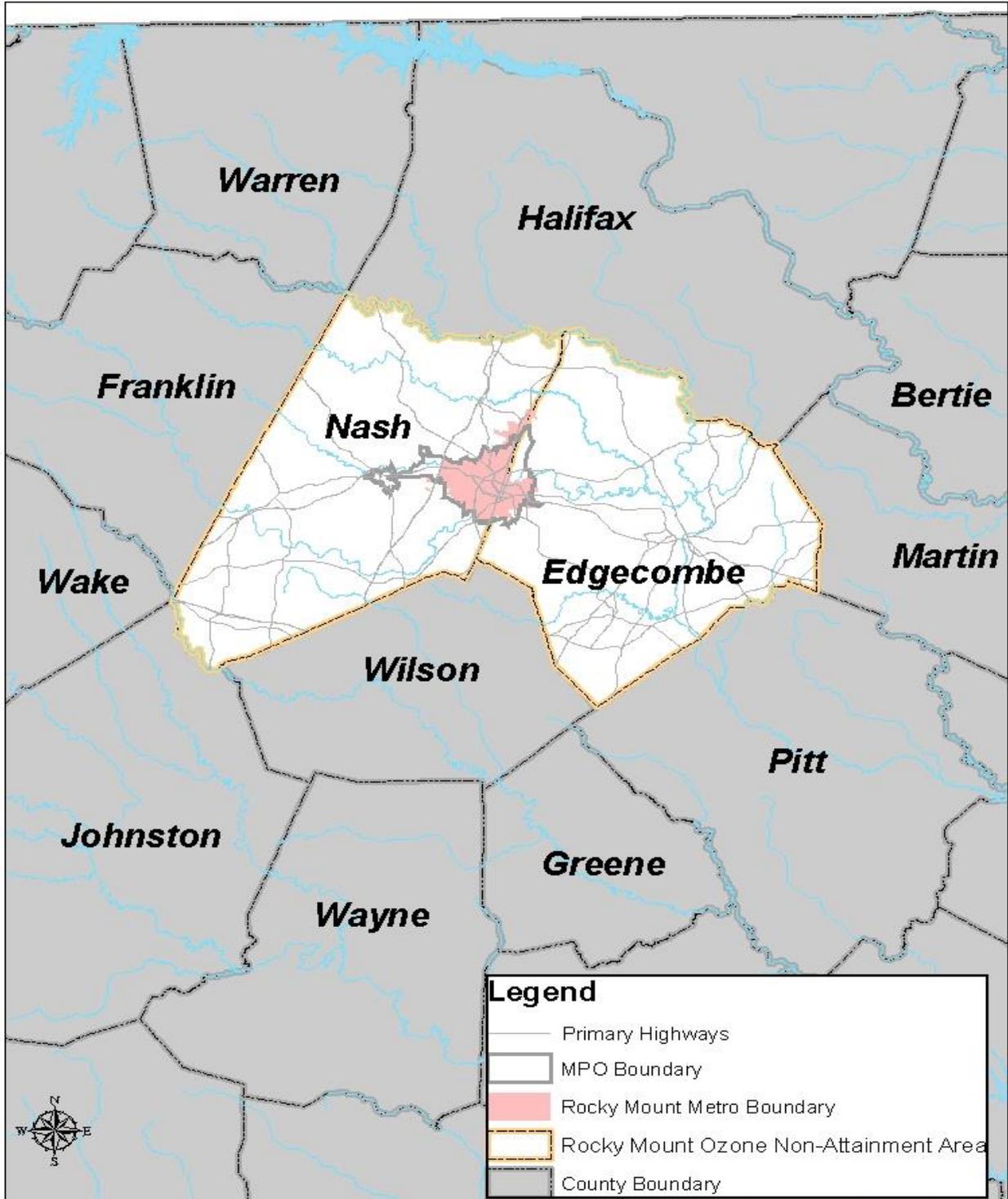
The purpose of this report is to comply with the provisions of the Clean Air Act Amendments of 1990 and the Fixing America’s Surface Transportation (FAST) Act. It demonstrates that the activities resulting from the implementation of the financially constrained MTP and the TIP will not contribute to future violations of the National Ambient Air Quality Standards (NAAQS) in the following jurisdictions:

- The Rocky Mount Urban Area Metropolitan Planning Organization,
- The portions of the Upper Coastal Plain Rural Planning Organization (UCPRPO) which are in the Rocky Mount Urban Area Ozone Maintenance Area (Nash and Edgecombe Counties).

This conformity determination is based on a regional emissions analysis that uses the transportation network approved by the above-named Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) for the 2045 Metropolitan Transportation Plan, VMT and Speed input data developed by NCDOT, and emissions provided by the North Carolina Department of Air Quality (NCDAQ) from the Motor Vehicle Emission Simulator (MOVES) model. The entire Rocky Mount Urban Area maintenance region is shown as a map on Figure 1.

All federally funded projects in areas designated by the United States Environmental Protection Agency (USEPA) as air quality non-attainment or maintenance areas must come from a conforming Metropolitan Transportation Plan and transportation improvement program (TIP). The Rocky Mount Area is required by 40 CFR 51 and 93 to make a conformity determination on any newly adopted or amended fiscally constrained Metropolitan Transportation Plan and related TIP. In addition, the United States Department of Transportation (USDOT), specifically, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) must make a conformity determination on the MPO Plan for the Rocky Mount Urban Area and the related TIP for the maintenance area.

Figure 1. Rocky Mount Urban Area Ozone Maintenance Area



In order to assist the Rocky Mount Area in making a conformity determination on the adopted 2045 fiscally constrained Metropolitan Transportation Plan, the following agencies shared leading roles composing substantial portions of this document:

Agency	Counties
Rocky Mount MPO	Nash (part), Edgecombe (part)
NCDOT, with RPO input	Nash (part), Edgecombe (part)

This analysis is consistent with 40 CFR Part 93 *Transportation Conformity Rule and the Fixing America's Surface Transportation (FAST) Act*. Based on the regional emissions analysis documented in this report, the following items are in conformity:

- Rocky Mount Urban Area MPO 2045 MTP
- 2018-2022 TIP in the Non-attainment Area outside of MPO

This report documents the regional emissions analysis using the motor vehicle emissions budget test, the interagency consultation process, public involvement process, and analysis methodology used to demonstrate transportation conformity for the MPO and the rural portion of each county and thus for the entire Rocky Mount Urban Area.

40 CFR Part 93 requires that a conforming transportation plan satisfy five conditions:

- The transportation plan must be consistent with the motor vehicle emissions budget(s) in an area where the applicable implementation plan or implementation plan submission contains a budget (*40 CFR Part 93.118*).
- The transportation plan, TIP, or FHWA/FTA project not from a conforming plan must provide for the timely implementation of TCMs from the applicable implementation plan (*40 CFR Part 93.113b*).
- The MPO must make the conformity determination according to the consultation procedures of *40 CFR Part 93.105* and the implementation plan revision required by *40 CFR Part 93.390* (*40 CFR Part 416*).
- The conformity determination must be based on the latest emissions estimation model available (*40 CFR Part 93.111*).
- The conformity determination must be based on the latest planning assumptions (*40 CFR Part 93.110*).

This report shows that the MPO's 2045 MTP and the projects out of 2018-2022 STIPs in rural (donut) areas outside of the MPO boundaries meets each condition. Each condition is discussed in the following sections of this report.

2. Air Quality Planning

USEPA originally declared Nash and Edgecombe Counties non-attainment for ozone (O₃) under the 8-hour ozone standard on April 15, 2004. Ozone, the primary component of smog,

is a compound formed when volatile organic compounds (VOC) and oxides of nitrogen (NOx) mix together in the atmosphere with sunlight. NOx and VOC are referred to as ozone “precursors.”

In 1997 the NAAQS for ozone was reviewed and revised to reflect improved scientific understanding of the health impacts of this pollutant. When the standard was revised in 1997, an eight-hour ozone standard was established that is designed to replace the one-hour standard. The USEPA designated the entire Rocky Mount Urban area as a “marginal” non-attainment area for ozone under the eight-hour standard, with an effective date of June 15, 2004; the designation covers the following geographic areas:

- Nash County
- Edgecombe County

EPA approved the 8-hour ozone maintenance plan on November 6, 2006 (with an effective date of January 5, 2007).

On February 7, 2011, NCDAQ submitted a SIP revision to increase the motor vehicle emissions budget (MVEB) safety margins. EPA approved the SIP revision on September 27, 2012 (with an effective date of November 26, 2012).

The Federal register notice for the MVEB update approval is provided in Appendix A

3. Metropolitan Transportation Plan

The 2045 Transportation Plan was developed in 2017. Federal law *40 CFR part 93.104(b)(3)* requires a conformity determination of the transportation plan no less frequently than every four years. As required in *40 CFR 93.106*, the horizon years for the transportation plan are no more than ten years apart.

The Rocky Mount Urban Area MPO includes portions of Nash and Edgecombe Counties. The remaining portions of the maintenance area are rural areas of Nash and Edgecombe Counties within the Upper Coastal Plain RPO.

3.1 Consultation

The 2045 Transportation Plan is consistent with consultation requirements discussed in *40 CFR 93.105*.

Consultation on the development of this conformity determination was accomplished through interagency consultation meetings held on June 5, 2018 and July 18, 2018. A summary of the topics discussed and the list of attendees at each meeting is included in Appendix D.

3.2 Financial Constraint Assumptions

The MTP is fiscally constrained as discussed in *40 CFR 93.108*. The Rocky Mount Urban Area MPO Metropolitan Transportation Plan is fiscally constrained to the year 2045. All projects included in the current 2018-2022 TIP are fiscally constrained, and funding sources have been identified for construction and operation. The estimates of available funds are based on historic funding availability and include federal, state, private, and local funding sources. Additional detail on fiscal constraint is included in the MPO's Metropolitan Transportation Plan. It is assumed that the projects listed for each horizon year will be completed and providing service by the end of the indicated calendar year (December 31). These transportation networks are in greater detail in Appendix B.

3.3 Latest Planning Assumptions

The 2045 MTP was developed with the latest planning assumptions as discussed in *40 CFR 93.110*. The Rocky Mount Urban Area Travel Demand Model was developed for the urbanized portion of the Rocky Mount Urban Area maintenance area. The MPO provided housing, employment and population projections. A set of highway projects was developed. This collection of socioeconomic data, highway network and travel forecast tools, representing the latest planning assumptions, were finalized through the adoption of the draft Metropolitan Transportation Plan by the Rocky Mount Urban Area MPO in 2017. Additional detail on these planning assumptions is provided below.

Land use and demographic data were collected by staff members of the Rocky Mount Urban Area MPO. Staff updated the residential and employment data and prepared growth forecasts to 2045.

Forecasts were prepared by MPO staff. Methodology was applied to maintain consistency between residential and employment forecasts and local land use plans. Data and forecasts were submitted for public review by the MPO, and adopted for use in developing travel demand and air quality forecasts by the MPO's Transportation Advisory Committee.

The Rocky Mount Urban Area Travel Demand Model (TDM) uses the basic four-step process (trip generation, trip distribution, mode choice and assignment). The steps of the process are discussed in greater detail in the sections below. The Rocky Mount Urban Area's TransCAD model is housed at the North Carolina Department of Transportation. The TransCAD model covers all of the City of Rocky Mount, Nashville and portions of Nash and Edgecombe Counties that are considered urban in nature.

Outside of the modeled area, NCDOT utilizes a spreadsheet that incorporates the vehicle-miles traveled (VMT) universe file and historical trends to project the VMT in future years at the county level. The spreadsheet calculates speed based on a model originally developed by the Texas Transportation Institute (TTI) but modified by NCDOT. Speeds and VMT generated by the spreadsheet are incorporated into the MOVES2014a model, which outputs vehicle emissions. The rural spreadsheet model is used for portions of Nash and Edgecombe Counties and is factored based on

population percentage for those portions of maintenance counties not covered by the TransCAD model. This methodology has been used to demonstrate conformity in other areas and has received approval from interagency partners.

There are no court orders or special agreements that apply to conformity (*40 CFR 93.109*).

3.4 Future Year Roadway Projects

Roadway improvements used for conformity modeling were developed in the 2045 Metropolitan Transportation Plan process within the MPO. Outside of the MPO boundary, TIP projects from the 2018-2022 TIP serve as the future year roadway projects. For the 2045 MTP, a list of needed projects was developed based on modeled congestion and identified local needs. Improvements were coded into the TDM and analyzed. Intermediate analysis for the years 2027, 2035, and 2045 were performed. Projects were added from the MPO priority list until estimated project costs equaled the expected funding available. The three future networks (2027, 2035 and 2045) used for the conformity determination are the same as the networks used for the 2045 Metropolitan Transportation Plan. Throughout the process to develop the roadway network, the MPO and NCDOT identified any initial inconsistencies in project timing and characteristics (e.g. cross-section) and reached consensus on consistent solutions.

The following criteria are used to identify major existing and future regional roadway systems that may produce significant impacts to air quality emissions:

Regional Significance Criteria

1. The facility serves regional transportation needs (i.e. facilities that provide access to and from the region or that provide access to major destinations in the region);
2. The facility is functionally classified higher than a minor arterial (minor arterials may be regionally significant if their main purpose is to provide access to major facilities in the region);
3. The facility is included in the travel model for the region (In many cases collector streets are modeled that are not regionally significant).

To be regionally significant a facility should meet one or more of the criteria in this checklist (*40 CFR 93.109*).

Appendix B includes a list of the future year roadway projects in the Rocky Mount urban area as indicated below, including indications of which projects are regionally significant and which projects are exempt.

Area	Location of Roadway Project List in Appendix B
Rocky Mount Urban Area MPO	2045 MTP
Upper Coastal Plain RPO (Nash and Edgecombe Counties)	2018-2022 TIP

The exempt highway projects listed in Appendix B will serve as the Metropolitan Transportation Plan (MTP) for the region in the event of a conformity lapse. A **conformity** lapse is when an area develops a MTP that does not pass the conformity test. The TAC must adopt a MTP of exempt projects (40 CFR 93.126, 127 & 128) that will serve as the MTP/TIP for the area in the event of a **conformity** lapse. This will allow exempt projects to receive federal funding.

3.5 Transit networks

Due to the nature of the Rocky Mount Urban Area, transit projects were insignificant for this conformity analysis.

3.6 Congestion Mitigation/Air Quality (CMAQ) Projects

In North Carolina, each MPO and RPO in a non-attainment or maintenance area receives an allocation of CMAQ funds based on population and air quality status. In addition, a statewide pool of CMAQ funds is set aside for projects serving more than one non-attainment area and these projects are awarded on a competitive basis. NCDOT administers the CMAQ program and individual CMAQ projects are locally administered. MPOs and RPOs determine projects within their monetary allocations based on a schedule that coincides with the development of the State TIP.

3.7 Travel Demand Model

Rocky Mount Urban Area Travel Demand Model covers the metropolitan area of City of Rocky Mount, Town of Nashville and portions of Nash and Edgecombe Counties considered urbanized. The remainder of the Nash and Edgecombe counties is covered by the NCDOT NMAA spreadsheet.

The trip generation module of the Rocky Mount Model stratified the trip rates by area type and trip purpose. The trip purposes used were home based work (HBW), home based other (HBO), and non-home-based (NHB). Trip tables were also built for commercial vehicles, internal – external trips, and through trips.

The travel behavior survey was used to determine where the trips would be ‘attracted to (Greenville, NC 2005 survey was used for this purpose). Regression coefficients were developed for industrial, retail, highway retail, office and service employment, as well as total dwelling units.

3.8 Trip Distribution

The Rocky Mount Urban Area Model uses a standard gravity model to distribute trips. The model builds zone-to-zone trip tables (by purpose) using a weighted sum of travel time and distance. For assignment purposes the individual trip tables are aggregated into a single trip table for each MTP analysis year (2027, 2035 and 2045).

3.9 Mode Choice

Mode choice was not applied to the Rocky Mount Urban Area model.

3.10 Highway assignment and vehicle miles traveled

Once the total number of trips has been determined, the trips are assigned to the network. For the Rocky Mount Urban Area Model, this is done using an equilibrium loading. In an equilibrium loading, trips are loaded in a series of 'all or nothing' loadings. After each 'all or nothing' loading, travel times are recalculated. This process continues until the network is in equilibrium. The network is considered to be in equilibrium when further travel time reductions for an individual traveler cannot be achieved by changing the selected path.

3.11 Method of reporting VMT and speed

The Rocky Mount Urban Area model has the ability to provide reports in the form of daily output. Vehicle miles traveled (VMT) used in the conformity determination are from the last iteration of the model. Each link in the roadway network carries a functional classification.

The MOVES2014a model requires, as input, the speeds and VMT by facility type. This information can be derived directly from the model link data output. This first requires the separation of the model link data into functional classification. The congested link speed in mph can then be determined by converting the link distance to miles and dividing by travel time. The congested speed is then weighted by the ratio of the link VMT to the system VMT for each of the functional classifications. This input is then used for MOVES model.

4. Regional Emissions Budget Tests

The Rocky Mount Urban area has an approved attainment demonstration or maintenance plan by USEPA. Therefore, emissions budget comparisons have been performed to satisfy the emissions test requirement of *40 CFR Part 93.118*. Emissions factors are provided by DEQ.

No counties in the maintenance area are completely within the Rocky Mount Urban Area travel demand model (TDM) boundary. Both Nash and Edgecombe counties have parts that are within the modeled area and parts that are outside of the modeled

area.

4.0.1 Emissions analysis source

Vehicle Miles of Travel (VMT) and speeds for the emissions analysis were derived from the Rocky Mount Urban Area TDM where it is available. VMT and speeds for the portions of Nash and Edgecombe Counties outside the modeled area came from the NCDOT MNAA spreadsheet factored by the percentage of each county's population in the rural area, a method that has been used in prior analyses.

The NCDOT utilizes a spreadsheet that incorporates the VMT universe file and historical trends to project the VMT to the horizon years at the county level. The VMT data are expressed as daily vehicle miles of travel (DVMT). This data is based upon the annual average daily traffic (AADT) reported as part of the annual Highway Performance Monitoring System (HPMS) VMT reported to the Federal Highway Administration (FHWA). North Carolina records AADT data for all roads in all functional classifications. The 2009, 2010 and 2011 VMTs are much higher than previous years due to improvement in reporting of VMT for the local roads. In the past a default of 400 AADT was assumed (statewide) where no traffic count was available for the local roads. For 2009-2011, we have had much more local traffic counts. Because of the higher local traffic counts, the 400 AADT assumption has been revised when no traffic counts are available. There is a specific unique default available for every county, and that number could vary from several hundred to several thousand. Therefore, TPD used the following approach to handle the change in methodology used for estimating VMT in recent years (2009 and later).

The following outlines the approach to project VMT for the non-modeled portion of Edgecombe and Nash Counties:

- 1- Calculated average growth year from 2009-2016
- 2- Applied the calculated growth rate from Step 1 to the base year of 2016. A simple interest rate formula was applied to project the VMT for 2017, 2027, 2035 and 2045. The VMT were calculated for each county.
- 3- Used the ratio of VMT for each road class to total VMT for 2016 to disaggregate county total VMT to road class level.

This approach will compensate for the reclassification of VMT from year to year due to the expansion of urbanized boundaries or other reasons. The rural spreadsheet calculates speeds based on a model originally developed by the Texas Transportation Institute (TTI) but modified by NCDOT. Speeds and VMT generated by the rural spreadsheet are incorporated into the MOVES emissions model to generate emissions for each county. This methodology has been used to demonstrate conformity in other areas and received approval from the interagency partners. The rural spreadsheet analysis is provided in Appendix I.

4.0.2 Emissions Comparison Years (ozone)

For areas with budgets under the 8-hour Ozone standard emissions must be analyzed for years where there is an 8-hour emission budget, the attainment year (if applicable), the horizon year and intermediate years such that intervals do not exceed 10 years. The following years were analyzed to meet the requirements: 2027 (model run), 2035 (model run), and 2045 (model run & MTP horizon year).

Table 5. Rocky Mount Urban Area Transportation Conformity Analysis Matrix

County	Area model status	Area emissions budget status	Emissions analysis source	2017	2020	2030	2045 horizon
Nash	Modeled area	emissions budget	Rocky Mount model	O3	O3	O3	O3
	Rural area	emissions budget	Rural spreadsheet (factored)	O3	O3	O3	O3
Edgecombe	Modeled area	emissions budget	Rocky Mount model	O3	O3	O3	O3
	Rural area	emissions budget	Rural spreadsheet (factored)	O3	O3	O3	O3

4.1 Emissions Model

MOVES2014a was used for this conformity determination.

Motor vehicle emissions controls considered in the MOVES2014a model include the following:

Strategy

- I/M Program (per NC SIP)*
- Tier 2 vehicle's Emission Standards*
- Low Sulfur Gasoline and Diesel fuels*
- Heavy Duty Vehicle Rules 2004 and 2007*
- Low RVP Gasoline*
- On board vapor recovery*

Methodology/Approach

- Ran Model in Place*

Also, area specific information is used for such items as vehicle age distribution and vehicle type distribution rather than national default values, as documented below.

4.1.1 Development of VMT Mix by Vehicle Type

The North Carolina Department of Transportation (NCDOT) provides data on VMT for six urban and six rural road types; vehicle mix data are available for the same road types. Automatic traffic recording stations and selected Highway Performance Monitoring System (HPMS) locations were used and counts taken throughout 2010 are used to determine the percentage of vehicles, by vehicle type, for various road types. Vehicle classification data was used in conjunction with MOVES2014a default vehicle mix to estimate fleet distribution by functional class. The classification data was iteratively adjusted to replicate MOVES2014a's national classification default within the analysis area.

4.1.2 Vehicle Age Distributions

The vehicle age distribution is based on the North Carolina Department of Motor Vehicles' (DMV) registration records for the in-use fleet in the Rocky Mount Urban Area. DMV provided the information. The data was modified and arranged to comply with MOVES2014a

4.2 Transportation Control Measures

There are no transportation control measures pertaining to the Rocky Mount Urban Area.

4.3 Emissions Comparison Tests by Location and Pollutant

In 1997 the NAAQS for ozone was reviewed and revised to reflect improved scientific understanding of the health impacts of this pollutant. When the standard was revised in 1997, an eight-hour ozone standard was established. The USEPA designated the entire Rocky Mount Urban Area as a "marginal" non-attainment area for eight-hour ozone with an effective date of June 15, 2004.

EPA approved the 8-hour ozone maintenance plan on November 6, 2006 (with an effective date of January 5, 2007).

On February 7, 2011, NCDAQ submitted a SIP revision to increase the motor vehicle emissions budget (MVEB) safety margins. EPA approved the SIP revision on September 27, 2012 (with an effective date of November 26, 2012).

The Federal register notices for the maintenance plan and the MVEB update approvals are provided in Appendix A

The maintenance area covers the following geographic areas:

- Nash County
- Edgecombe County
- The Rocky Mount Urban Area MPO within the metropolitan area
- The rural area that is comprised of those portions of Nash and Edgecombe Counties that remains outside of the MPO metropolitan area boundary

Two organizations (NCDOT and Rocky Mount MPO) are responsible for conformity determinations; each must make a conformity determination for its respective area in order for all of the areas to be designated in conformity.

For this report, emissions were calculated and reported at the County level. 40 CFR Part 93.106 requires that transportation emissions be estimated at, minimum, ten-year intervals. Table 7 summarizes the emissions test used and decision-making responsibility for conformity findings in each County.

Table 6. Emissions Test and Responsibility for Conformity Findings

Location	Pollutant(s)	Emissions Test	Conformity Finding Responsibility
Nash County	O3	Less than or equal to MVEBs	Rocky Mount MPO for the area within the MPO boundary NCDOT in consultation with Upper Coastal Plain RPO for the area outside of the MPO boundary
Edgecombe County	O3	Less than or equal to MVEBs	Rocky Mount MPO for the area within the MPO boundary NCDOT in consultation with Upper Coastal Plain RPO for the area outside of the MPO boundary

The results of the emission comparisons are summarized by County in Tables 8 and 9. Detailed emissions analysis results by county are contained in Appendix E

Table 7. Edgecombe County NOx Emissions Comparison

Analysis Year	Model (Urban) (kg/day)	Spreadsheet (Rural) (kg/day)	Total Comparison Amount (kg/day)	Budget Amount (kg/day)	
2027	131	460	591	2,251	OK
2035	69	318	387	2,251	OK
2045	55	307	362	2,251	OK

Table 8. Nash County NOx Emissions Comparison

Analysis Year	Model (Urban) (kg/day)	Spreadsheet (Rural) (kg/day)	Total Comparison Amount (kg/day)	Budget Amount (kg/day)	
2027	981	499	1,480	6,141	OK
2035	681	334	1,015	6,141	OK
2045	648	287	935	6,141	OK

5. Public Involvement and Interagency Consultation

The 2045 Metropolitan Transportation Plan is consistent with consultation requirements discussed in *40 CFR 93.105*. Interagency consultation was a cooperative effort on the part of the Rocky Mount Urban Area MPO, the Upper Coastal Plain RPO, the North Carolina Department of Transportation, the North Carolina Division of Air Quality, the Environmental Protection Agency and the Federal Highway Administration. The process was administered by the Federal Highway Administration on behalf of the partners and was organized according to the sections in the document titled *Rocky Mount Urban Area Transportation Conformity: Pre-Analysis Consensus Plan*, a document agreed to at the initial interagency consultation meeting on June 5, 2018. Subsequent interagency consultation meetings were held on July 18, 2018. A Copy of the latest version of the Consensus Plan, written agency comments and agendas and summaries of the interagency consultation meetings are included in Appendix D and E.

Public review of this report was handled in accordance with the Rocky Mount Urban Area MPO and the Upper Coastal Plain RPO public participation policy for Transportation Plans. Comments from the public participation process are incorporated into the final Conformity Analysis and Determination Report. Those comments that are written are included in Appendix E of the final report.

6. Conclusion

Based on the analysis and consultation discussed above, the following transportation plan and TIP pass the conformity test. In every horizon year for the pollutant in each geographic area, the emissions expected from the implementation of the Metropolitan Transportation Plan and TIP is less than the SIP MVEBs.

Table 9: Summary of Conformity Status of Rocky Mount Urban Area Transportation Plan

Criteria (√ indicates the criterion is met)	Rocky Mount Urban Area MPO 2045 MTP & 2012-18 TIP*	Rural Area of Nash and Edgecombe Counties 2012-18 STIP
Less than or equal to MVEBs	√	√
Interagency Consultation	√	√
Latest Emissions Model	√	√
Latest Planning Assumptions	√	√
Fiscal Constraint	√	√

* The 2018-2022 TIPs are direct subsets of the 2045 MTPs

Appendix A

Federal Register Notice Final SIP MVEB Approval

Appendix B

List of Roadway Projects (within Maintenance Area)

- Rocky Mount Urban Area MPO 2045 MTP Projects
- Upper Coastal Plain RPO (Nash and Edgecombe) 2018-2022 TIP Projects

Appendix C

2018-2022 Transportation Improvement Programs

Appendix D

Interagency Consultation

- Meeting notes
- Agency Comments
- Pre-Analysis Consensus Plan

Appendix E

Comments and Responses from the Agency Review and Public Involvement
Process

Appendix F

Newspaper Advertisements and Affidavits

Appendix G

MPO/NC DOT Conformity Determinations and TIP/MTP Adoptions

(this information is not available at this time and will be provided in the Final Draft CDR)

Appendix H

US DOT Conformity Determinations

(this information is not available at this time and will be provided in the Final Draft CDR)

Appendix I

MOVES2014a, Rural Spreadsheet, and Regional Emissions Analysis Files