

- SIP Budget Years: 2015 (Forsyth County)
- Comparison Years for CO SIP:
 - 2015 MVEB will be compared to the analysis years of 2015, 2025 and 2035

4.0.4 Emission comparison years (PM 2.5)

Guilford and Davidson County has a PM 2.5 maintenance SIP. The SIP provides a 2015 and 2021 budget.

- SIP Budget Years: 2015 and 2021 (Guilford and Davidson County)
- Comparison Years for PM2.5 SIP:
 - 2015 MVEB will be compared to the analysis years of 2015
 - 2021 MVEB will be compared to the analysis years of 2021, 2025 and 2035

4.1 Emissions Model

MOVES2010b was used to develop the emissions factors. Motor vehicle emission controls considered in the MOVES2010b model include the following:

Strategy

- I/M Program*
- 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

- Accounted for in MOVES model*
- Accounted for in MOVES model*
- Accounted for in MOVES model*
- Accounted for in MOVES model*
- Accounted for in MOVES model*
- Accounted for in MOVES model*

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 Emissions Factors

The following MOOVES2010b model-input parameters will be used in the conformity analysis.

CO Maintenance Area: Forsyth County

PM_{2.5} Maintenance Area: Davidson and Guilford Counties

Parameter	Details	Data Source
a. <i>Emissions Model Version(s):</i>	MOVES2010b	
b. <i>Emission Model Runs:</i>	Typical Winter Weekday (CO) tons/day Annual (NOx and Direct PM _{2.5}) kilogram/yr	
c. <i>Time Periods:</i>	Daily for CO Annually for NOx and Direct PM _{2.5}	
d. <i>Pollutants Reported:</i>	CO, NOx (for PM _{2.5}) and Direct PM _{2.5}	
e. <i>Emissions Budget Years:</i>	CO: 2015 PM 2.5: 2011 & 2021	
f. <i>Emissions Analysis Years:</i>	2015, 2021, 2025, 2035 (interpolate for 2021)	
g. <i>Vehicle Classes:</i>	13	

- h. **Temperature and Relative Humidity:** Hourly average temperature and relative humidity calculated for each month. Meteorological data is from the GSO Triad Regional Airport.
- i. **VMT Mix:** Statewide mix based on 2009 data using the method in the August 2004 USEPA Guidance.
- j. **Speeds:** From PTRM and Non-Modeled Area Analysis Spreadsheet
- k. **Vehicle Age Distribution:** Based on 2010 vehicle registration data provided by NCDOT.
- l. **I/M Program:** 2015, 2021, 2025, 2035: OBD-II for Davidson, Forsyth and Guilford Counties.
- m. **Anti-tampering Applicability:** Not included in MOVES
- n. **RVP:** Calendar Monthly

	RVP
Jan, Dec	15
Feb, March, April, Oct, Nov	13.5
May	9.0
June, July, Aug, Sept	7.8

- o. **Strategies:** See item #12 above
- p. **I/M Compliance Factor Coverage (CFC):** *This input to MOVES accounts for the I/M compliance rate, waiver rate, and regulatory coverage adjustment for applicable vehicles. When calculated by MOVES guidance methods this value is 90.25% for passenger cars, 84.84% for passenger trucks, and 79.42% for light commercial trucks for all 3 counties.*
- q. **Evaluation Month:** 12 month annual emissions or any part thereof (output can be disaggregated at the user's discretion)
- r. **VMT:** PTRM and Non-Modeled Area Analysis Spreadsheet
- s. **Diesel Sulfur Content:** MOVES considers all recent rulemakings (Tier 2, ultra low sulfur diesel, etc). The default data in MOVES can be relied on here. Default database values are by month and county and can be requested by the MPO.
- t. **Source type (vehicle type) population:** Year-specific vehicle populations, broken down by source type (i.e. passenger cars, light commercial trucks, combination long-haul trucks, etc.) will be developed for each county. These source type population estimates will be based on the latest available (2010 or later) total number of registered

vehicles in each county, obtained from the Office of State Budget and Management (OSBM). Total registered vehicle populations for future years will be projected using certified base and future year human population data, also obtained from OSBM.

$$\text{Future year total vehicle population} = \text{Base year total vehicle population} * \frac{(\text{Future year human population})}{(\text{Base year human population})}$$

MOVES-default source type population distributions for the appropriate county-year will then be applied to the future year total to generate the final source type population data.

4.2 Transportation Control Measures

The North Carolina State Implementation Plan lists no transportation control measures pertaining to the Triad.

4.3 Emissions Comparison Tests by Location and Pollutant

The USEPA designated Forsyth County for carbon monoxide (CO) as defined by the EPA. The 1990 Clean Air Act Amendments (CAAA) designated these areas as moderate non-attainment area for CO. However, due to improved monitoring data, this area was redesignated as maintenance for CO on November 7, 1994.

USEPA approved the second ten-year update of these emissions budgets on September 20, 2004 with an effective date of November 19, 2004. The last year for VOC and NO_x emissions budgets is 2015; therefore, analysis years beyond 2015 were compared to the 2015 emissions budget. The USEPA approval and promulgation rulings for CO and ozone containing the budgets are in Appendix A.

The USEPA designated Davidson and Guilford Counties, in their entirety, as a non-attainment area for the PM 2.5 Standard with an effective date of April 5, 2005. This area was re-designated from non-attainment to maintenance for the 1997 PM 2.5 Standard effective on December 19, 2011.

The maintenance designations cover the following geographic areas:

- Guilford County (PM 2.5)
- Davidson County (PM2.5)
- Forsyth County (CO)

Four organizations 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:

- the Burlington-Graham Urban Area MPO (BGMPO) within its portion of the metropolitan area boundary in Guilford County;
- the Greensboro Urban Area MPO (GUAMPO) within the metropolitan area boundary of Guilford County;
- the High Point Urban Area MPO (HPMPO) within its metropolitan area boundary in Guilford, Davidson and Forsyth Counties;

- the Winston-Salem Urban Area MPO (WSMPO) within its portion of the metropolitan area boundary in Forsyth and Davidson Counties;
- the NCDOT in donut areas that is comprised of those county portions of Davidson that remain outside the MPO metropolitan area boundary.

Table 11 summarizes the emissions test used and decision-making responsibility for conformity findings in each County.

Table 11. Emissions Test and Responsibility for Conformity Findings

Location	Pollutant(s)	Emissions Test	Conformity Finding Responsibility
Guilford County	PM 2.5	Budget	Greensboro MPO, High Point MPO & Burlington Graham MPO
Davidson County	PM 2.5	Budget	Winston Salem MPO, High Point MPO & NCDOT for donut Davidson County
Forsyth County	CO	Budget	Winston Salem MPO & High Point MPO

The results of the emission comparisons are summarized by County in Tables 18 through 20. Detailed emissions analysis results by county are contained in Appendix G.

Table 18. Forsyth County Emissions Comparison Summary

CO: Current CO SIP (tons/day)			
Area	Comparison Year		
	2015	2025	2035
FORSYTH MVEB (CO)	247.64	247.64	247.64
FORSYTH Emission Model Results	177.68	133.39	137.39

Table 19. Guilford County Emissions Comparison Summary

PM 2.5 (NO _x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (NO _x)	11,133,605	6,309,650	6,309,650	6,309,650
GUILFORD Emission Model Results	6,137,940	4,178,070	3,638,970	3,156,990

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
GUILFORD MVEB (PM 2.5)	421,841	421,841	421,841	421,841
GUILFORD Emission Model Results	192,030	140,714	134,387	137,717

Table 20. Davidson County Emissions Comparison Summary

PM 2.5 (NO_x): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
DAVIDSON MVEB (NO_x)	4,086,413	2,148,938	2,148,938	2,148,938
DAVIDSON Emission Model Results	2,541,190	1,573,961	1,291,697	1,004,338

PM 2.5 (PM 2.5): The PM 2.5 Redesignation Effective 12/19/11 (kg/year)				
Area	Comparison Year			
	2015	2021	2025	2035
DAVIDSON MVEB (PM 2.5)	153,313	153,313	153,313	153,313
DAVIDSON Emission Model Results	82,731	52,694	47,009	43,245

5. Public Involvement and Interagency Consultation

The 2035 Transportation Plans are consistent with consultation requirements discussed in *40 CFR 93.105*. Interagency consultation was a cooperative effort on the part of the Burlington-Graham MPO, the Greensboro Urban Area MPO, the High Point Urban Area MPO, the Winston-Salem Urban Area MPO, the Piedmont Triad Area RPO, the North Carolina Department of Transportation, the North Carolina Division of Air Quality, the Environmental Protection Agency, the Federal Transit Administration, and the Federal Highway Administration. The process was administered by the Piedmont Authority for Regional Transportation (PART) on behalf of the partners and was organized according to the sections in the document titled *Triad Region Transportation Conformity:*

Pre-Analysis Consensus Plan, a document agreed to at the initial interagency consultation meeting on February 22, 2012 and updated periodically. Subsequent interagency consultation meetings were held on March 23, 2012, April 20, 2012, May 18, 2012, June 15, 2012, July 20, 2012, August 17, 2012, September 21, 2012 and October 19, 2012. 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 B.

Public review of this report was handled in accordance with each MPO, PART and RPO public participation policy for the LRTPs. Copies of all public participation policies are included in Appendix H. Comments from the general public participation process and interagency review are incorporated into the final Conformity Analysis and Determination Report. All written comments on the draft report from the general public and interagency review are included in Appendices I and J of the final report.

6. Conclusion

Based on the analysis and consultation discussed above the following transportation plans and TIPs conform to the purpose of the North Carolina State Implementation Plan. In every horizon year for every pollutant in each geographic area, the emissions expected from the implementation of the long-range plans and TIPs are less than the emissions budgets established in the SIP.

Table 17: Summary of Conformity Status of Triad LRTPs

Criteria (√ indicates the criterion is met)	Burlington-Graham MPO 2035 LRTP	Greensboro Urban Area MPO 2035 LRTP	High Point Urban Area MPO 2035 LRTP	Winston-Salem Urban Area MPO 2035 LRTP	Davidson County Donut Area projects from the Davidson County 2012-18 TIP
Less Than Emissions Budget(s) or Baseline	√	√	√	√	√
TCM Implementation	The NC SIP includes no Transportation Control Measures in the Triad Area				
Interagency Consultation	√	√	√	√	√
Latest Emissions Model	√	√	√	√	√
Latest Planning Assumptions	√	√	√	√	√
Fiscal Constraint	√	√	√	√	√

In the final Transportation Conformity Analysis and Determination Report, please refer to the resolutions of conformity finding, approval, and/or endorsement by the metropolitan planning organizations of the Piedmont Triad region in Appendices' K, L and M.