

NOACA Technical Memorandum

CONFORMITY ANALYSES FOR Resolution 2004-037 PLAN AND TIP AMENDMENTS CLEVELAND INNERBELT PROJECTS AND LAKE COUNTY SR-2 CONFORMITY ANALYSIS



July 2004



The Northeast Ohio Areawide Coordinating Agency (NOACA) is a public Organization serving the counties of and municipalities & townships within Cuyahoga, Geauga, Lake, Lorain and Medina (covering an area with 2.1 million people). NOACA is the agency designated or recognized to perform the following functions:

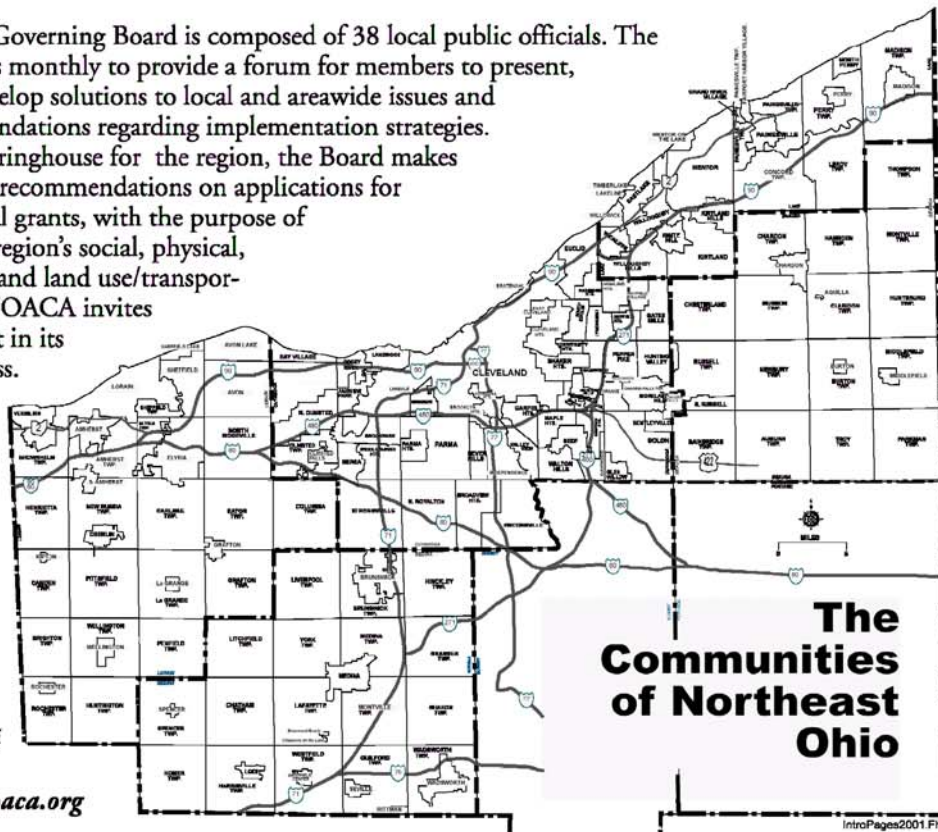
- **Serve as the Metropolitan Planning Organization (MPO), with responsibility for comprehensive cooperative and continuous planning for highways, public transit, and bikeways, as defined in the Transportation Equity Act for the 21st Century.**
- **Perform continuous water quality, transportation-related air quality and other environmental planning functions.**
- **Administer the area clearinghouse function, which includes providing local government with the opportunity to review a wide variety of local or state applications for federal funds.**
- **Conduct transportation and environmental planning and related demographic, economic and land use research.**
- **Serve as an information center for transportation and environmental and related planning.**
- **At NOACA Governing Board direction, provide transportation and environmental planning assistance to the 172 units of local, general purpose government.**

The NOACA Governing Board is composed of 38 local public officials. The Board convenes monthly to provide a forum for members to present, discuss and develop solutions to local and areawide issues and make recommendations regarding implementation strategies. As the area clearinghouse for the region, the Board makes comments and recommendations on applications for state and federal grants, with the purpose of enhancing the region's social, physical, environmental and land use/transportation fabric. NOACA invites you to take part in its planning process. Feel free to participate, to ask questions and to learn more about areawide planning. For more information, call:

(216) 241-2414

or log on at:

<http://www.noaca.org>



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**Conformity Analyses For Resolution 2004-037
Plan and TIP Amendments
Cleveland Innerbelt Projects and Lake County SR-2
Conformity Analysis**

July 2004

Prepared by

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HOWARD R. MAIER
EXECUTIVE DIRECTOR

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**RESOLUTION OF THE GOVERNING BOARD
OF THE
NORTHEAST OHIO AREAWIDE COORDINATING AGENCY**

WHEREAS, the Northeast Ohio Areawide Coordinating Agency (NOACA), the Metropolitan Planning Organization (MPO) for the five Northeast Ohio Counties of Cuyahoga, Geauga, Lake, Lorain and Medina, is presently engaged, through Governing Board action and staff technical work, in the continuing phase of the cooperative, comprehensive planning process designed to meet needs, requirements, goals and objectives of national, state and local governmental levels, all within this nation's federal transportation system; and

WHEREAS, the Congress of the United States, through law, and the U.S. Department of Transportation, through regulation, have determined that a long-range twenty year Transportation Plan and a four-year Transportation Improvement Program (TIP) shall be prepared, which include federal-aid transportation projects expected to be implemented; and

WHEREAS, the following projects are proposed amendments to the Transportation Plan Tier 1 (Framework For Action 2025):

- a. ODOT 12: CUY INNERBELT CORRIDOR: PID No. 77510 – Environmental documentation and preliminary development (ODOT Project Development Process – PDP Steps 5 through 8) for IR-71, from SR-176 to IR-90; IR-77, from East 30th Street to IR-90; and IR-90, from IR-71 to SR-2, in Cleveland.
- b. ODOT 12: CUY INNERBELT CURVE: PID No. 77413 –Reconstruction and widening on IR-90, from Superior Avenue to East 40th Street, in Cleveland.
- c. ODOT 12: CUY INNERBELT BRIDGE: PID No. 77332 – Reconstruction and widening on IR-71, from SR-176 to IR-90 and IR-90, from IR-71 to IR-77, in Cleveland.
- d. ODOT 12: CUY E 55TH ST: PID No. 77613 – Replacement of the CSX railroad bridge over East 55th Street, in Cleveland.
- e. ODOT 12: CUY QUIGLEY CONNECTOR: PID No. 76941 – New construction of Quigley Road, from West 14th Street to Quigley Road, in Cleveland.
- f. ODOT 12: CUY FREEWAY MANAGEMENT SYSTEM: PID No. 77331 – Freeway Management System (ITS) deployed on various routes and sections of interstates in Cuyahoga County.

**RESOLUTION NO. 2004-037
PLAN AND TIP AMENDMENT
(1ST QUARTER SFY 2005)**

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- g. ODOT 12: CUY UNIVERSITY CIRCLE CONNECTOR: PID No. 77333 – Sub-area corridor study from East 55th Street at IR-490 to East 105th Street at Quincy Avenue, in Cleveland.
- h. ODOT 12: CUY CRV INTERMODAL CONNECTOR: PID No. 77334 – Sub-area corridor study along the Cuyahoga River Valley, from Harvard Avenue to River Avenue, in Cleveland.
- i. ODOT 12: CUY LAKEFRONT WEST: PID No. 77330 – Reconstruction of SR-2, from Lake Road to Main Avenue, in Cleveland.
- j. ODOT 12: LAK SR-2 CORRIDOR: PID No. 13486 – Reconstruction and widening of SR-2, from Beidler Drive to Richmond Road, in Willoughby, Mentor, Painesville Township, and Painesville.
- k. ODOT 12: CUY INNERBELT TRENCH: PID No. 25795 – Reconstruction and access modification on IR-90, from IR-77 to Superior Avenue and on IR-77, from East 30th Street to IR-90, in Cleveland.

WHEREAS, of the above projects, the following are also proposed amendments to the SFY 2004 – 2007 Transportation Improvement Program (TIP):

- a. ODOT 12: CUY INNERBELT CORRIDOR: PID No. 77510 – Environmental documentation and preliminary development (ODOT Project Development Process – PDP Steps 5 through 8) for IR-71, from SR-176 to IR-90; IR-77, from East 30th Street to IR-90; and IR-90, from IR-71 to SR-2, in Cleveland.
- b. ODOT 12: CUY INNERBELT CURVE: PID No. 77413 – Preliminary engineering and right of way elements: Reconstruction and widening on IR-90, from Superior Avenue to East 40th Street, in Cleveland.
- c. ODOT 12: CUY INNERBELT BRIDGE: PID No. 77332 – Preliminary engineering and right of way elements: Reconstruction and widening on IR-71, from SR-176 to IR-90 and IR-90, from IR-71 to IR-77, in Cleveland.
- d. ODOT 12: CUY E 55TH ST: PID No. 77613: Preliminary engineering, right of way and construction elements: Replacement of the CSX railroad bridge over East 55th Street, in Cleveland.

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- e. ODOT 12: CUY QUIGLEY CONNECTOR: PID No. 76941 – Preliminary engineering, right of way and construction elements: New construction of Quigley Road, from West 14th Street to Quigley Road, in Cleveland.
- f. ODOT 12: CUY FREEWAY MANAGEMENT SYSTEM: PID No. 77331 – Preliminary engineering and construction elements: Freeway Management System (ITS) on various routes and sections of interstates in Cuyahoga County.
- g. ODOT 12: CUY UNIVERSITY CIRCLE CONNECTOR: PID No. 77333 – Sub-area corridor study (ODOT PDP Steps 5 and 6 only), from East 55th Street at IR-490 to East 105th Street at Quincy Avenue, in Cleveland.
- h. ODOT 12: CUY CRV INTERMODAL CONNECTOR: PID No. 77334 - Sub-area corridor study (ODOT PDP Steps 5 and 6 only), along the Cuyahoga River Valley, from Harvard Avenue to River Avenue, in Cleveland.
- i. ODOT 12: CUY LAKEFRONT WEST: PID No. 77330 - Preliminary engineering and right of way elements: Reconstruction of SR-2, from Lake Road to Main Avenue, in Cleveland.
- j. ODOT 12: LAK SR-2 CORRIDOR: PID No. 13486 – Preliminary engineering element: Reconstruction and widening of SR-2, from Beidler Drive to Richmond Road, in Willoughby, Mentor, Painesville Township, and Painesville.

WHEREAS, some of the above projects affect the existing plan's air quality conformity determination and staff has conducted a new air quality analysis that demonstrates conformity of the amendments with the applicable State Implementation Plan (SIP) emission budgets; and

WHEREAS, the above projects are consistent with the financial plans; and

WHEREAS, the above projects are consistent with the goals and objectives of the Region's land use and transportation plans; and

WHEREAS, the above projects are recommended by the Transportation Advisory Committee (TAC) as amendments to the Plan and SFY 2004 – 2007 TIP, as appropriate.

NOW, THEREFORE, BE IT RESOLVED by the Governing Board of the Northeast Ohio Areawide Coordinating Agency, consisting of thirty-eight principal officials of general purpose local government throughout and within the Counties of Cuyahoga, Geauga, Lake, Lorain and Medina that:

**RESOLUTION NO. 2004-037
PLAN AND TIP AMENDMENT
(1ST QUARTER SFY 2005)**

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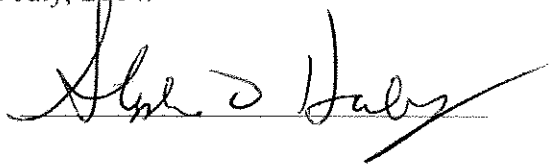
Section 1: The referenced projects have had appropriate review and are recommended for approval.

Section 2: The NOACA Plan and TIP be amended to include the attached projects for project development and processing review purposes as shown on the attachments.

Section 3: The Executive Director is hereby authorized to transmit a certified copy of this resolution and conformity analysis to appropriate Federal, State and local agencies.

Certified to be a true copy of a Resolution of
the Governing Board of the Northeast Ohio
Areawide Coordinating Agency adopted this
9th day of July, 2004.

Secretary: _____



Date Signed: _____

7/9/04

NORTHEAST OHIO AREAWIDE COORDINATING AGENCY

MEMORANDUM

TO: NOACA Governing Board Members

FROM: Howard R. Maier
Executive Director

DATE: June 30, 2004

RE: **Resolution 2004-037: Plan and TIP Amendments**

Summary

During the past year, NOACA and Ohio Department of Transportation (ODOT) staffs have presented information regarding the Innerbelt Major Investment Study and Strategic Plan. The Board has been given details on the planning process, project elements and implementation sequence.

There are 10 projects linked to the Innerbelt Study, including the Intelligent Transportation System (ITS) Freeway Management System. ODOT has requested these be added to NOACA's Transportation Plan and Transportation Improvement Program (TIP) so that they can continue project planning/development with federal funding assistance. ODOT also requested a Plan revision and TIP amendment for a SR 2 corridor project so that they may access federal funds for the next phase of development for that improvement.

It was the consensus of the Innerbelt Scoping Committee to proceed with the Strategic Plan. The TAC recommends Governing Board approval of the Plan and TIP amendments.

Detailed Assessment

The Innerbelt Study, SR 2 Study and ITS are currently on Tier 3 of the Transportation Plan. A Plan revision is necessary to move the detailed projects onto Plan Tier 1. The Board's Investment policy provides the following definition for Tier 1:

Tier 1 projects are at an advanced stage of planning and have identified federal funding. These projects are on the fiscally balanced part of the Plan and are used to perform the federally required air quality analysis. They are capacity and non-capacity projects that are expected to be constructed within the next four years. Projects in this Tier are normally also on the Transportation Improvement Program.

Attached are the ODOT requested Plan and TIP amendments. There are eleven projects, and air quality conformity is required for seven. All of these projects are to be added to Plan Tier 1. Projects that are expected to encumber funds during the fiscal years 2004-2007 are also to be amended to the TIP. (The current TIP covers 2004 through 2007.) Attached is a summary table.

PID	Project Name	Work	Plan/TIP?	Conformity Analysis Needed?
77510	Innerbelt Corridor	Environmental and preliminary design	Plan and TIP	Yes
77413	Innerbelt Curve	Reconstruction and Widening	Plan and TIP	Yes
77332	Innerbelt Bridge	Reconstruction and Widening	Plan- all elements TIP- partial	Yes
25795	Innerbelt Trench	Reconstruction and Access Modification	Plan	Yes
77613	East 55 th St	Bridge Replacement	Plan and TIP	No
76941	Quigley Connector	New Construction	Plan and TIP	Yes
77331	ITS	ITS	Plan and TIP	No
77333	University Circle Connector	Sub Area Corridor Study	Plan and TIP	No
77334	CRV Intermodal Connector	Sub Area Corridor Study	Plan and TIP	No
77330	Lakefront West	Reconstruction	Plan- all elements TIP- partial	Yes
13486	SR2 Corridor	Reconstruction and Widening	Plan- all elements TIP- partial	Yes

The Governing Board, by Resolution, has previously recommended the above projects for TRAC funding, and TRAC has committed funding to all the projects. Additionally, the Board approved the Major Investment Study for the SR 2 Corridor. The Board has not yet approved the ITS Study.

Staff has completed the necessary technical work related to the Air Quality Analysis. Results indicate the amended Plan conforms to the State Implementation Plan (SIP) emission budgets. Attached is an Executive Summary for the Innerbelt projects and SR-2 Conformity Analysis.

Also enclosed as a separate document is ODOT's Innerbelt Summary Report.

Conclusion

The TAC has recommended Governing Board approval of the Plan revisions and TIP amendments. Approval of these amendments will enable us to continue to improve the region's infrastructure. Please contact me if you have any questions or concerns.

Executive Summary

PLAN AND TIP AMENDMENTS

INNERBELT PROJECTS AND LAKE SR-2 CONFORMITY ANALYSIS

On July 9, 2004 the NOACA Governing Board is considering Resolution 2004-037. This resolution amends the Tier 1 of the NOACA long-range transportation plan to include a number of projects related to Innerbelt reconstruction in Cleveland and the widening of portions of SR-2 in Lake County.

Because these amendments affect capacity on the region's transportation systems, it is necessary, per the 1990 Clean Air Act Amendments and subsequent regulations, to perform the required analyses to ensure:

Conformity to the (air quality implementation) plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities will not (i) cause or contribute to any new violations of any standards in any area, (ii) increase the frequency or severity of any existing violation of any standard in any areas, or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The complete conformity document will include documentation for all aspects of the analyses. This summary covers main points. The conformity analyses were conducted in accordance with the *Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act*, 40 CFR Parts 51 and 93, issued November 24, 1993 and subsequent applicable revisions, and in accordance with the *Ohio State Transportation Conformity Rules, Ohio Administration Code Part 3745-101-01 through 20*, issued August 21, 1995 and subsequent applicable revisions.

The results of the analyses, as displayed in Tables 1 and 2 for Hydrocarbons and Oxides of Nitrogen respectively, is that both projects conform to Ohio's State Implementation Plan because the projects:

- ♦ Contribute to the State Implementation Plan's purpose of eliminating and reducing ozone violations;
- ♦ Produce emission burdens that are below the applicable budgets established in the State Implementation Plan;
- ♦ Were prepared in accordance with current federal and state conformity guidance.

Since conformity analyses for this area must include the entire ozone maintenance area, the emissions from the applicable long-range transportation plans for the Akron Metropolitan Area Transportation Study (AMATS), and the County of Ashtabula are included in Tables 1 and 2.

**Table 1
Hydrocarbons Emissions Budget Test**

HYDROCARBONS <i>(tons/day)</i>	NOACA	ASHTABULA	AMATS	TOTAL
1993 Attainment Year	115.71	12.30	53.39	181.40
2006 Budget				92.70
2006 Emissions	44.38	4.02	20.51	68.91
2015 Emissions	19.52	2.07	10.25	31.84
2025 Emissions	13.41	1.58	7.47	22.46

**Table 2
Oxides Of Nitrogen Emissions Budget Test**

OXIDES OF NITROGEN <i>(tons/day)</i>	NOACA	ASHTABULA	AMATS	TOTAL
1993 Attainment Year	102.25	12.10	45.55	159.90
2006 Budget				104.40
2006 Emissions	60.18	5.39	30.86	96.43
2015 Emissions	20.50	2.33	12.86	35.69
2025 Emissions	9.24	1.31	6.83	17.38

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Executive Summary

Plan and TIP Amendments Innerbelt Projects and Lake SR-2 Conformity Analysis

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Oxides Of Nitrogen Emissions Budget Test

OXIDES OF NITROGEN (tons/day)	NOACA	ASHTABULA	AMATS	TOTAL
1993 Attainment Year	102.25	12.10	45.55	159.90
2006 Budget				104.40
2006 Emissions	60.18	5.39	30.86	96.43
2015 Emissions	20.50	2.33	12.86	35.69
2025 Emissions	9.24	1.31	6.83	17.38

Introduction

Transportation plans, programs, and projects from areas currently or previously not attaining the National Ambient Air Quality Standards (NAAQS) for ozone must "conform" with their respective Federal or State Implementation Plans (SIPs). The Cleveland/Akron/Lorain Area is currently a maintenance area under the one-hour ozone NAAQS. As such, its conformity requirement is to ensure that the hydrocarbon and oxide of nitrogen emissions from its transportation plans, programs, and projects are less than the amount budgeted for them in the SIP for several different analysis years.

In Ohio, the Ohio Environmental Protection Agency (OEPA) is the lead agency for coordinating development of the SIPs. The Ohio Department of Transportation (ODOT), the Metropolitan Planning Organizations (MPOs), and the Local Air Agencies (LAAs) participate in the development of the SIPs, the development of the metropolitan transportation plans and the State Transportation Improvement Program (STIP).

This document describes the procedures used to demonstrate the conformity of the amendment of several Innerbelt related projects in Cuyahoga County and a Lake County SR-2 widening to Ohio's Ozone SIP.

1. Conformity Analysis Interagency Consultation Process

A continuing major and important requirement of the conformity analysis process is the maintenance of an effective interagency consultation process between the federal, state, and local agencies involved in the development of transportation plans and programs. Ohio Administrative Code (OAC) section 3745-101-04 defines the consultation procedures for the state formally. In general, Ohio has chosen the "straw man" process, whereby the lead agencies in the conformity process assume responsibility for preparing and distributing draft documents, with supporting information, and assuring that each affected party involved in the conformity process is included in the consultation process.

Due to the recent conversion to the use of the United State Environmental Protection Agency's emission factor model MOBILE 6, considerable interagency consultation is ongoing regarding the inputs to that model. The inputs described herein are the results of that ongoing consultation process.

2. Conformity Analysis Tests

The interagency consultation process resulted in the following procedures being established for this analysis:

- ◆ Emission forecasts were generated for calendar year 2006, 2015, and 2025 for all areas;
- ◆ AMATS and Ashtabula County emissions for their existing transportation plans as produced by MOBILE 6 will be used for those areas.

The conformity tests are performed to demonstrate that the emission burdens from the area's SFY 2000-2003 TIPs and transportation plans do not exceed the mobile source emission budgets established in the OEPA State Implementation Plan. Table 1, below, records the applicable SIP mobile source budgets for the Cleveland/Akron/Lorain Area.

Table 1

	NOACA (tons/day)		AMATS (tons/day)		Ashtabula (tons/day)		Total (tons/day)	
	HC	NO _x	HC	NO _x	HC	NO _x	HC	NO _x
2006 Budget							92.70	104.40

3. Transportation Plan Updates and STIP/TIP Development

Following passage of the 1991 ISTEA legislation, Ohio’s transportation planning agencies initiated efforts to update the Ohio Statewide Transportation Plan and the Ohio urbanized area MPO transportation plans. As a result of these efforts ODOT issued a two-phased statewide transportation plan entitled Access Ohio. A Macro Phase focusing on broad statewide policies and goals was issued in October 1993 and a Micro Phase focusing on system needs and priorities was issued in June 1995. ODOT is currently in the process of updating Access Ohio.

Access Ohio incorporates by reference the transportation plans and programs of the State’s metropolitan planning areas. This project amendment to NOACA’s long-range transportation plan will therefore be consistent with the State’s plan.

4. STIP/TIP Conformity Analysis Project Networks

Based upon the criteria in 40 CFR Sections 51.464, 51.438, and 51.448 of the Final Conformity rule, and as reviewed through the Interagency Consultation Process, the conformity analysis highway networks used for NOACA’s most recent long-range transportation plan conformity analysis were updated to include:

- a. ODOT 12: CUY INNERBELT CURVE: PID No. 77413 –Reconstruction and widening on IR-90, from Superior Avenue to East 40th Street, in Cleveland.
- b. ODOT 12: CUY INNERBELT BRIDGE: PID No. 77332 – Reconstruction and widening on IR-71, from SR-176 to IR-90 and IR-90, from IR-71 to IR-77, in Cleveland.
- c. ODOT 12: CUY E 55TH ST: PID No. 77613 – Replacement of the CSX railroad bridge over East 55th Street, in Cleveland.
- d. ODOT 12: CUY QUIGLEY CONNECTOR: PID No. 76941 – New construction of Quigley Road, from West 14th Street to Quigley Road, in Cleveland.
- e. ODOT 12: CUY FREEWAY MANAGEMENT SYSTEM: PID No. 77331 – Freeway Management System (ITS) deployed on various routes and sections of interstates in Cuyahoga County.
- f. ODOT 12: CUY UNIVERSITY CIRCLE CONNECTOR: PID No. 77333 – Sub-area corridor study from East 55th Street at IR-490 to East 105th Street at Quincy Avenue, in Cleveland.
- g. ODOT 12: CUY CRV INTERMODAL CONNECTOR: PID No. 77334 – Sub-area corridor study along the Cuyahoga River Valley, from Harvard Avenue to River Avenue, in Cleveland.
- h. ODOT 12: CUY INNERBELT TRENCH: PID No. 25795 – Reconstruction and access modification on IR-90, from IR-77 to Superior Avenue and on IR-77, from East 30th Street to IR-90, in Cleveland.

- i. ODOT 12: CUY LAKEFRONT WEST: PID No. 77330 – Reconstruction of SR-2, from Lake Road to Main Avenue, in Cleveland.
- j. ODOT 12: LAK SR-2 CORRIDOR: PID No. 13486 – Reconstruction and widening of SR-2, from Beidler Drive to Richmond Road, in Willoughby, Mentor, Painesville Township, and Painesville.
- k. ODOT 12: CUY INNERBELT CORRIDOR: PID No. 77510 – Environmental documentation and preliminary development (ODOT Project Development Process – PDP Steps 5 through 8) for IR-71, from SR-176 to IR-90; IR-77, from East 30th Street to IR-90; and IR-90, from IR-71 to SR-2, in Cleveland.

The networks include:

- ◆ 2006 Highway Network (SIP Milestone year): This represents the existing transportation network plus regionally significant projects that are expected to be open to traffic by the analysis year;
- ◆ 2015 Highway Network: This represents the 2006 Highway Network plus regionally significant projects that are expected to be open to traffic by the analysis year;
- ◆ 2025 Highway Network: This represents the 2020 Highway Network plus regionally significant projects that are expected to be open to traffic by the analysis year. This is the out year for NOACA’s Framework for Action 2025.

These networks meet the conformity requirement that analysis years be no more than ten years apart.

5. Latest Planning Assumptions

The Cleveland/Akron/Lorain Area plan and program conformity analyses readily meet this requirement. The STIP projects in Ashtabula County are developed consistent with the most recent Statewide Transportation Plan, Access Ohio. The MPO plans are consistent with their respective planning processes.

The modeling process used to develop each MPO Transportation Plan and Program is calibrated using the latest population and land use data available. Before the modeling process is used to develop the Plans, it is validated based on 1990 traffic counts

Further, U.S. EPA's most recent emission factor software, MOBILE 6 was used for these analyses. Considerable effort was taken to ensure that the inputs used for these analyses reflect actual characteristics of the local fleet and the I/M programs in place here. The MOBILE 6 inputs used in this analysis are described in Attachment A.

The emission inventories and budgets are also from the most recent Ohio SIP submittals, which were also developed using the appropriate MOBILE software.

The urban transportation models remain the best information that can be provided concerning urbanized area VMT growth. As stated above the models are developed and kept current based upon the most recent population and land use data available. They are also validated based upon the most recently available traffic counts. The MPOs and ODOT are confident that the urban models accurately project VMT growth in Ohio's urbanized areas.

6. Timely Implementation of TCMs

The November 1993 SIP submittal included Transportation Control Measures (TCMs) only in the Cleveland/Akron nonattainment area. All identified TCMs in that SIP are in place.

7. Urban Travel Demand Modeling

As noted above, NOACA maintains a PC-based regional travel demand forecasting model (TRANPLAN) for use in its urban transportation planning process. This model employs the traditional four step modeling process to project existing and future traffic volumes and travel patterns on the regional transportation networks. The four step process consists of trip generation, trip distribution, mode split, and route assignment. Output from the model is link-by-link directional for peak and off peak periods and is converted to 24-hour traffic volumes for the existing or future regional transportation networks.

The Ohio Department of Transportation (ODOT) holds the transportation model for the AMATS area. AMATS prepares and submits networks for its planning area to ODOT. ODOT prepares networks for Ashtabula County. ODOT's modeling is also run on a PC-based version of TRANPLAN.

The TRANPLAN model is uniquely suited to perform the emission analyses required by the Final Conformity rule. The modeling process identifies growth in vehicle miles of travel and changes in regional travel patterns resulting from the projects that are proposed in the area transportation plans and programs.

8. Air Quality Area Geography Not Covered by an Urban Model

All urbanized portions of the Cleveland/Akron/Lorain area are covered by a transportation model. Emissions for Ashtabula County, a rural portion of the area, are generated by ODOT using HPMS based non-model procedures.

9. Off Model Emission Reduction Credits

The current conformity analyses for the Cleveland/Akron/Lorain area do not utilize emission reduction credits from any transportation improvements that cannot be captured in the urban modeling process. Ohio defines this type of emission reduction as an "off model" credits.

Projects funded through the Congestion Mitigation and Air Quality (CMAQ) Program are an example of the type of projects that generate off model credits. Typical CMAQ projects are park and ride lots, Compressed Natural Gas (CNG) bus conversions, and traffic flow operational improvements.

10. MPO TIP Conformity Analysis Geographic Coverage Issues

The Cleveland/Akron/Lorain area's geographic coverage issue is the presence of two metropolitan planning organizations, AMATS and NOACA, in the urban airshed, as well as a county, Ashtabula, which is not part of either MPO. As a result, the MPOs and ODOT, which is responsible for transportation planning in Ashtabula County, perform a conformity analysis for their respective portions of the area. The results of these analyses are then combined to make a conformity determination for the area as federally required.

11. Factoring Process to Normalize HPMS and Urban Travel Demand Model Results

Section 93.122 of the conformity regulations requires development of a factor "to reconcile and calibrate the network-based model estimates of vehicle miles traveled in the base year of its validation to the HPMS estimates for the same period."

Although Sec. 93.122 refers to calibrating VMT, it specifies that this is a requirement for serious and above areas after January 1, 1995. Although no Ohio areas meet this requirement, Ohio decided that reconciling the HPMS generated data and the urban travel demand model generated data was merited. ODOT, OEPA, and the MPOs discussed whether the calibration should be based upon differences in emissions or on differences in VMT. The group decided that the emissions were the pertinent factor and therefore used the emissions difference for the calibration.

Previously, emission forecasts based on outputs from AMATS' and NOACA's urban modeling processes were also factored to achieve equivalency with SIP emission forecasts prepared as part of the 1993 Redesignation Application. Improved and updated transportation models result in variations in forecast VMT and subsequently emissions. The area factored these new model outputs to maintain uniformity with the SIP. USEPA notified the region that this model-to-model factoring method could not be used. Therefore this type of factoring was not used for these analyses.

These processes are used for the nonattainment area geography covered by an urban model. For geography not covered by an urban model, the HPMS data is used to directly calculate emissions. This is the case for Ashtabula County.

12. Non-Federal Projects

The Cleveland/Akron/Lorain area contains regionally significant projects that are not federally funded. These projects are associated with the Ohio Turnpike. The air quality impacts of these projects (VMT, traffic redistribution, emissions) are also accounted for in the conformity analyses for this area.

13. Public Involvement

Extensive public involvement has contributed significantly to the process that resulted in the recommended Plan and TIP amendments. ODOT and the Innerbelt Scoping Committee conducted an open planning process that included numerous meetings, press releases, periodic newsletters and more for the purpose of informing the public and receiving public input.

ODOT managed a web site devoted solely to the Innerbelt project (www.innerbelt.org) and presented information throughout the entire planning process to NOACA's Transportation Advisory Committee (TAC). All TAC agendas are mailed in advance to interested and involved parties, and made available on NOACA's web site (www.noaca.org). In accordance with NOACA's Code of Regulations, all TAC meetings provide the opportunity for public comment.

The public involvement for these studies arguably could be the most open and far reaching process ever held for transportation projects in northeast Ohio. The public involvement process for the Innerbelt and SR2 studies will be documented in detail in the final reports for each study.

14. Rural County Conformity Demonstrations: Ashtabula County

Ashtabula County is a rural county in the northeastern corner of Ohio. The 1990 Clean Air Act Amendments included Ashtabula County in the eight county Cleveland/Akron/Lorain airshed. The Intermodal Surface Transportation Efficiency Act of 1991 required entire nonattainment areas to be included in a Metropolitan Planning Organization “except as otherwise provided by agreement between the MPO and Governor.” Ashtabula was not in an MPO area, while the other seven nonattainment area counties were included in either the Cleveland or Akron MPO. In September 1993, at the request of Ashtabula County, an agreement was executed between the county, the Cleveland and Akron MPOs, OEPA, and ODOT (as the Governor’s representative) exempting Ashtabula County from the Federal 3-C urban transportation planning process requirements (the MPO requirement). This agreement also established an interagency consultation process that is used to meet the transportation conformity requirements for the entire area. The Agreement provides for ODOT to conduct the conformity analysis for the Ashtabula County portion of the area while the Cleveland and Akron MPOs conduct analyses for their respective portions of the area. Following these individual efforts, the agencies combine the data to generate one conformity analysis for the entire area.

15. Conformity Demonstration

Tables 2 and 3 display the individual and aggregate emission estimates for the Ashtabula County, AMATS, and NOACA areas. A demonstration of conformity is achieved when the aggregate emissions for the area in each analysis year are less than the 2006 mobile source budget contained in the State Implementation Plan. As demonstrated by the totals in Table 2, the Cleveland/Akron/Lorain area meets this test.

**Table 2
Hydrocarbons Emissions Budget Test**

HYDROCARBONS (tons/day)	NOACA	ASHTABULA	AMATS	TOTAL
1993 Attainment Year	115.71	12.30	53.39	181.40
2006 Budget				92.70
2006 Emissions	44.38	4.02	20.51	68.91
2015 Emissions	19.52	2.07	10.25	31.84
2025 Emissions	13.41	1.58	7.47	22.46

**Table 3
Oxides Of Nitrogen Emissions Budget Test**

OXIDES OF NITROGEN (tons/day)	NOACA	ASHTABULA	AMATS	TOTAL
1993 Attainment Year	102.25	12.10	45.55	159.90
2006 Budget				104.40
2006 Emissions	60.18	5.39	30.86	96.43
2015 Emissions	20.50	2.33	12.86	35.69
2025 Emissions	9.24	1.31	6.83	17.38

16. Final Conformity Determination

Based upon the process and procedures described above, the Cleveland/Akron/Lorain area has determined conformity of the proposed Plan and TIP amendments to the Ohio State Implementation Plan. The conformity determination analyses for these documents were conducted consistent with the *Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act*, 40 CFR Parts 51 and 93, issued November 24, 1993 and the *Ohio State Transportation Conformity Rules, Ohio Administration Code Part 3745-101-01 through 20*, issued August 21, 1995, and subsequent amendments thereof. **Accordingly, the State of Ohio requests U.S. DOT conformity determinations for the referenced project amendment.**

Attachment A

Methodology for the Conformity Analyses

Methodology for Mobile Source Inventory Preparation

The general methodology for mobile source inventory preparation involves three steps:

- 1) Development of vehicle miles of travel (VMT) estimates for the required analysis years and transportation system networks;
- 2) Development of emission factors corresponding to the required analysis years;
- 3) Multiplication of emission factors by VMT to calculate estimated pollutant emissions from mobile sources in the required analysis years.

Vehicles Miles of Travel (VMT) and Transportation System Networks

NOACA uses the TRANPLAN model to generate Vehicle Mile of Travel (VMT) estimates. TRANPLAN uses a modified four-step modeling process incorporating feedback loops. A schematic representation of the model system can be found in Figure 1. Inputs to the model can be found in Table 1.

Table 1
NOACA's TRANSPORTATION DEMAND MODEL INPUT VARIABLES

Demographic Variables (by traffic zone):	Network Variables (by link):
size of traffic zone	road segment
Population	Distance
Households	functional classification
household size	area type
regional households by income quartiles	speed (peak, off-peak, 24 hr)
# of workers	capacity (peak, off-peak, 24 hr)
retail employment	# of lanes
basic employment	street width
service employment	intersection detail (left turn lane etc.)
Area type (CBD, high comm., etc.)	transit road/rail segment
short/long walk transit access	transit line designation
transit accessibility for Auto Ownership Model*	transit access/egress connection
school enrollment	transit speed
university enrollment	transit distance
average zonal income	transit fare
average regional income	transfer possibilities
	operational characteristics

*measure is calculated using other input variables

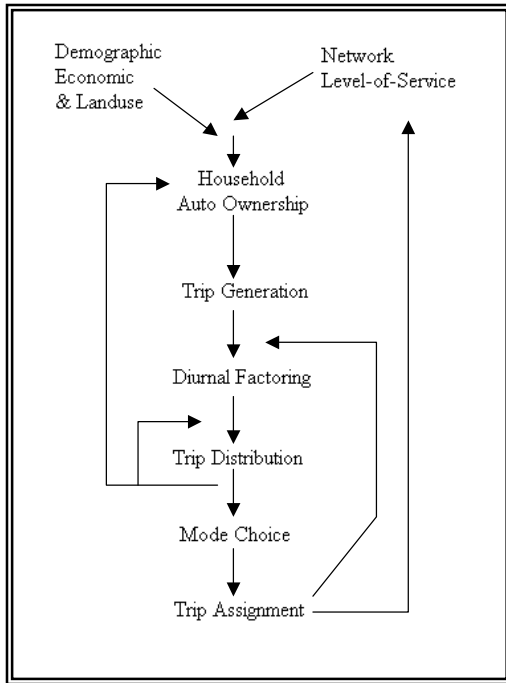


Figure 1: Schematic of TRANPLAN model

NOACA utilized TRANPLAN to generate VMT for the analysis years for the two separate widening scenarios. Tables 2-4 display the VMT for these analysis years

Table 2: 2006 VMT

Speed Range (miles/hour)	Freeway VMT (miles)	Major Arterial VMT (miles)	Special VMT (miles)	Toll VMT (miles)	Minor Arterial VMT (miles)	Load Link VMT (miles)	Intrazonal VMT (miles)	Total VMT (miles)
0.00 - 5.00	24,317	1,518	5,458	0	15,186	0	0	46,479
5.01 - 10.00	4,122	35,722	0	182	30,068	0	954	71,048
10.01 - 15.00	58,698	90,711	2,186	1,199	85,850	3,194,795	0	3,433,439
15.01 - 20.00	26,349	177,309	529	2,714	203,612	0	10,913	421,426
20.01 - 25.00	59,084	362,627	3,222	1,574	982,400	0	82,572	1,491,479
25.01 - 30.00	202,979	4,232,956	7,840	728	552,764	0	86,114	5,083,381
30.01 - 35.00	730,662	3,057,319	18,884	2,118	4,473,809	0	4,245	8,287,037
35.01 - 40.00	895,713	6,437,531	30,185	7,674	1,081,037	0	0	8,452,140
40.01 - 45.00	869,969	1,056,278	0	0	0	0	0	1,926,247
45.01 - 50.00	1,818,175	0	0	0	0	0	0	1,818,175
50.01 - 55.00	3,827,033	0	0	0	0	0	0	3,827,033
55.01 - 60.00	13,273,386	0	0	0	0	0	0	13,273,386
60.01 - 65.00	0	0	0	0	0	0	0	0
TOTAL	21,790,487	15,451,971	68,304	16,189	7,424,726	3,194,795	184,798	48,131,270

Table 3: 2015 VMT

Speed Range (miles/hour)	Freeway VMT (miles)	Major Arterial VMT (miles)	Special VMT (miles)	Toll VMT (miles)	Minor Arterial VMT (miles)	Load Link VMT (miles)	Intrazonal VMT (miles)	Total VMT (miles)
0.00 - 5.00	30,912	10,428	5,753	0	16,203	0	0	63,296
5.01 - 10.00	58,111	56,598	2,380	199	29,158	225	1,216	147,887
10.01 - 15.00	18,891	115,965	0	1,236	93,631	3,255,211	0	3,484,934
15.01 - 20.00	42,424	208,203	567	2,878	236,357	0	11,734	502,163
20.01 - 25.00	67,076	382,931	3,356	2,143	1,019,676	0	85,027	1,560,209
25.01 - 30.00	222,445	4,431,009	9,610	905	585,019	182	86,508	5,335,678
30.01 - 35.00	769,349	3,177,701	19,371	2,521	4,739,292	0	3,303	8,711,537
35.01 - 40.00	1,144,871	6,727,000	28,963	7,732	1,087,730	0	0	8,996,296
40.01 - 45.00	1,070,803	1,020,967	0	0	0	0	0	2,091,770
45.01 - 50.00	1,754,473	0	0	0	0	0	0	1,754,473
50.01 - 55.00	4,613,215	0	0	0	0	0	0	4,613,215
55.01 - 60.00	13,320,978	0	0	0	0	0	0	13,320,978
60.01 - 65.00	0	0	0	0	0	0	0	0
TOTAL	23,113,548	16,130,802	70,000	17,614	7,807,066	3,255,618	187,788	50,582,436

Table 4: 2025 VMT

Speed Range (miles/hour)	Freeway VMT (miles)	Major Arterial VMT (miles)	Special VMT (miles)	Toll VMT (miles)	Minor Arterial VMT (miles)	Load Link VMT (miles)	Intrazonal VMT (miles)	Total VMT (miles)
0.00 - 5.00	28,858	13,253	5,978	0	19,166	0	0	67,255
5.01 - 10.00	82,681	49,662	2,435	1,165	27,974	223	1,272	165,412
10.01 - 15.00	45,148	125,623	0	1,699	100,587	3,293,350	0	3,566,407
15.01 - 20.00	21,043	238,698	598	2,934	256,669	0	12,647	532,589
20.01 - 25.00	137,076	447,246	3,419	253	1,056,070	0	93,224	1,737,288
25.01 - 30.00	227,029	4,624,347	9,833	1,954	690,262	192	78,782	5,632,399
30.01 - 35.00	929,009	3,376,284	21,593	2,485	4,981,022	0	3,259	9,313,652
35.01 - 40.00	1,299,854	6,800,790	28,839	8,497	1,081,323	0	0	9,219,303
40.01 - 45.00	1,266,138	929,421	0	0	0	0	0	2,195,559
45.01 - 50.00	2,132,635	0	0	0	0	0	0	2,132,635
50.01 - 55.00	6,448,635	0	0	0	0	0	0	6,448,635
55.01 - 60.00	12,004,253	0	0	0	0	0	0	12,004,253
60.01 - 65.00	0	0	0	0	0	0	0	0
TOTAL	24,622,359	16,605,324	72,695	18,987	8,213,073	3,293,765	189,184	53,015,387

Emission Factors

Emission Factors for each analysis year were generated using the MOBILE6 emission factor model developed by USEPA. Emission factors were generated in five mph increments to correspond to resultant speeds on highway links from the traffic simulations. Since the inputs files have not changed since NOACA's last submitted conformity analysis copies of the input files for these analyses are not included in this document. Below is a description of input file elements for the HC run. The NOx run inputs are the same with the exception of the pollutant references.

Similar to previous MOBILE versions, the input files are divided into three sections: the header section, the run section, and the scenario section. The header section contains information pertinent to all runs and scenarios within the input file. It appears once at the beginning of the input file regardless of how many runs or scenarios are contained in it.

The run section includes information and data elements that customize the analysis to the local area. All scenarios in the input file generally use the inputs within this section. However, some of these inputs could be replaced with other values in the scenario section if modeling needs called for it.

The scenario section includes information pertinent to only a given scenario, such as the calendar year or VMT distribution. Many inputs can be placed in either the run or the scenario section. The user determines the appropriate location based upon the desired impact, local or global, of the input. The inputs used in this analysis are described below. Inputs are in regular text. Explanations are in italic text. Note: inputs are not printed here in the required MOBILE input format. The required format can be viewed in Attachment B.

Header Section

MOBILE6 INPUT FILE:

This tells MOBILE6 that the file is a normal input file as opposed to a batch file.

> xxxxxxxxxxxxxxxx

> xxxxxxxxxxxxxxxx

These are comment lines that provide the user with information regarding the run.

REPORT FILE: xxxxxxxxxx

This provides a user supplied name for the traditional output file.

SPREADSHEET:

This asks for spreadsheet output in addition to the traditional output file.

POLLUTANTS: HC

This tells the model to produce only CO emission factors.

RUN DATA:

This indicates the end of the header section and the beginning of the run section.

Run Section

MIN/MAX TEMPERATURE: 64 94

This tells the model that the minimum and maximum daily temperatures are 64 and 94 degrees. These temperatures were arrived at previously via interagency consultation.

REG DIST: M6CONFORM.RDT

This identifies the use of an alternative, local registration distribution and provides its file name. This file contains a local registration distribution for light duty vehicles. It identifies the percentage of on-road

vehicles in each of 25 model years. Its contents appear below.

REG DIST
* LDV
1 0.075 0.081 0.090 0.087 0.080 0.089
0.085 0.076 0.050 0.041 0.039 0.035
0.042 0.033 0.028 0.023 0.011 0.006
0.005 0.004 0.004 0.003 0.002 0.002 0.009

STAGE II REFUELING: 93 3 086 086

This input provides the model with specifications for modeling the impacts of the Stage II vapor recovery program for the NOACA area. It indicates that the program started in 1993; that it was phased in over three years; that is 86 percent efficient for Light Duty Gasoline Vehicles (LDGVs) and Light Duty Gasoline Trucks (LDGTs); and that it is 86 percent efficient for Heavy Duty Gasoline Vehicles (HDGVs).

OXYGENATED FUELS: 0.000 0.419 0.000 0.035 2

This input provides information on the use of oxygenated fuels in the area. Oxygenates impact emissions. The inputs provide: the ether blend market share; the alcohol blend market share; the average oxygen content of ether blend fuels; the average oxygen content of alcohol blend fuels, and that a Reid Vapor Pressure (RVP) waiver has been granted. The elimination of MTBE as a viable fuel additive is responsible for the absence of an ether blend market share at this time.

ANTI-TAMP PROG:

96 75 00 22222 21111111 1 12 096. 12111112

This input provides the model with information on the anti-tampering programs in use for the model run. The inputs provide the following information: the year the program began; the first model year covered by the program; the last model year covered by the program; the vehicle types covered by the program(14 total entries, 1 = not covered, 2 = covered); 1; program frequency(1=annual; 2=biennial); the program compliance rate; and the tampering inspections covered by the program (8 entries, 1 = not tested, 2 =tested).

I/M PROGRAM	:	1 2001 2003 2 T/O ASM 2525 PHASE-IN
I/M MODEL YEARS	:	1 1978 2003
I/M VEHICLES	:	1 22222 21111111 1
I/M STRINGENCY	:	1 27.0

I/M COMPLIANCE : 1 96.0
I/M WAIVER RATES : 1 3.0 3.0
I/M EXEMPTION AGE : 1 25
I/M GRACE PERIOD : 1 2

I/M PROGRAM : 2 1998 2000 2 T/O IDLE
I/M MODEL YEARS : 2 1978 2000
I/M VEHICLES : 2 22222 21111111 1
I/M STRINGENCY : 2 20.0
I/M COMPLIANCE : 2 96.0
I/M WAIVER RATES : 2 3.0 3.0
I/M EXEMPTION AGE : 2 25
I/M GRACE PERIOD : 2 2

I/M PROGRAM : 3 1996 1997 2 T/O IM240
I/M MODEL YEARS : 3 1978 1997
I/M VEHICLES : 3 22222 21111111 1
I/M STRINGENCY : 3 20.0
I/M COMPLIANCE : 3 96.0
I/M WAIVER RATES : 3 3.0 3.0
I/M EXEMPTION AGE : 3 25
I/M CUTPOINTs : 3 CUTPOINT.D
I/M GRACE PERIOD : 3 2

I/M PROGRAM : 4 1996 2005 2 T/O GC
I/M MODEL YEARS : 4 1978 2005
I/M VEHICLES : 4 11111 21111111 1
I/M COMPLIANCE : 4 96.0
I/M WAIVER RATES : 4 3.0 3.0
I/M EXEMPTION AGE : 4 25
I/M GRACE PERIOD : 4 2

I/M PROGRAM : 5 2004 2050 2 T/O OBD I/M
I/M MODEL YEARS : 5 1996 2050
I/M VEHICLES : 5 22222 21111111 1
I/M STRINGENCY : 5 27
I/M COMPLIANCE : 5 96
I/M WAIVER RATES : 5 1 1
I/M EXEMPTION AGE : 5 25
I/M GRACE PERIOD : 5 2

I/M PROGRAM : 6 2004 2006 2 T/O EVAP OBD & GC
I/M MODEL YEARS : 6 1996 2006
I/M VEHICLES : 6 22222 11111111 1
I/M COMPLIANCE : 6 96
I/M WAIVER RATES : 6 1 1
I/M EXEMPTION AGE : 6 25
I/M GRACE PERIOD : 6 2

I/M PROGRAM	: 7 2007 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS	: 7 2007 2050
I/M VEHICLES	: 7 22222 21111111 1
I/M COMPLIANCE	: 7 96
I/M WAIVER RATES	: 7 1 1
I/M EXEMPTION AGE	: 7 25
I/M GRACE PERIOD	: 7 2

One set of Inspection Maintenance (IM) Program inputs appears in the box above. This set applies to calendar year 2006 runs for post 2006 calendar years, inputs are updated to reflect the new range of model years covered, but remain the same otherwise. Because different model years are subject to different kinds of inspection, and there are entirely different impacts of some IM testing options, multiple entries are required to adequately portray the IM program as it exists. The following discussion will generally describe the meaning of the various inputs.

I/M PROGRAM:	<i>This input provides the following: the IM program number; the program start year; the program end year, the inspection frequency (1=annual, 2=biennial), the program type (T/O is test only); and the IM program inspection type which is one of 15 possible types.</i>
I/M MODEL YEARS:	<i>This input provides: the IM program number; the first model year covered by that program; and the last model year covered by that program.</i>
I/M VEHICLES:	<i>This input provides: the IM program number; the vehicle types (14 types) covered by the program (1=not covered, 2 = covered).</i>
I/M STRINGENCY:	<i>This input provides: the IM program number; the expected exhaust inspection failure rate for pre-1981 vehicles covered by the program.</i>
I/M COMPLIANCE:	<i>This input provides: the IM program number; the expected percentage of covered vehicles that will comply with the inspection requirement.</i>
I/M WAIVER RATES:	<i>This input provides: the IM program number; the percentage of pre-1981 vehicles that are expected to receive a waiver; the percentage of 1981 and later vehicles that are expected to receive a waiver.</i>
I/M EXEMPTION AGE:	<i>This input provides the age at which vehicles are no longer subject to the test.</i>
I/M CUTPOINTS:	<i>This input provides the cut points for passing or failing the test for the tested pollutants.</i>
I/M GRACE PERIOD:	<i>This input provides: the IM program number, and the age at which vehicles first become subject to the program</i>

Scenario Section

Since there are many scenarios in a single run, only a single representative scenario will be discussed here. The reader can refer to the full input file printout in attachment B for any additional desired detail.

SCENARIO RECORD: Freeway...	<i>This input indicates the beginning of a scenario section and allows the user to provide a scenario name that is included with the output files.</i>
CALENDAR YEAR: 2006	<i>This input provides the calendar year for which the model is generating emission factors.</i>
EVALUATION MONTH: 7	<i>This input provides the evaluation month for which the model is being run. Two choices are possible. 1 is January. 7 is July.</i>
FUEL RVP: 9	<i>This input provides the fuel Reid Vapor Pressure (RVP) for fuel used in the area. RVP is a measure of how easily a fuel evaporates. The lower the RVP the lower the fuels evaporation rate under a consistent set of conditions.</i>
VMT FRACTIONS :	<i>This input identifies the percentage of the vehicle fleet represented by each of 16 vehicle types. This is an expansion from the eight types recognized in MOBILE5. MOBILE6 guidance documents include a methodology for completing the conversion from MOBILE5 to MOBILE6.</i>
AVERAGE SPEED: 05.0 FREEWAY	<i>This input instructs the model to generate emissions for the scenario at a single user provide speed (in this case 5 miles per hour on a Freeway). MOBILE6 unlike its predecessors utilizes different speed and emission profiles for different facility types. The user can choose between non-ramp, Freeway, Arterial, and Areawide types.</i>

This concludes the summary of MOBILE6 input parameters used for the hydrocarbon and oxide of nitrogen analyses.

Emissions

Once the previously discussed modeling efforts have been completed, the vehicle miles of travel (VMT) from the TRANPLAN run are multiplied by their associated emission factors to generate an estimate of emissions for each evaluated calendar year. Tables displaying this step appear in Attachment B. In keeping with past practice, gram/day emissions are converted to tons/day for purposes of reporting.

Attachment B

Emission Calculation Tables

Hydrocarbons – Freeway Emissions

Speed Range (miles/hour)	2006			2015			2025		
	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	24,317	3.353	0.09	30,912	1.408	0.05	28,858	1.026	0.03
5.01 - 10.00	4,122	1.697	0.01	58,111	0.741	0.05	82,681	0.539	0.05
10.01 - 15.00	58,698	1.278	0.08	18,891	0.555	0.01	45,148	0.393	0.02
15.01 - 20.00	26,349	1.061	0.03	42,424	0.447	0.02	21,043	0.302	0.01
20.01 - 25.00	59,084	0.965	0.06	67,076	0.405	0.03	137,076	0.269	0.04
25.01 - 30.00	202,979	0.903	0.20	222,445	0.378	0.09	227,029	0.249	0.06
30.01 - 35.00	730,662	0.851	0.69	769,349	0.356	0.30	929,009	0.231	0.24
35.01 - 40.00	895,713	0.814	0.80	1,144,871	0.34	0.43	1,299,854	0.218	0.31
40.01 - 45.00	869,969	0.783	0.75	1,070,803	0.326	0.38	1,266,138	0.206	0.29
45.01 - 50.00	1,818,175	0.757	1.52	1,754,473	0.316	0.61	2,132,635	0.199	0.47
50.01 - 55.00	3,827,033	0.737	3.11	4,613,215	0.31	1.58	6,448,635	0.196	1.39
55.01 - 60.00	13,273,386	0.724	10.59	13,320,978	0.307	4.51	12,004,253	0.194	2.57
60.01 - 65.00	0	0.722	0.00	0	0.307	0.00	0	0.194	0.00
TOTAL	21,790,487		17.94	23,113,548		8.06	24,622,359		5.48

Hydrocarbons – Major Arterial Emissions

Speed Range (miles/hour)	2006			2015			2025		
	MAJOR VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	1,518	3.159	0.01	10,428	1.334	0.02	13,253	0.991	0.01
5.01 - 10.00	35,722	1.694	0.07	56,598	0.74	0.05	49,662	0.548	0.03
10.01 - 15.00	90,711	1.303	0.13	115,965	0.562	0.07	125,623	0.404	0.06
15.01 - 20.00	177,309	1.061	0.21	208,203	0.441	0.10	238,698	0.301	0.08
20.01 - 25.00	362,627	0.963	0.38	382,931	0.401	0.17	447,246	0.271	0.13
25.01 - 30.00	4,232,956	0.898	4.19	4,431,009	0.373	1.82	4,624,347	0.249	1.27
30.01 - 35.00	3,057,319	0.847	2.85	3,177,701	0.351	1.23	3,376,284	0.231	0.86
35.01 - 40.00	6,437,531	0.812	5.76	6,727,000	0.335	2.48	6,800,790	0.218	1.63
40.01 - 45.00	1,056,278	0.782	0.91	1,020,967	0.322	0.36	929,421	0.207	0.21
45.01 - 50.00	0	0.756	0.00	0	0.311	0.00	0	0.198	0.00
50.01 - 55.00	0	0.736	0.00	0	0.305	0.00	0	0.195	0.00
55.01 - 60.00	0	0.722	0.00	0	0.302	0.00	0	0.193	0.00
60.01 - 65.00	0	0.711	0.00	0	0.301	0.00	0	0.193	0.00
TOTAL	15,451,971		14.51	16,130,802		6.30	16,605,324		4.29

Hydrocarbons – Special Facility* Emissions

Speed Range (miles/hour)	2006			2015			2025		
	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	5,458	3.271	0.02	5,753	1.399	0.01	5,978	1.012	0.01
5.01 - 10.00	0	1.756	0.00	2,380	0.778	0.00	2,435	0.558	0.00
10.01 - 15.00	2,186	1.356	0.00	0	0.595	0.00	0	0.414	0.00
15.01 - 20.00	529	1.112	0.00	567	0.472	0.00	598	0.311	0.00
20.01 - 25.00	3,222	1.012	0.00	3,356	0.431	0.00	3,419	0.281	0.00
25.01 - 30.00	7,840	0.947	0.01	9,610	0.403	0.00	9,833	0.259	0.00
30.01 - 35.00	18,884	0.895	0.02	19,371	0.381	0.01	21,593	0.242	0.01
35.01 - 40.00	30,185	0.861	0.03	28,963	0.366	0.01	28,839	0.23	0.01
40.01 - 45.00	0	0.831	0.00	0	0.352	0.00	0	0.219	0.00
45.01 - 50.00	0	0.805	0.00	0	0.342	0.00	0	0.211	0.00
50.01 - 55.00	0	0.783	0.00	0	0.335	0.00	0	0.207	0.00
55.01 - 60.00	0	0.768	0.00	0	0.332	0.00	0	0.206	0.00
60.01 - 65.00	0	0.756	0.00	0	0.330	0.00	0	0.206	0.00
TOTAL	68,304		0.08	70,000		0.04	72,695		0.03

*This category represents traffic on the Valley Parkway through the Cleveland Metroparks system.

Hydrocarbons – Toll Road Emissions

Speed Range (miles/hour)	2006			2015			2025		
	TOLL VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	0	3.257	0.00	0	1.365	0.00	0	0.998	0.00
5.01 - 10.00	182	1.68	0.00	199	0.733	0.00	1,165	0.536	0.00
10.01 - 15.00	1,199	1.265	0.00	1,236	0.55	0.00	1,699	0.393	0.00
15.01 - 20.00	2,714	1.044	0.00	2,878	0.441	0.00	2,934	0.301	0.00
20.01 - 25.00	1,574	0.941	0.00	2,143	0.396	0.00	253	0.266	0.00
25.01 - 30.00	728	0.873	0.00	905	0.367	0.00	1,954	0.243	0.00
30.01 - 35.00	2,118	0.818	0.00	2,521	0.343	0.00	2,485	0.225	0.00
35.01 - 40.00	7,674	0.778	0.01	7,732	0.325	0.00	8,497	0.21	0.00
40.01 - 45.00	0	0.746	0.00	0	0.31	0.00	0	0.198	0.00
45.01 - 50.00	0	0.719	0.00	0	0.3	0.00	0	0.19	0.00
50.01 - 55.00	0	0.7	0.00	0	0.294	0.00	0	0.186	0.00
55.01 - 60.00	0	0.687	0.00	0	0.291	0.00	0	0.184	0.00
60.01 - 65.00	0	0.686	0.00	0	0.290	0.00	0	0.184	0.00
TOTAL	16,189		0.02	17,614		0.01	18,987		0.01

Hydrocarbons – Minor Arterial Emissions

Speed Range (miles/hour)	2006			2015			2025		
	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	15,186	3.158	0.05	16,203	1.329	0.02	19,166	0.986	0.02
5.01 - 10.00	30,068	1.692	0.06	29,158	0.736	0.02	27,974	0.543	0.02
10.01 - 15.00	85,850	1.3	0.12	93,631	0.559	0.06	100,587	0.4	0.04
15.01 - 20.00	203,612	1.058	0.24	236,357	0.438	0.11	256,669	0.297	0.08
20.01 - 25.00	982,400	0.961	1.04	1,019,676	0.398	0.45	1,056,070	0.267	0.31
25.01 - 30.00	552,764	0.896	0.55	585,019	0.37	0.24	690,262	0.246	0.19
30.01 - 35.00	4,473,809	0.845	4.17	4,739,292	0.348	1.82	4,981,022	0.228	1.25
35.01 - 40.00	1,081,037	0.811	0.97	1,087,730	0.333	0.40	1,081,323	0.216	0.26
40.01 - 45.00	0	0.781	0.00	0	0.319	0.00	0	0.204	0.00
45.01 - 50.00	0	0.755	0.00	0	0.309	0.00	0	0.196	0.00
50.01 - 55.00	0	0.735	0.00	0	0.303	0.00	0	0.192	0.00
55.01 - 60.00	0	0.721	0.00	0	0.3	0.00	0	0.191	0.00
60.01 - 65.00	0	0.710	0.00	0	0.298	0.00	0	0.190	0.00
TOTAL	7,424,726		7.19	7,807,066		3.12	8,213,073		2.17

Hydrocarbons – Local Road Emissions

Speed Range (miles/hour)	2006			2015			2025		
	LOCAL VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	0	3.098	0.00	0	1.281	0.00	0	0.96	0.00
5.01 - 10.00	954	1.651	0.00	1,441	0.705	0.00	1,495	0.525	0.00
10.01 - 15.00	3,194,795	1.266	4.46	3,255,211	0.532	1.91	3,293,350	0.384	1.39
15.01 - 20.00	10,913	1.026	0.01	11,734	0.412	0.01	12,647	0.281	0.00
20.01 - 25.00	82,572	0.931	0.08	85,027	0.374	0.04	93,224	0.253	0.03
25.01 - 30.00	86,114	0.867	0.08	86,690	0.347	0.03	78,974	0.232	0.02
30.01 - 35.00	4,245	0.817	0.00	3,303	0.326	0.00	3,259	0.215	0.00
35.01 - 40.00	0	0.784	0.00	0	0.311	0.00	0	0.202	0.00
40.01 - 45.00	0	0.754	0.00	0	0.297	0.00	0	0.19	0.00
45.01 - 50.00	0	0.729	0.00	0	0.287	0.00	0	0.182	0.00
50.01 - 55.00	0	0.709	0.00	0	0.281	0.00	0	0.178	0.00
55.01 - 60.00	0	0.694	0.00	0	0.278	0.00	0	0.176	0.00
60.01 - 65.00	0	0.683	0.00	0	0.275	0.00	0	0.175	0.00
TOTAL	3,379,593		4.64	3,443,406		1.98	3,482,949		1.45

Hydrocarbons – Total Emissions by Speed Range

HYDROCARBON EMISSIONS (TONS/DAY)			
Speed Range	2006	2015	2025
0.00 - 5.00	0.17	0.10	0.07
5.01 - 10.00	0.13	0.12	0.10
10.01 - 15.00	4.80	2.05	1.51
15.01 - 20.00	0.49	0.24	0.18
20.01 - 25.00	1.58	0.68	0.51
25.01 - 30.00	5.03	2.19	1.54
30.01 - 35.00	7.73	3.36	2.36
35.01 - 40.00	7.57	3.33	2.21
40.01 - 45.00	1.66	0.75	0.50
45.01 - 50.00	1.52	0.61	0.47
50.01 - 55.00	3.11	1.58	1.39
55.01 - 60.00	10.59	4.51	2.57
60.01 - 65.00	0.00	0.00	0.00
NOACA TOTAL	44.38	19.52	13.41
Akron	20.51	10.25	7.47
Ashtabula	4.02	2.07	1.58
TOTAL	68.91	31.84	22.46
Budget	92.70	92.70	92.70
DELTA	(23.79)	(60.86)	(70.24)

Oxides of Nitrogen – Freeway Emissions

Speed Range (miles/hour)	2006			2015			2025		
	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	24,317	2.079	0.06	30,912	0.684	0.02	28,858	0.306	0.01
5.01 - 10.00	4,122	1.625	0.01	58,111	0.525	0.03	82,681	0.221	0.02
10.01 - 15.00	58,698	1.375	0.09	18,891	0.439	0.01	45,148	0.177	0.01
15.01 - 20.00	26,349	1.302	0.04	42,424	0.416	0.02	21,043	0.168	0.00
20.01 - 25.00	59,084	1.264	0.08	67,076	0.404	0.03	137,076	0.164	0.02
25.01 - 30.00	202,979	1.243	0.28	222,445	0.397	0.10	227,029	0.161	0.04
30.01 - 35.00	730,662	1.236	1.00	769,349	0.394	0.33	929,009	0.16	0.16
35.01 - 40.00	895,713	1.261	1.25	1,144,871	0.403	0.51	1,299,854	0.163	0.23
40.01 - 45.00	869,969	1.312	1.26	1,070,803	0.419	0.49	1,266,138	0.168	0.23
45.01 - 50.00	1,818,175	1.393	2.79	1,754,473	0.446	0.86	2,132,635	0.177	0.42
50.01 - 55.00	3,827,033	1.517	6.40	4,613,215	0.485	2.47	6,448,635	0.19	1.35
55.01 - 60.00	13,273,386	1.706	24.96	13,320,978	0.546	8.02	12,004,253	0.21	2.78
60.01 - 65.00	0	1.734	0.00	0	0.554	0.00	0	0.213	0.00
TOTAL	21,790,487		38.20	23,113,548		12.90	24,622,359		5.29

Oxides of Nitrogen – Major Arterial Emissions

Speed Range (miles/hour)	2006			2015			2025		
	MAJOR VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	1,518	1.395	0.00	10,428	0.475	0.01	13,253	0.257	0.00
5.01 - 10.00	35,722	1.113	0.04	56,598	0.375	0.02	49,662	0.198	0.01
10.01 - 15.00	90,711	0.94	0.09	115,965	0.315	0.04	125,623	0.162	0.02
15.01 - 20.00	177,309	0.849	0.17	208,203	0.283	0.06	238,698	0.144	0.04
20.01 - 25.00	362,627	0.792	0.32	382,931	0.263	0.11	447,246	0.133	0.07
25.01 - 30.00	4,232,956	0.755	3.52	4,431,009	0.251	1.23	4,624,347	0.126	0.64
30.01 - 35.00	3,057,319	0.737	2.48	3,177,701	0.244	0.85	3,376,284	0.121	0.45
35.01 - 40.00	6,437,531	0.747	5.30	6,727,000	0.248	1.84	6,800,790	0.123	0.92
40.01 - 45.00	1,056,278	0.764	0.89	1,020,967	0.254	0.29	929,421	0.126	0.13
45.01 - 50.00	0	0.788	0.00	0	0.262	0.00	0	0.129	0.00
50.01 - 55.00	0	0.818	0.00	0	0.272	0.00	0	0.133	0.00
55.01 - 60.00	0	0.857	0.00	0	0.285	0.00	0	0.138	0.00
60.01 - 65.00	0	0.908	0.00	0	0.302	0.00	0	0.145	0.00
TOTAL	15,451,971		12.82	16,130,802		4.45	16,605,324		2.28

Oxides of Nitrogen – Special Facility* Emissions

Speed Range (miles/hour)	2006			2015			2025		
	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	5,458	1.259	0.01	5,753	0.455	0.00	5,978	0.264	0.00
5.01 - 10.00	0	0.997	0.00	2,380	0.358	0.00	2,435	0.203	0.00
10.01 - 15.00	2,186	0.839	0.00	0	0.3	0.00	0	0.167	0.00
15.01 - 20.00	529	0.758	0.00	567	0.271	0.00	598	0.149	0.00
20.01 - 25.00	3,222	0.707	0.00	3,356	0.252	0.00	3,419	0.138	0.00
25.01 - 30.00	7,840	0.673	0.01	9,610	0.24	0.00	9,833	0.131	0.00
30.01 - 35.00	18,884	0.655	0.01	19,371	0.233	0.00	21,593	0.126	0.00
35.01 - 40.00	30,185	0.662	0.02	28,963	0.236	0.01	28,839	0.128	0.00
40.01 - 45.00	0	0.673	0.00	0	0.241	0.00	0	0.13	0.00
45.01 - 50.00	0	0.684	0.00	0	0.245	0.00	0	0.133	0.00
50.01 - 55.00	0	0.697	0.00	0	0.25	0.00	0	0.136	0.00
55.01 - 60.00	0	0.71	0.00	0	0.255	0.00	0	0.139	0.00
60.01 - 65.00	0	0.724	0.00	0	0.261	0.00	0	0.142	0.00
TOTAL	68,304		0.05	70,000		0.02	72,695		0.01

*This category represents traffic on the Valley Parkway through the Cleveland Metroparks system.

Oxides of Nitrogen – Toll Road Emissions

Speed Range (miles/hour)	2006			2015			2025		
	TOLL VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	0	3.063	0.00	0	0.973	0.00	0	0.374	0.00
5.01 - 10.00	182	2.503	0.00	199	0.784	0.00	1,165	0.284	0.00
10.01 - 15.00	1,199	2.176	0.00	1,236	0.675	0.00	1,699	0.235	0.00
15.01 - 20.00	2,714	2.038	0.01	2,878	0.631	0.00	2,934	0.22	0.00
20.01 - 25.00	1,574	1.957	0.00	2,143	0.606	0.00	253	0.212	0.00
25.01 - 30.00	728	1.915	0.00	905	0.592	0.00	1,954	0.207	0.00
30.01 - 35.00	2,118	1.907	0.00	2,521	0.589	0.00	2,485	0.205	0.00
35.01 - 40.00	7,674	1.951	0.02	7,732	0.603	0.01	8,497	0.21	0.00
40.01 - 45.00	0	2.047	0.00	0	0.634	0.00	0	0.22	0.00
45.01 - 50.00	0	2.206	0.00	0	0.684	0.00	0	0.236	0.00
50.01 - 55.00	0	2.455	0.00	0	0.763	0.00	0	0.261	0.00
55.01 - 60.00	0	2.84	0.00	0	0.885	0.00	0	0.299	0.00
60.01 - 65.00	0	2.897	0.00	0	0.903	0.00	0	0.304	0.00
TOTAL	16,189		0.04	17,614		0.01	18,987		0.00

Oxides of Nitrogen – Minor Arterial Emissions

Speed Range (miles/hour)	2006			2015			2025		
	MINOR VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	15,186	1.349	0.02	16,203	0.461	0.01	19,166	0.253	0.01
5.01 - 10.00	30,068	1.074	0.04	29,158	0.363	0.01	27,974	0.194	0.01
10.01 - 15.00	85,850	0.906	0.09	93,631	0.304	0.03	100,587	0.159	0.02
15.01 - 20.00	203,612	0.817	0.18	236,357	0.273	0.07	256,669	0.141	0.04
20.01 - 25.00	982,400	0.763	0.83	1,019,676	0.254	0.29	1,056,070	0.13	0.15
25.01 - 30.00	552,764	0.727	0.44	585,019	0.241	0.16	690,262	0.122	0.09
30.01 - 35.00	4,473,809	0.708	3.49	4,739,292	0.235	1.23	4,981,022	0.118	0.65
35.01 - 40.00	1,081,037	0.717	0.85	1,087,730	0.238	0.29	1,081,323	0.119	0.14
40.01 - 45.00	0	0.733	0.00	0	0.244	0.00	0	0.122	0.00
45.01 - 50.00	0	0.753	0.00	0	0.251	0.00	0	0.125	0.00
50.01 - 55.00	0	0.779	0.00	0	0.26	0.00	0	0.129	0.00
55.01 - 60.00	0	0.811	0.00	0	0.27	0.00	0	0.133	0.00
60.01 - 65.00	0	0.853	0.00	0	0.284	0.00	0	0.138	0.00
TOTAL	7,424,726		5.94	7,807,066		2.08	8,213,073		1.10

Oxides of Nitrogen – Local Road Emissions

Speed Range (miles/hour)	2006			2015			2025		
	LOCAL VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)	VMT (miles)	EF (grams/mile)	EMISSIONS (tons/day)
0.00 - 5.00	0	1.277	0.00	0	0.427	0.00	0	0.237	0.00
5.01 - 10.00	954	1.01	0.00	1,441	0.333	0.00	1,495	0.18	0.00
10.01 - 15.00	3,194,795	0.848	2.99	3,255,211	0.277	0.99	3,293,350	0.146	0.53
15.01 - 20.00	10,913	0.763	0.01	11,734	0.247	0.00	12,647	0.128	0.00
20.01 - 25.00	82,572	0.711	0.06	85,027	0.229	0.02	93,224	0.117	0.01
25.01 - 30.00	86,114	0.675	0.06	86,690	0.217	0.02	78,974	0.11	0.01
30.01 - 35.00	4,245	0.656	0.00	3,303	0.21	0.00	3,259	0.105	0.00
35.01 - 40.00	0	0.664	0.00	0	0.213	0.00	0	0.107	0.00
40.01 - 45.00	0	0.678	0.00	0	0.218	0.00	0	0.109	0.00
45.01 - 50.00	0	0.694	0.00	0	0.223	0.00	0	0.111	0.00
50.01 - 55.00	0	0.715	0.00	0	0.23	0.00	0	0.114	0.00
55.01 - 60.00	0	0.739	0.00	0	0.238	0.00	0	0.117	0.00
60.01 - 65.00	0	0.770	0.00	0	0.248	0.00	0	0.121	0.00
TOTAL	3,379,593		3.13	3,443,406		1.04	3,482,949		0.55

Oxides of Nitrogen – Total Emissions by Speed Range

OXIDE OF NITROGEN EMISSIONS (TONS/DAY)			
Speed Range	2006	2015	2025
0.00 - 5.00	0.09	0.04	0.02
5.01 - 10.00	0.09	0.07	0.04
10.01 - 15.00	3.26	1.08	0.58
15.01 - 20.00	0.40	0.16	0.08
20.01 - 25.00	1.30	0.45	0.25
25.01 - 30.00	4.32	1.50	0.79
30.01 - 35.00	6.99	2.42	1.27
35.01 - 40.00	7.44	2.65	1.30
40.01 - 45.00	2.15	0.78	0.36
45.01 - 50.00	2.79	0.86	0.42
50.01 - 55.00	6.40	2.47	1.35
55.01 - 60.00	24.96	8.02	2.78
60.01 - 65.00	0.00	0.00	0.00
NOACA TOTAL	60.18	20.50	9.24
Akron	30.86	12.86	6.83
Ashtabula	5.39	2.33	1.31
TOTAL	96.43	35.69	17.38
Budget	104.40	104.40	104.40
DELTA	(7.97)	(68.71)	(87.02)