

# Air Quality Conformity Analysis

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2004-2006 Indianapolis Regional  
Transportation Improvement Program, and

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2025 Indianapolis Regional Transportation  
Plan

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Prepared by:

City of Indianapolis  
Department of Metropolitan Development  
Division of Planning  
200 East Washington Street, Suite 1841

Indianapolis, Indiana 46204



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## Introduction

Required under section 176(c) of the Clean Air Act, as amended in 1990, the transportation conformity rule established the criteria and procedures by which the Federal Highway Administration, the Federal Transit Administration, and metropolitan planning organizations (MPOs) determine the conformity of federally funded or approved highway and transit plans, programs, and projects to state implementation plans (SIPs). Conformity ensures that transportation planning does not produce new air quality violations, worsen existing violations, or delay timely attainment of national ambient air quality standards. According to the Clean Air Act, federally supported activities must conform to the implementation plan's purpose of attaining and maintaining these standards.

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval. The conformity criteria is satisfied if the current transportation plan and TIP have been found to conform to the applicable implementation plan by the MPO and DOT according to the procedures of EPA rules. Only one conforming transportation plan or TIP may exist in an area at any time; conformity determinations of a previous transportation plan or TIP expire once the current plan or TIP is found to conform by DOT. The conformity determination on a transportation plan or TIP will also lapse if conformity is not determined according to the EPA specified frequency requirements.

*Transportation Plan* means the official metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450. The *Transportation Plan* must be consistent with the mobile vehicle emissions budget(s) in the applicable implementation plan (40 CFR 51.428).

*Transportation improvement program (TIP)* means a staged, multiyear, intermodal program of transportation projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan, and developed pursuant to 23 CFR part 450. The *TIP* must be consistent with the mobile vehicle emissions budget(s) in the applicable implementation plan (40 CFR 51.430).

Marion County is classified as a maintenance area for the ozone pollutant. As such, the capacity expansion projects proposed in the Transportation Plan must be analyzed using an approved methodology and computer model developed by the U.S. Environmental Protection Agency. The model measures the amount of pollutants that will be emitted as a result of implementing the projects contained in the Plan. The emissions cannot exceed the emissions budget specified in the State Implementation Plan (SIP) and the Indianapolis-Marion County Redesignation Maintenance Plan developed by the Indiana Department of Environmental Management in conjunction with the Indianapolis Environmental Management Division and the Metropolitan Planning Organization staff.

## Need for Analysis

Since the approval of the Regional Transportation Plan in 1995, the 2004-2006 Indianapolis Regional Transportation Improvement Program has been developed and minor changes to the Cost Feasible Regional Transportation Plan are necessary. To monitor these changes and assess the Plan's impact on the continuing attainment of the National Air Quality Standards, the MPO staff performs this analysis to meet the requirements of Conformity Rules as they are in effect to-date.

## Revisions to Transportation Plan

Revisions to the Year 2025 Transportation Plan are necessary due to project changes in the 2004-2006 Indianapolis Regional Transportation Improvement Program (IRTIP). This in turn triggers the need for an Air Quality Conformity Analysis. For information purposes, completed projects in 1997 to 2002 and projects under construction in 2003 have also been incorporated into the revised Cost Feasible Transportation Plan.

### List of Projects

A comprehensive list of projects included in the various scenarios for this Air Quality Conformity Analysis of the 2025 Cost Feasible Transportation Plan is presented in Appendix A. A colored-coded map is also included to help locating these projects.

### Years of Action Scenarios

Based on previous interagency consultation as documented in IDEM's May 27, 1999 letter, it was agreed to conduct the following target years for action scenarios:

- 2006 (SIP Maintenance Plan Budget Year)
- 2015 (less than 10 years in the future) and
- 2020 (Previous Long Range Transportation Plan Forecast Year)
- 2025 (Current Long Range Transportation Plan Forecast Year)

## Review of Previous Air Quality Documents

There are two documents in the Regional Transportation Plan series that explain the technical details of transportation, air quality relationships and other related factors associated with forecast of total emissions based on computer models, and EPA developed emission factors. A further review of air quality issues results in the third Air Quality Overview Report. The fourth is the Reexamination Report in 1997 and the fifth and the sixth reports deal with the air quality conformity analysis for Year 2020 Transportation Plan and subsequent Transportation Improvement Programs. Reports Seventh, Eighth and Ninth deal with the 2025 Regional Transportation Plan and

associated Transportation Improvement Program Amendments. This is the tenth report addressing the transportation air quality conformity requirements since 1995

- 1) Technical Memorandum for Task 21 - Tools for Air Quality Conformity Analysis, 1995
- 2) Technical Memorandum for Task 36 - Air Quality Conformity, 1995
- 3) Air Quality Overview Report, 1996
- 4) Air Quality Conformity Reexamination Report, 1997
- 5) Air Quality Conformity Reexamination Report, 1998
- 6) Air Quality Conformity Reexamination Report, 1999
- 7) Air Quality Conformity Reexamination Report, May 2000
- 8) Air Quality Conformity Report, December 2000 ; and
- 9) Air Quality Conformity Analysis, February 2003.

## Technical Steps

The EMIS air quality model was developed in response to the conformity requirements of the federal Clean Air Act Amendments and the requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). It has been adapted to be used with standard TRANPLAN for use in Indianapolis. It uses the U.S. Environmental Protection Agency's MOBILE 5a computer program and a custom-written FORTRAN program to estimate daily mobile source emissions associated with transportation alternatives.

It is the user's responsibility to prepare the MOBILE inputs. Within each run MOBILE must be requested to provide output for multiple speed conditions using MOBILE "Scenario Descriptive Records." MOBILE accepts records in any speed increment, but there is a limit of thirty records per scenario. A scheme that works well is to provide these records in five mile per hour (mph) increments beginning with five mph and ending with a speed at least as large as the maximum speed in the network. Generally, transportation planners will prepare these inputs in consultation with the local agency responsible for monitoring air quality.

EMIS calculates daily mobile source air pollution burden based on emission factors from MOBILE 5a (in grams per vehicle mile), vehicle miles of travel (VMT), and congested speed from a highway assignment. Travel on centroid connectors, and intrazonal travel also is accounted for by the model. EMIS summarizes daily pollutant emissions by geographic location from calculations performed by the model on a link-by-link basis.

Appendix B shows a flowchart of detailed steps involved in the Indianapolis Travel Forecasting Model dealing with air quality conformity technical routines.

Input and output files for EPA's Mobile5a emission factors for years 2006, 2015, 2020 and 2025 are documented in Appendixes C and D. These factors were then used in the Indianapolis EMIS air quality module of the TransCAD GIS Add-in Procedure to produce detailed Emission Reports for all eight computer runs. Two additional scenarios were included with the inclusion of the Indianapolis to Evansville I-69 preferred alignment from the Indiana Department of Transportation's Tier 1 Draft Environmental Impact Statement. Trip tables were further adjusted to account for regional land use impacts and external station changes provided by INDOT's consultants for the I-69 study. These account for the last two scenarios for the Year 2025.

Appendix E collects all Emission Reports for ten scenarios. A detailed computational spreadsheet for converting from Model outputs to HPMS equivalencies is presented in Appendix F.

## Summary and Conclusion

The federal regulations governing air quality conformity require that certain time periods be analyzed. The following table and chart present the emissions data for each time along with the Indianapolis/Marion County 2006 redesignation emissions budget. As documented in the Chart, none of the emissions in the budget is exceeded by the Plan for any of these time periods. Therefore, the 2025 Plan including the 2004-2006 Transportation Improvement Program can proceed as proposed.

### EMISSIONS SUMMARY

		1990	2006	2006	2015	2020	2025	2025(I-69)
		BASE	BASE	BUDGET	BASE	BASE	BASE	BASE
BASE	HC	107.20	53.38	71.70	58.48	60.93	65.73	58.85
	CO	731.51	374.68	521.60	434.88	452.41	490.75	433.77
	Nox	63.44	49.38	63.10	55.32	60.55	63.06	60.18
		1990	2006	2006	2015	2020	2025	2025(I-69)
		BASE	ACTION	BUDGET	ACTION	ACTION	ACTION	ACTION
ACTION	HC	107.20	51.99	71.70	53.80	57.10	57.50	58.10
	CO	731.51	366.29	521.60	392.49	420.85	422.43	427.87
	Nox	63.44	50.68	63.10	55.58	58.01	59.57	60.46

### TRANSPORTATION AIR QUALITY EMISSIONS SUMMARY

