Appendix C: Interagency Consultation, including Pre-Analysis Consensus Plan

Appendix C contains summaries of interagency consultation and technical meetings, along with the most recent version of the Pre-Analysis Consensus Plan guiding how the conformity process will be followed.

The initial interagency consultation meeting was held on June 28, 2018; subsequent communications were conducted via email and telephone. A summary of the June 28th meeting is provided below.

TRIANGLE OZONE MAINTENANCE REGION

Chatham Co. – part (rural), Durham Co., Franklin Co. (rural), Granville Co. (rural), Johnston Co. (rural), Orange Co., Person Co. (rural), Wake Co.

Interagency Consultation Meeting – 2045 MTP
Monday, June 18, 2018

Triangle J Council of Governments Conference Room
4307 Emperor Blvd, Durham, NC 27703

Meeting Summary (July 3, 2018 version)

1. **Participants:** John Hodges-Copple (Triangle J COG), Edward Dancausse (FHWA), Alex Rickard (CAMPO), Matt Day (Triangle Area RPO), Hemang Surti (NCDOT-TPD), Geoff Green (GoTriangle), Phyllis Jones (NCDOT), Mark Eatman (NCDOT-TPD), Behshad Norowzi (NCDOT), Scott Walston (NCDOT-TPD), Chris Lukasina (CAMPO), Andy Henry (DCHC MPO), Heather Hildebrandt (NCDOT), Todd Pasley (NCDEQ-DAQ), Julie Bogle (NCDOT-TPD), Wannetta Mallette (BG MPO), Brian Phillips (NCDEQ-DAQ), Sheila Blanchard (NCDEQ-DAQ), Joey Huang (NCDEQ-DAQ), Aaron Cain, DCHC MPO), Dianna Myers (US EPA), Kelly Sheckler (US EPA), Stan Mitchell (FTA-Region IV), Felix Nwoko, DCHC MPO).

2. **Meeting Purpose –** John Hodges-Copple outlined the purpose of the meeting: i) to review the draft Pre-Analysis Consensus Plan, clarify any issues and make any adjustments; ii) review the conformity process schedule and make any needed adjustments; and iii) outline follow-up steps that need to be addressed.

3. **Pre-Analysis Consensus Plan –** Edward Dancausse reviewed each item in the draft Pre-Analysis Consensus Plan. He noted that the pollutant of concern is ozone and that the Triangle is NOx-limited, so only NOx emissions, and not VOCs, would be analyzed. Comparisons will be made to the 2017 NOx emissions budget. References to CO emissions will be removed.

A question was raised if a comparison would be needed for the current year (2018). Eddie Dancausse responded that normally an analysis would be needed for the SIP year, but since that was past (2017) and the next MTP plan year (2025) is within 10 years of the SIP year, analysis would only be needed for 2025, 2035 and 2045 (the horizon year).

A question was raised about when the current version of the Triangle Region Transportation Demand Model was adopted. John Hodges-Copple responded that version 6 of the model was adopted along with the final socioeconomic data and 2045 MTP networks by the MPOs in 2018 in February (CAMPO) and March (DCHC MPO).

Dianna Myers noted that Durham County was not labeled on the maps in the document. John Hodges-Copple indicated that he would add the labeling.

Todd Pasley reviewed the control strategies and mobile source emission reduction strategies, noting how the MOVES2014a version of the model accounts for control strategies. John Hodges-Copple will modify the mobile source emission reduction strategies to note that park-n-ride lots, transit improvements and land use changes are now incorporated in the combination of the CommunityViz growth allocation model and TRMv6 transportation model.

A question was raised about the source of the human population for 2045 used as a factor to estimate vehicle populations in future years. DAQ staff indicated they use Office of State Budget and Management forecasts. John Hodges-Copple will follow up with Todd Pasley to ensure that a consistent method is used for the vehicle population and the forecasts from the 2045 MTP.

John Hodges-Copple will remove the reference to the regional TDM program as a MOVES model strategy (page 8); the TDM program will remain an option for off-model analysis in calculating VMT and speed associated with the regional transportation model (page 7).

A commenter noted that the list of CMAQ projects in the region should be included as part of the review material.

The section on conformity determines will be revised to note that for areas outside of MPO jurisdiction, the first four years of the STIP (2018-21) serve as the plan.

A commenter asked for clarification on the MOVES analysis: does it report results for each individual county/ county portion or does it report aggregated results for the region? Todd Pasley responded that typically each county is run separately. It might be possible to consider 2 options:

- Determine results for the modelled area and non-modelled area separately, then add the results together, or:
- Calculate VMTs and speeds for each area, then use a weighted average and do a single MOVES run.

A question was raised about the purpose of the future total vehicle population/mix. Todd Pasley responded that in MOVES, vehicle population is used for emissions from vehicle starts and evaporative emissions. Since VOCs are not a pollutant of concern in the Triangle, this contribution is expected to be relatively small.

Clarity was sought on what constitutes the "latest planning assumptions." Eddie Dancausse responded that if 2016 data is the latest available, then that is what is used. The year of the assumptions is typically documented in the conformity report.

Behshad Norowzi noted that he is working with Phyllis Jones to create a lane miles and centerline miles database by county coving the 10 years of the STIP. Eddie Dancausse indicated that this sounds like a reasonable approach; a description of the method and data sources should be included in the conformity report.

4. **2045 MTP/Conformity Process Schedule –** Edward Dancausse reviewed the steps in the Conformity Process Schedule. It was noted that some of the names of participants need to be updated.

   The draft presented indicated that Burlington-Graham MPO would make the determination in November, but the BG MPO board typically would not meet in November. Eddie Dancausse will follow up with BG MPO staff to discuss an appropriate schedule and actions. One option may be for the BG MPO board to vote at its October meeting to approve the conformity report subject to final edits and authorize the board chair to sign the resolution at the appropriate time.

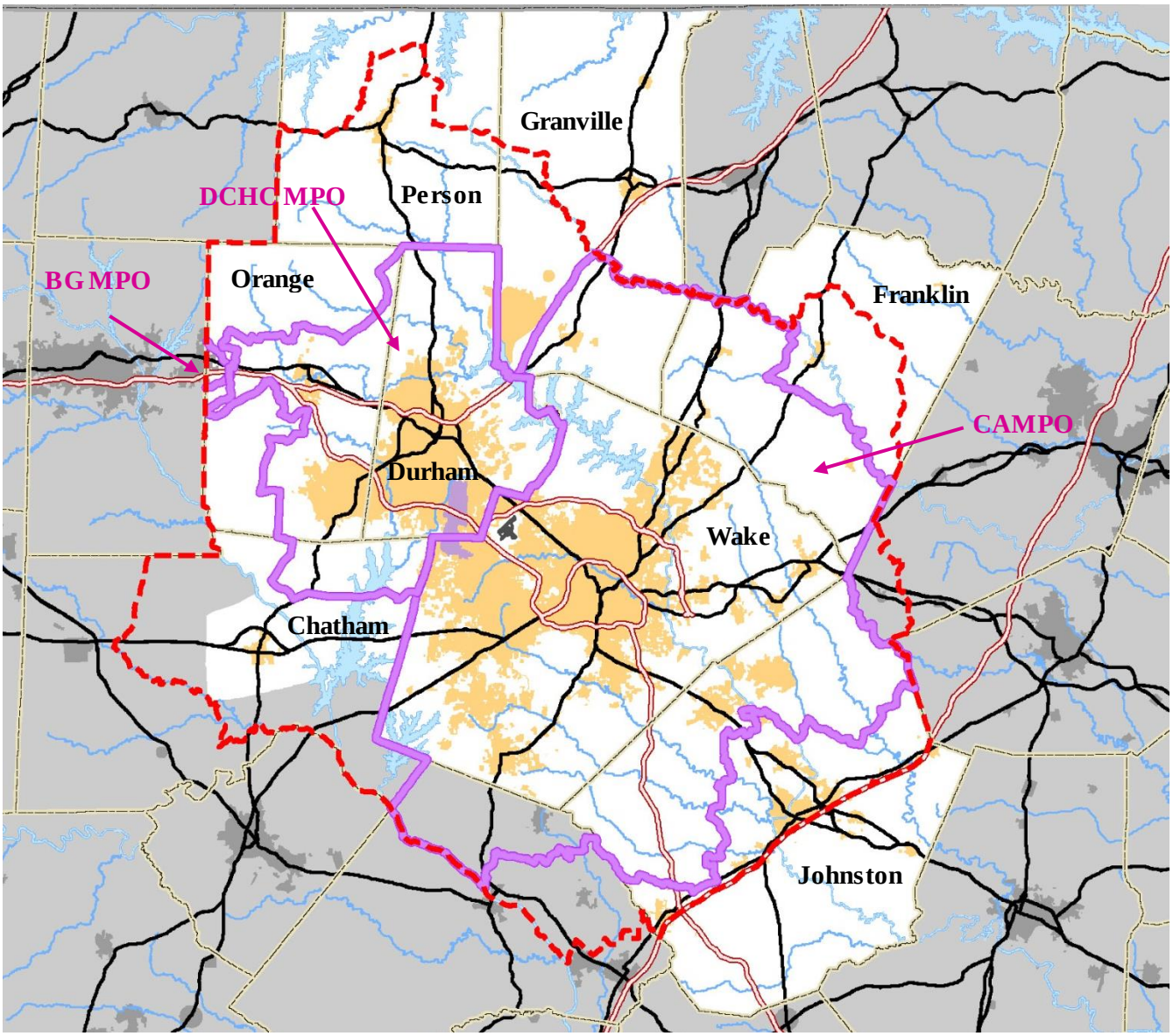
   A commenter wondered about the need for the emissions factor review, since the Triangle Regional Model now has a MOVES post-processor to translate VMT and speeds into emissions. The sense was that it would still be worthwhile to have this step as a QA/QC step to ensure the outcomes are the same. It was noted that Gerald Daniel will be doing the transportation modelling for this effort.

5. **Other Business/Next Steps –** John Hodges-Copple summarized the following follow-up items:
   a. John Hodges-Copple will update the Pre-Analysis Consensus Plan based on the discussion and circulate the revised version and meeting summary to the participants.
   b. Heather Hildebrandt will create the initial list of CMAQ projects in the region for review by the participants.
   c. Eddie Dancausse will discuss schedule and conformity determination steps with Burlington-Graham MPO.
   d. A revised schedule with updated staff participants will be prepared.
   e. John Hodges-Copple will follow up on the population by county for each analysis year (2025, 2035, 2045).
   f. John Hodges-Copple will schedule a follow-up meeting for late August or September, if needed.

Triangle Region Transportation Conformity: Pre-Analysis Consensus Plan

2045 Metropolitan Transportation Plans

September 5, 2018 version



Prepared Cooperatively Between the
Capital Area MPO
Durham-Chapel Hill-Carrboro MPO
Burlington-Graham MPO
North Carolina Department of Transportation
and the
Federal Highway Administration

Triangle Region Transportation Conformity: Pre-Analysis Consensus Plan

Metropolitan Transportation Plans

September 5, 2018 version

Triangle Area (8-hour ozone): Chatham County (part), Durham County, Franklin County, Granville County, Johnston County, Orange County, Person County, Wake County. The map on page 4 shows the current boundaries of MPOs and the Triangle Regional Transportation Model compared to the Triangle Area Ozone Maintenance Area.

The Capital Area Metropolitan Planning Organization (CAMPO), Durham-Chapel Hill-Carrboro MPO (DCHC MPO), Burlington-Graham MPO (BGMPO) and NCDOT (representing rural portions of the Triangle ozone maintenance area) are proposing the following plan and procedures to conduct a transportation conformity analysis. This plan is being submitted to the interagency consultation partners for soliciting consensus before commencement of a full-scale transportation conformity analysis. The plans and procedures may be revised as the MPOs and NCDOT proceed with the analysis. Notification of changes will be made to the interagency consultation partners.

Metropolitan Transportation Plan (MTP) and Transportation Improvement Program (TIP)

1. **Existing Land Use and Demographics:** Land use and demographic data were collected by regional planning agencies and staff members of DCHC MPO and CAMPO. A regional methodology was agreed upon that included residential and employment data for a 2013 baseline, and preparing growth forecasts to 2045 for the area in the Regional Travel Model.

   Residential data included population, dwelling units, households, income and university-related group quarters population (dormitories, fraternities and sororities). Residential data was based on Census 2010 data, supplemented with Certificate of Occupancy data to estimate 2013 values. Group quatrters-related population was supplied by area universities. Residential data were reviewed by local planning department staff.

   Employment data was based on data maintained by InfoUSA. Large employers were contacted directly to verify work location and number of employees. The results were verified for each county against employment benchmark totals obtained from the Bureau of Economic Analysis and from Woods & Poole. Zonal employment data were checked for consistency against existing land use maps and were reviewed by local planning department staff.

   Forecasts were prepared using CommunityViz growth allocation software in a joint project by both MPOs. Data and forecasts were submitted for public review by each MPO, and adopted

for use in developing travel demand and air quality forecasts by each MPO's Transportation Advisory Committee. Modeling included a range of land use scenarios, including a baseline forecast based on current plans. The preferred land use forecast was selected by the MPOs in concert with the preferred highway and transit networks matched to the land use pattern.

2. **MTP Travel Demand Model Version and Validation (Base) Year:** CAMPO and the DCHC MPO use a single regional travel demand model, a TransCAD model with a 2013 base year. The version of the model used in this analysis is TransCAD Model TRM v6.

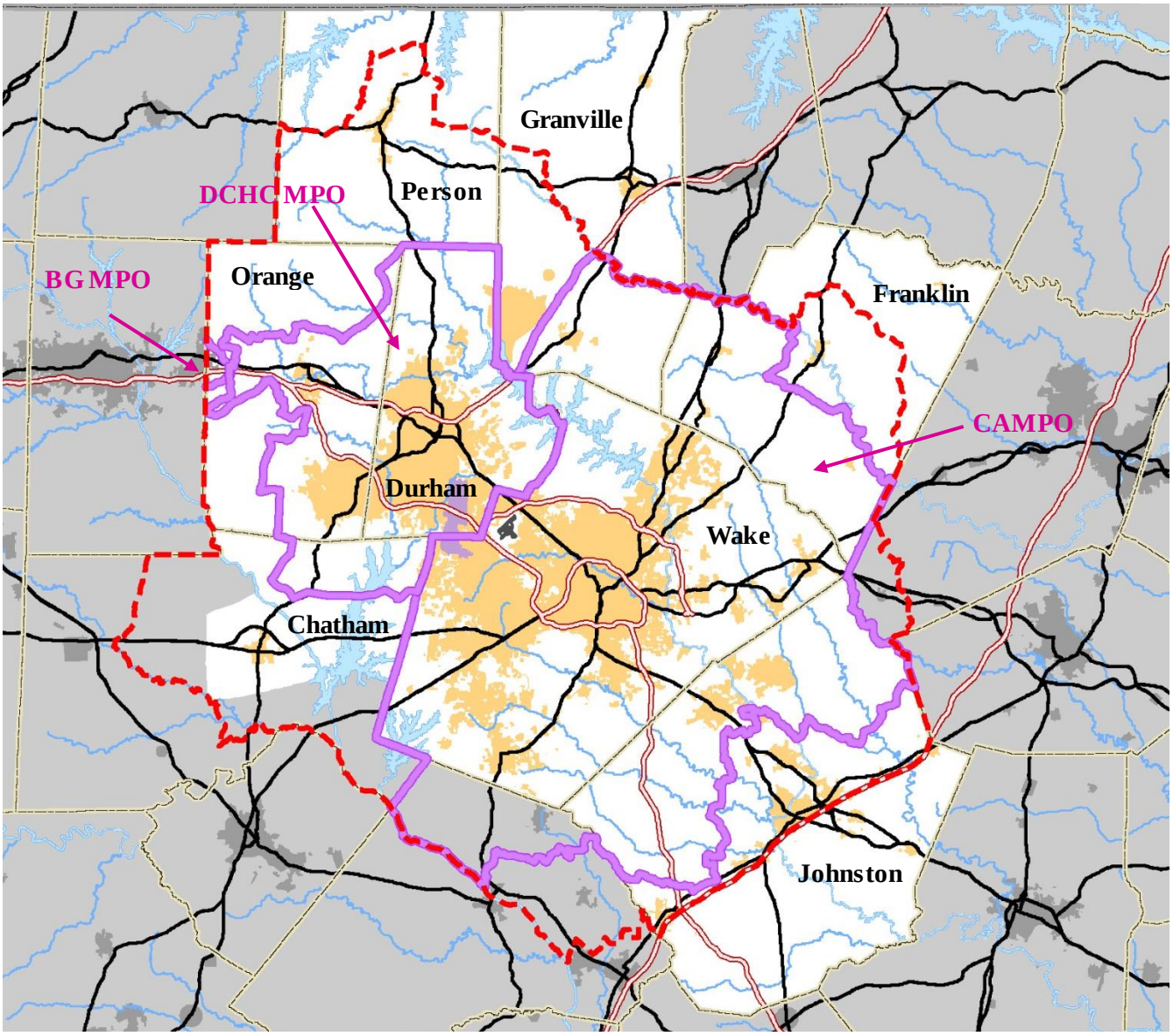
3. **MTP Horizon Years:** 2040 (BG MPO), 2045 (DCHC MPO and CAMPO)

4. **MTP Travel Demand Model Intermediate Project Years:** 2025, 2035.

5. **TIP years:** 2018-2021

6. **Air Quality Conformity Analysis Years (O3):** The table on page 5 summarizes air quality analysis methods and years for the different parts of the Triangle Ozone Maintenance Area, for ozone. The use of different analysis methods in different parts of the nonattainment area does not preclude future unified conformity efforts in the region.

Triangle Ozone Maintenance Area (Area shown in white)



Legend

- Triangle Ozone Maintenance Area
- TRM Modelled Area
- MPO Boundary
- Major Road Or Highway
- RTP
- Municipal Limit
- County Boundaries

BG MPO is Burlington-Graham MPO (small part of Orange County in the maintenance area).

CAMPO is Capital Area MPO (all of Wake County and parts of Franklin, Granville, Harnett and Johnston Counties)

DCHC MPO is Durham-Chapel Hill-Carrboro MPO (all of Durham and parts of Orange and Chatham Counties

Triangle Area Transportation Conformity Analysis Matrix

County	Area model status	Area emissions budget status	Emissions analysis source	Emissions comparison years			
				2025	2035	2040	2045
Person	modeled area	emissions budget	TRM	O3	O3	O3	O3
	rural area	emissions budget	NMAA (factored)[1]	O3	O3	O3	O3
Granville	modeled area	emissions budget	TRM	O3	O3	O3	O3
	rural area	emissions budget	NMAA (factored)[1]	O3	O3	O3	O3
Franklin	modeled area	emissions budget	TRM	O3	O3	O3	O3
	rural area	emissions budget	NMAA (factored)[1]	O3	O3	O3	O3
Johnston	modeled area	emissions budget	TRM	O3	O3	O3	O3
	rural area	emissions budget	NMAA (factored)[1]	O3	O3	O3	O3
Chatham (part)	modeled (all)	emissions budget	TRM	O3	O3	O3	O3
Orange	modeled (all)	emissions budget	TRM	O3	O3	O3	O3
Durham	modeled (all)	emissions budget	TRM	O3	O3	O3	O3
Wake	modeled (all)	emissions budget	TRM	O3	O3	O3	O3

TRM: Triangle Regional Model NMAA: Non-Modeled Area Analysis O3: Ozone

[1] where part of a county is covered by the regional model, the remainder of the county was analyzed using the NCDOT rural spreadsheet, factored by the percentage of county's population that lives outside of the modeled area.

Additional table notes and explanations:

County: The Triangle Ozone maintenance area consists of 7 whole counties plus 4 townships in NE Chatham County: New Hope, Williams, Center and Baldwin.

Model Status: The ozone maintenance areas of 4 counties are completely within the Triangle Regional travel demand Model (TRM) boundary: Chatham, Durham, Orange and Wake. The other 4 counties, Granville, Franklin, Person and Johnston, have parts that are within the modeled area and parts that are in non-modeled rural areas. Where part of a county is covered by the regional model, the remainder of the county was analyzed using the NCDOT rural spreadsheet, factored by the percentage of the county's population that lives outside of the modeled area.

SIP and emissions test: Each county (portion of county for Chatham) has a motor vehicle emissions budget.

Emissions analysis source: VMT and speeds for the emissions analysis will be derived from the TRM where it is available. Person County VMT and speeds will come from the NCDOT NMAA spreadsheet; VMT and speeds for the portions of Franklin, Granville, Johnston and Person outside the modeled area will come from the NCDOT analysis spreadsheet factored by the percentage of each county's population in the rural area (method used in prior analyses).

Emissions analysis years (Conformity and/or SIP): The Triangle has a current SIP based on 8-hour ozone standards. Emissions must be calculated for any year with a Motor Vehicle Emissions Budget (MVEB), and at other years if needed to ensure that no analysis interval exceeds 10 years, including the MTP's horizon year (2045 for DCHC MPO and CAMPO; 2040 for BG MPO). Proposal: For conformity purposes, the entire area will be analyzed for 2025, 2035 (MTP intermediate years), 2040 (BG MPO horizon year) and 2045 (DCHC MPO and CAMPO horizon year).

List of Specific <u>Conformity</u> Years (8-hour Ozone SIP):

a. Horizon: 2040 (BG MPO), 2045 (DCHC MPO and CAMPO)
b. SIP (8-Hour Ozone) Emission Budget Years: 2008 and 2017
c. Emission Comparison Years for NO_x: 2025, 2035, 2040, 2045

7. **Non-attainment/Maintenance Counties:** Ozone maintenance counties are Chatham County (part), Durham County, Franklin County, Granville County, Johnston County, Orange County, Person County, Wake County.

8. **Travel Demand Modeling Tools:** Triangle Regional Model's TransCAD model housed at ITRE and NCDOT rural spreadsheet. The TransCAD model covers all of Durham, Orange and Wake Counties, all of the portion of Chatham County that is in the Ozone maintenance area, and portions of Franklin, Granville. Person and Johnston counties (which are maintenance for ozone) along with a portion of Harnett County (which is in attainment). Tolling capability has been added to the model to account for VMT and speed impacts associated with North Carolina Turnpike Authority projects.

   NCDOT utilizes a spreadsheet that incorporates the vehicle-miles traveled (VMT) universe file and historical trends to project the VMT in the horizon 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 generated by the spreadsheet are incorporated into the MOVES2014a emissions program. Then, emission factors developed by MOVES2014a are imported into the spreadsheet and multiplied by forecasted VMT to generate emissions. The rural spreadsheet model will be used for those portions of non-attainment counties not covered by the Triangle Regional Model, factored by the county population percentage outside of the modeled area as determined by the 2010 Census. This methodology has been used to demonstrate conformity in other areas and has received approval from interagency partners.

9. **Modal Split/Mode Choice:** Not Applicable for rural areas where Non-modeled Area Analysis spreadsheet used; nested LOGIT model in Triangle Region Travel Demand Model used in modeled area.

10. **VMT Adjustments:** 8-Hour Ozone SIP – No VMT adjustments

11. **Motor Vehicle Emissions Budgets/Conformity Test:** The Triangle was redesignated to attainment for the 1997 8-hour ozone national ambient air quality standard (NAAQS) effective December 26, 2007. Motor vehicle emissions budgets (MVEBs) for transportation conformity determinations were established as part of the maintenance plan for the area. The MVEBs were revised to be compatible with the MOVES model effective February 3, 2014. The EPA approved the finding of insignificance for volatile organic compounds' (VOCs) contribution from motor vehicle emissions to the 8-hour ozone pollution in the Triangle area. Therefore, the MVEBs only include NOx budget values, for the years 2008 and 2017.

Each county (or portion for Chatham County) has a Motor Vehicle Emission Budget established for 2008 and 2017. The table below shows the individual 2017 NO_x budgets which will be compared to future year emissions.

NOx MVEB Comparisons for Transportation Conformity					
Budget Area	MVEB (kg/day)	Comparison Year			
		2025	2035	2040	2045
Chatham*	2017 NOx Budget	2,112	2,112	2,112	2,112
Durham	2017 NOx Budget	12,610	12,610	12,610	12,610
Franklin	2017 NOx Budget	2,645	2,645	2,645	2,645
Granville	2017 NOx Budget	3,278	3,278	3,278	3,278
Johnston	2017 NOx Budget	11,838	11,838	11,838	11,838
Orange	2017 NOx Budget	7,364	7,364	7,364	7,364
Person	2017 NOx Budget	1,674	1,674	1,674	1,674
Wake	2017 NOx Budget	38,441	38,441	38,441	38,441

* partial county, covering only the maintenance area within Chatham County

12. Control Strategies: Emission reduction credits will be taken for the following on-road mobile SIP commitments. Currently there are no TCMs in the Triangle Area SIP.

Strategy	**Methodology/Approach**
I/M Program	*Accounted for in the MOVES model*
Tier 2/Tier 3 vehicle Emission Standards	*Accounted for in the MOVES model*
Low Sulfur Gasoline and Diesel fuels	*Accounted for in the MOVES model*
Heavy Duty Vehicle Rules 2004 and 2007	*Accounted for in the MOVES model*
Low RVP Gasoline	*Accounted for in the MOVES model*
On board vapor recovery	*Accounted for in the MOVES model*

13. Mobile Source Emission Reduction Strategies: The MPOs anticipate taking emission credits for Mobile Source Emission Reduction Strategies, as appropriate and allowed by Federal guidance documents. Some potential strategies are listed below.

Strategy	**Modeled**	**Year(s) Credited (as appropriate)**
Park-n-Ride Lots:	*included*	*Park-n-ride lots are incorporated in modeling results*
Vanpools:	*included*	*ridesharing is incorporated in modeling results*
TDM Programs:	*Off model*	*all modeled years*
ITS:	*Off model*	*all modeled years*
Transit Improvement:	*included*	*transit facilities and serves are incorporated in modeling results*
Land Use Changes:	*included*	*land use is incorporated in modeling results*

14. MOVES Model Settings: The following model-input parameters will be used in the conformity analysis.

Parameter	**Details and Data Sources**
a. *Emissions Model Version:*	MOVES2014a
b. *Emission Model Time Period:*	Typical Summer Weekday (NOx)
c. *Evaluation month:*	July

d. ***Travel Periods:*** Based on VMT and speed data availability from the Triangle Regional Model (TRM) and Non-Modeled Area Analysis (NMAA) models, processed according to USEPA guidance to generate hourly speed and VMT distribution data in the required MOVES input formats.

e. ***Pollutants Reported:*** NOx (8 Hr Ozone)

f. ***Emissions Budget Year(s):*** 2017

g. ***Emissions Analysis Years:*** 2025, 2035, 2040 and 2045

h. ***Temperature and Relative Humidity:*** 2005 July monthly average 24-hour temperature and relative humidity consistent with data used to develop MVEBs

i. ***Vehicle Classes:*** 13 (MOVES vehicle categories)

j. ***VMT Mix:*** Statewide mix based on 2016 data using the method in the August 2004 USEPA Guidance.

k. ***Speed Distribution:*** From TRM and NMAA data

l. ***Source Type (vehicle) Age Distribution:*** The latest available 2016 vehicle registration data provided by NCDOT, which also includes a breakdown of the number of vehicles by model year, will be used to create the required source type age distribution input file for each county. As per EPA guidance, the source type age distribution will not be projected for future years.

m. ***I/M Program:*** The following I/M program parameters will apply to applicable counties: compliance rate = 96%, waiver rate = 5% with an exemption for vehicles from the 3-year latest model years. I/M program does not apply to Person County.

n. ***Gasoline Reid Vapor Pressure:*** 9.0 psi for all counties

o. ***Source Type (vehicle type) Population:*** Vehicle population estimates will be developed for each future modeling year based on the latest available 2016 vehicle registration data provided by NCDOT. This data includes the total number of registered vehicles by county, divided into nine source type categories. The data will first be reorganized into thirteen source type categories (i.e. passenger cars, light commercial trucks, combination long-haul trucks, etc.) as required for MOVES2014a. These source type population estimates will then be projected for each required modeling year, using the same base and future year-county human population data that were used in the TDM model, according to the following formula:

Total Vehicle Population $_{\text{future year}}$ =
Total Vehicle Population $_{\text{base year}}$ * (Human Population $_{\text{future year}}$ / Human Population $_{\text{base year}}$)

15. **CMAQ Projects:** NCDOT and the MPOs will provide a list of CMAQ projects for the final conformity report.

16. **Regionally Significant Projects (Federal or Non Federal):** The designations used in the previous 2040 MTP conformity report will be retained and updated to the 2045 horizon year.

17. **Backup List of Exempt Projects (Federally Funded):** The MPOs will identify exempt projects according to the Conformity Regulation (40 CFR 93.126) as a backup plan in the event of a conformity lapse. A discussion on the purpose of this list can be a part of the conformity determination report (CDR) and the list of projects can be added as an appendix in the CDR. Each MPO/rural area will review and update the list in the previous 2040 MTP conformity report and extend to the 2045 horizon year.

18. **Conformity Schedule:** A draft conformity schedule has been developed and is provided as an attachment to this document.

19. **Conformity Determinations:** Four organizations will be responsible for making the conformity determinations in four distinct parts of the Triangle Ozone Maintenance Area:

    a. the NC Capital Area MPO within the CAMPO metropolitan area boundary –all of Wake County plus parts of Franklin, Granville and Johnston Counties.
        - Adopt the 2045 MTP (previous adoption can be used if there are no amendments)
        - Make conformity finding on the 2045 MTP and conforming 2018-21TIP
    b. the Durham-Chapel Hill-Carrboro MPO within its metropolitan area boundary – all of Durham County and parts of Orange and Chatham counties.
        - Adopt the 2045 MTP (previous adoption can be used if there are no amendments)
        - Make conformity finding on the 2045 MTP and conforming 2018-21 TIP
    c. the Burlington-Graham MPO within its portion of the metropolitan area boundary in western Orange County.
        - Make conformity finding on the 2040 MTP and conforming 2018-21 TIP
    d. the NCDOT in a rural area that is comprised of those portions of Chatham, Orange, Person, Franklin, Granville and Johnston Counties that remain outside of any MPO metropolitan area boundary.
        - Make conformity finding for the 2018-21 STIP projects within the designated areas.

    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.