

2050 MTP – Alternatives Analysis

Emissions and Vehicle Miles Traveled (VMT)

Emissions

A table on the next page shows the daily pollutant emissions from the transportation sector for the various scenarios (i.e., Alternatives) in the base year (2016) and the horizon year (2050). An emissions model (MOVES3) uses Triangle Regional Model (TRM) output data, such as vehicle miles traveled (VMT) and vehicle speed, to calculate the data.

Despite the regional VMT climbing over 75% from 2016 to 2050, all of the pollutants decrease over the same period, and the only pollutant that increases, CO₂, does so by only 16%. This decrease is likely because MOVES3 assumes that the automobile fleet will continue to improve its energy efficiency, i.e., more miles per gallon, and the tailpipe pollutants will continue to decline, as well. There is little difference in the various pollutants among the four 2050 scenarios because there is little difference in VMT among those scenarios. VMT remains stubbornly fixed in the future scenarios because much of the population and employment growth occurs in suburban areas in which VMT reduction measures have little effect. In addition, the TRM is not very sensitive to VMT reduction measures such as Travel Demand Management (TDM) and non-motorized travel.

Vehicles Miles Traveled (VMT)

This document does not provide the various emissions by county. Those emissions are closely dependent on VMT, so it is simpler to provide the county VMT table on the next page instead of 45 emissions tables (nine counties multiplied by five emissions). The VMT table shows large increases from 2016 to 2050 in every county, with Chatham County and Wake County topping the growth list at 111% and 91%. It is also notable that Wake County's 25 million miles per day increases in VMT accounts for 60% of the 41 million miles per day increase for the entire modeling region.

Emissions	Year ==>	2016	2050	2050	2050	2050	% change
Pollutant	Scenario ==> Unit of Measure	Existing	Existing + Committed	Plans & Trends	Shared Leadership	All Together	2016 to 2050
Carbon Monoxide (CO)	1,000 kilograms	317	177	187	183	178	-44%
Nitrous Oxides (NOx)	1,000 kilograms	25	8	9	9	8	-68%
Volatile Organic Compounds (VOC)	1,000 kilograms	18	11	12	12	12	-37%
Particulate Matter (PM2.5)	1,000 kilograms	0.54	0.31	0.32	0.31	0.31	-43%
Carbon Dioxide (CO2)	1 million kilograms	28	32	34	33	32	16%
Daily Energy Consumption per capita	gallon of gasoline	1.6	1.8	1.9	1.9	1.8	16%

Vehicle Miles Traveled (millions of miles, daily)	2016	2050	2050	2050	2050	% change
Scenario ==> County*	Existing	Existing + Committed	Plans & Trends	Shared Leadership	All Together	2016 to 2050
Chatham	1.7	3.9	3.7	3.6	3.6	111%
Durham	9.0	13.9	14.2	14.2	13.9	54%
Granville	1.2	2.1	2.0	1.9	1.9	59%
Franklin	1.3	2.5	2.4	2.4	2.3	72%
Harnett	1.0	1.7	1.6	1.6	1.6	64%
Johnston	5.6	10.4	10.4	10.1	9.9	78%
Orange	4.9	7.8	7.7	7.6	7.6	55%
Person	0.6	0.8	0.8	0.8	0.8	25%
Wake	27.0	51.0	52.8	51.9	51.7	91%
Total	52.4	94.0	95.6	94.0	93.3	78%

* Values are for the area of the County that is within the Triangle Regional Model boundary.