



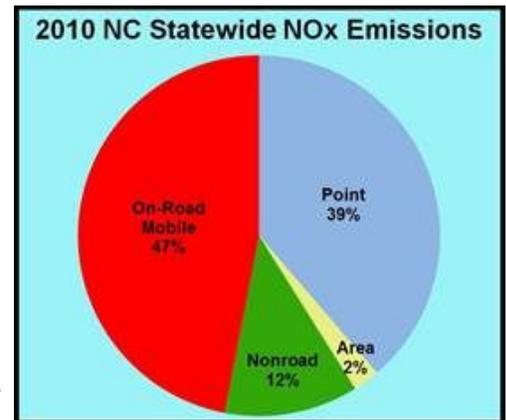
NC CLEAN ENERGY TECHNOLOGY CENTER

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MOBILE EMISSIONS AND THE ENVIRONMENT An Overview and What You Can Do

Twenty-four North Carolina counties are designated as maintenance areas for ground-level ozone or particulate matter through National Ambient Air Quality Standards (NAAQS). Ground-level ozone forms when nitrogen oxides (NO_x) react with volatile organic compounds (VOCs) in the presence of heat and sunlight. Ozone irritates eyes, damages lungs, and aggravates respiratory problems, with greater susceptibility for children and the elderly. The NC Division of Air Quality estimates that vehicle emissions are the main source of NO_x emissions in North Carolina. In addition, carbon dioxide (CO₂) and other greenhouse gas (GHG) emissions trap the earth's heat and contribute to global climate change.



Combusting one gallon of gasoline creates **19** pounds of (CO₂).

Advancements in emission control technology for non-methane organic gases (NMOG), volatile organic compounds (VOCs) or hydrocarbons (HC), nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) have been initiated in response to air quality concerns and federal regulations. The emissions certification of your vehicle as well as the miles per gallon performance are important factors to consider when purchasing a new or used vehicle.

U.S Emissions Measurement Standards

In 2004 the Federal Tier 2 Standards required all auto manufacturers' light-duty fleets (SUVs, vans, pickup trucks, and passenger vehicles) to meet an average NO_x emission standard of 0.07 grams per mile at a useful life of 120,000 miles by 2010. National regulations were also implemented that reduced sulfur levels in gasoline and placed tighter control on evaporative and refueling emissions. In additions PM emissions were reduced in heavy duty diesel vehicles 90% between 1998 and 2010 in conjunction with the removal of sulfur in diesel fuel.

Beginning in 2010, Federal Tier 2 Standards required the average tailpipe emission levels for an auto manufacturers' entire light-duty fleet to meet Bin 5 standards or lower. Vehicles are certified via federal standards to one of eight Bins, with Bin 1 having the least emissions.

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Overall Difference in NMOG, NOx, and CO for Tier 2 Bins compared with the Bin 5 Standard

Bin 1	Bin 2	Bin 3	Bin 4	Bin 5	Bin 6	Bin 7	Bin 8
-100%	-70%	-49%	-38%	-	14%	38%	75%

National Greenhouse Gas (GHG) Emissions Standards and Corporate Average Fuel Economy (CAFE) Standards have been developed in a joint effort by the Environmental Protection Agency (EPA) and Department of Transportation’s National Highway Traffic Safety Administration (NHTSA). Similar to the Tier 2 Standards, average GHG Emissions Standards have been established for auto manufacturers’ light-duty vehicles for model years 2012 through 2016. With national GHG Emissions Standards fully enacted by 2016, the average tailpipe emission levels for an auto manufacturers’ entire light-duty fleet should meet CAFE standards of 250 grams of CO2 per mile. **Through advancements in technology and new fuel economy regulations, the NHTSA standards project that all light-duty fleets will meet an average of 35.5 miles per gallon (MPG) by 2016.**

Projected Fleet-Wide Emissions Compliance Levels under NHTSA and CAFE CO2 Standards (g/mi) and Corresponding Fuel Economy (MPG)					
	2012	2013	2014	2015	2016
	(g/mi) (MPG)				
Passenger Cars	263 33.8	256 34.7	247 36	236 37.7	225 39.5
Light Trucks	346 25.7	337 26.4	326 27.3	312 28.5	298 29.8
Combined Cars & Trucks	295 30.1	286 31.1	276 32.2	263 33.8	250 35.5

National standards have also been created for 2014-2018 model year medium- and heavy-duty vehicles. Moreover transportation fuel sold in the U.S. is required to contain a minimum amount of renewable fuel. Blending requirements are increasing annually from 7.5 billion to 36 billion gallons in 2022.

Vehicle emission standards continue to apply to all light-duty vehicles, regardless of whether the fueling system uses gasoline, diesel, or alternative fuels. However vehicles that can operate on two fuels such as E85 flex fuel vehicles and bi-fuel natural gas a propane vehicles are certified on the dirtier fuel and thus the Bin rating will not reflect the cleaner burning alternative. Window stickers required by the EPA and DOT provide fuel economy and environmental ratings to help consumers compare energy use, fuel cost, and environmental impact between traditional gasoline-powered and advanced technology vehicles. Consider purchasing a cleaner-operating, fuel-efficient vehicle using [EPA’s Green Vehicle Guide](#) and the [U.S Dept of Energy’s Fuel Economy Guide](#).

For more information visit:

- EPA Green Vehicle Guide- www.epa.gov/greenvehicles
- DOE Fuel Economy Guide- www.fueleconomy.gov
- EPA Regulations - <http://www.epa.gov/otaq/climate/regulations.htm>
- DOE Fuel Economy Labels - <http://www.fueleconomy.gov/feg/label/>
- Greenhouse Gas Calculator - <http://www.epa.gov/cleanenergy/energy-resources/calculator.html>
- ACEEE’s Green Car Guide - <http://www.greenercars.org/>
- Clean Air Carolina - www.cleanaircarolina.org
- NC Division of Air Quality Smoking Vehicle Complaint Form - <http://www.ncair.org/motor/smoking.shtml>

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