

Air & Noise

Air – Overview

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APPLICABILITY

An air assessment that considers a project’s impact on air quality will be completed for every federal-aid and state-funded transportation project.

For federal-aid projects, the 1990 Clean Air Act (CAA) amendments and guidelines, issued by the Environmental Protection Agency (EPA), set forth guidelines to be followed by agencies responsible for attainment of the National Ambient Air Quality Standards (NAAQS). The NAAQS were developed with the goal of reducing air pollution nationwide to prevent instances of air pollution-related health impacts. The CAA requires that federal transportation projects are consistent with state air quality goals, found in the State Implementation Plan (SIP). The process to ensure this consistency is called Transportation Conformity. Conformity to the SIP means that transportation activities will not cause new violations of the NAAQS, worsen existing violations of the standards, or delay timely attainment of the relevant standard.

For state-funded projects, the Georgia Environmental Policy Act (GEPA) sets forth guidance on air quality in order to determine if a project would adversely or significantly impact air quality.

REGULATIONS, GUIDANCE AND POLICY

An air assessment shall be conducted in compliance with the following:

- > *Section 176(c)– Conformity, CAA as amended;*
- > *Title 40 Code of Federal Regulation, Part 93.126–Exempt Projects;*
- > *The National Environmental Policy Act (NEPA) of 1969 as amended; and*
- > *GEPA, Official Code of Georgia 12-16-1.*

AIR POLLUTANTS

The NAAQS have been established for air pollutants identified by EPA as being of concern nationwide. These air pollutants, referred to as criteria pollutants, are carbon monoxide (CO), lead, nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), ozone (O₃), and sulfur dioxide (SO₂). The sources of these pollutants, effects on human health and the nation's welfare, and occurrence in the atmosphere vary considerably. In addition to the criteria pollutants, EPA also regulates Mobile Source Air Toxics (MSATs).

Table 1 describes the NAAQS criteria pollutants and MSATs.

Table 1 – NAAQS Criteria Pollutants and MSATs

Pollutant	Description
Carbon Monoxide (CO)	Carbon monoxide is a colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.
Lead	Lead is a chemical element in the carbon group. Lead is a soft, malleable, and heavy post-transition metal.
Nitrogen Dioxide (NO ₂)	Nitrogen dioxide belongs to a family of highly reactive gases called nitrogen oxides (NO _x). A suffocating, brownish gas, nitrogen dioxide is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.
Particulate Matter (PM)	Particulate matter is the term for solid or liquid particles found in the air. Coarse dust particles (PM ₁₀) are 2.5 to 10 micrometers in diameter. Fine particles (PM _{2.5}) are 2.5 micrometers in diameter or smaller.
Ozone (O ₃)	Ground-level O ₃ (the primary constituent of smog). O ₃ is created by sunlight acting on NO _x and volatile organic compounds in the air.
Sulfur Dioxide (SO ₂)	These gases are formed when fuel containing sulfur (mainly coal and oil) is burned, and during metal smelting and other industrial processes.
Mobile Source Air Toxics (MSATs)	EPA identified 21 MSATs from the 188 air toxics listed by the CAA. The six priority MSATs include benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.

EPA's regulations on lead are focused on smelter and battery plants, the major sources of lead in the air. A regulatory ban on the introduction of gasoline produced with the use of any lead additive was issued as of January 1, 1996.

Sulfur levels in fuel have been slowly ratcheted down. EPA's Gasoline Sulfur program in effect (2004-2007) reduced the sulfur content of gasoline by up to 90 percent from uncontrolled levels. In addition, the Gasoline Sulfur program aims to lower sulfur content of gasoline to 10 parts per million (ppm) averages by 2017. A 15 ppm sulfur specification, known as ultra-low sulfur diesel, was phased in for highway diesel fuel from 2006-2010.

Until recently, portions of Georgia were not in attainment for PM_{2.5}. However, effective October 24, 2016, EPA revoked the 1997 Primary Annual PM_{2.5} NAAQS. As a result, the entire state is considered to be in attainment for PM_{2.5}.

Georgia is in attainment for lead, SO₂, NO₂, PM₁₀, and PM_{2.5}; therefore, assessments for these pollutants are not required. Assessments are required for CO, O₃ and MSATs.

Carbon Monoxide

The state is in attainment for CO; however, CO is also a concern for projects with signalized intersections (due to idling vehicles). It is a concern if, in the project design year (20-year design horizon) for the build condition, the following two conditions are met:

- > If the approaches to an intersection have average daily traffic (ADT) higher than 10,000; and
- > If the intersection operates at a level-of-service (LOS) D, E, or F.

If the project meets *both* conditions, it will be assessed for potential CO effects on nearby receptors.

Table 2 defines LOS.

Table 2 – Level-of-Service Definitions

LOS	Definition
A	Volume is well below capacity and traffic is flowing freely.
B	Volume is steady, the presence of other vehicles begins to be noticeable.
C	Steady traffic flow, speeds and maneuverability are more closely controlled by traffic volumes.
D	Approaching an unsteady flow in which speed and maneuverability are severely restricted.
E	Traffic flow is reduced to a slow but relatively uniform speeds, and traffic volume is equal to or nearly equal to capacity and maneuverability is extremely difficult.
F	Volume greatly exceeds the capacity and lengthy delays occur.

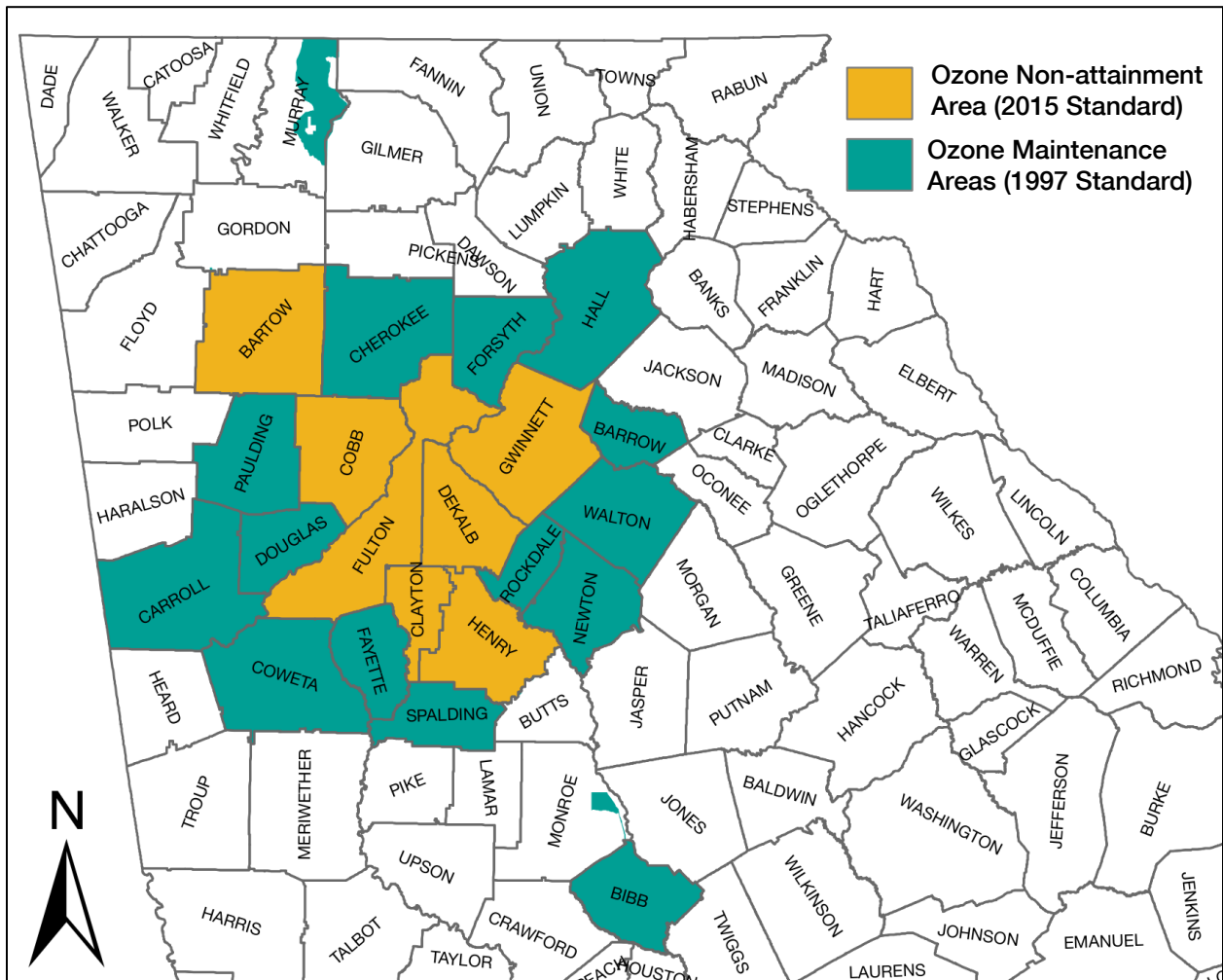
Ozone

Portions of the state are not in attainment for O₃, or are within O₃ maintenance areas. For projects in these areas, regardless of funding, O₃'s potential effects will be assessed. Inclusion in the area's conforming plan, within the Transportation Improvement Program

(TIP), serves as the assessment. The TIP is a document prepared by Metropolitan Planning Organizations (MPOs) to allocate federal transportation funds within their respective metropolitan regions.

Figure 1 illustrates the non-attainment areas and the maintenance areas of the state. Maintenance areas are geographic regions that had a history of nonattainment but now meet the NAAQS. The Atlanta Regional Commission, the Atlanta Region MPO, is responsible for developing and adopting the conforming plan for Georgia's non-attainment areas.

Figure 1 – Ozone Non-attainment Area and Ozone Maintenance Areas in Georgia



Source: EPA Guidance, Georgia 8-hour Ozone Non-attainment Areas (2015 Standard) and Georgia 8-hour Ozone Maintenance Areas (1997 Standard)

MSATs

Depending on the type of federal-aid project, NEPA may require a project-level assessment for MSATs. The assessment requires either a qualitative or quantitative analysis of MSATs, depending on the project's ADT.

PROJECT APPLICABILITY SUMMARY

The following table summarizes the project conditions (such as ADT and/or LOS) that warrant assessment and reporting of the three primary air quality pollutants.

Table 3 – Project Applicability Summary

Pollutant	Region	Funding	Project Level Analysis
CO	Statewide	State or Federal	LOS D, E, or F at signalized intersections where ADT > 10,000
O ₃	O ₃ Non-attainment Area	State or Federal	All projects in an O ₃ Non-attainment Area
MSAT	Statewide	Federal only	If required by the project type, then... ADT < 140,000 requires a Qualitative Analysis ADT > 140,000 requires a Quantitative Analysis

Guidebook Revision History

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