APPENDIX MM – GREENE COUNTY AIR QUALITY CONFORMITY

Part A: Conformity Finding
Part B: Agency Comment Letters
Part C: Analysis of Volatile Organic Compound and Nitrogen Oxides Emissions with Public Comments and Responses

Part A: Conformity Finding

U.S. Department of Transportation
Federal Highway Administration

Indiana Division

575 North Pennsylvania Street, Room 254
Indianapolis, Indiana 46204

January 5, 2011

In Reply Refer To:
HDA-IN

Mr. Roy Nunnally, Director
Long Range Planning, Modeling & Traffic Counting Section
Indiana Department of Transportation
100 N. Senate Ave.
Indianapolis, Indiana 46204

Dear Mr. Nunnally:

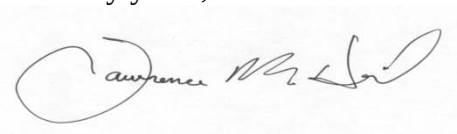
The Federal Highway Administration (FHWA) has completed the review of the conformity demonstration for Greene County, Indiana's 8-hour ozone maintenance area for the I-69 Tier 2 Section 4 Final Environmental Impact Statement (FEIS). Greene County is an 8-hour maintenance area with approved motor vehicle emission budgets for volatile organic compounds and oxides of nitrogen.

The Indiana Department of Environmental Management (IDEM) and the United States Environmental Protection Agency (EPA) completed their reviews (see enclosed comments). EPA reviewed the conformity documentation related to the 8-hour ozone standard and have concluded in their letter of December 16, 2010 that the analyses and documentation meet the criteria outlined in the conformity rule. The EPA approved the redesignation request and maintenance plan with motor vehicle emission budgets for Greene County on November 4, 2005. The conformity documentation demonstrated conformity to the approved budgets in the 8-hour ozone maintenance plan. They recommended that FHWA find that the I-69 Section 4 Tier 2 FEIS demonstrates conformity to the State Implementation Plan budgets as required by the conformity rule. IDEM in their letter of January 5, 2011 indicated that they had no formal comments. Appropriate consultation and public involvement on the finding has been completed.

Therefore we find that the conformity documentation for the I-69 project in Greene County, Indiana demonstrates conformity as required by the conformity rule. If you have any questions

regarding this finding, you may contact Larry Heil at (317) 226-7480 or by e-mail larry.heil@dot.gov.

Sincerely yours,



For Robert F. Tally, Jr. P.E.
Division Administrator

Enclosures

Cc: Shawn Seals, IDEM
Patricia Morris, R-5 EPA

Part B: Agency Comment Letters

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

AR-18J

DEC 16 2010

Robert F. Tally, Jr., P.E.
Division Administrator
Federal Highway Administration
575 North Pennsylvania Street, Room 254
Indianapolis, Indiana 46204

Dear Mr. Tally:

This letter provides the U.S. Environmental Protection Agency's comments regarding the transportation conformity demonstration for section 4 of the I-69 highway for ozone conformity in Greene County, Indiana.

Our review of the conformity documentation for the updated section 4 of I-69 with the open to traffic year of 2015, has concluded that the conformity documentation meets the conformity criteria in 40 CFR Part 93. The Greene County, Indiana area was designated as a basic 8-hour ozone area. Indiana submitted a complete 8-hour ozone redesignation request and maintenance plan with motor vehicle emissions budgets, which were approved in a Federal Register notice published on November 14, 2005. The conformity documentation demonstrated conformity to the approved budgets in the 8-hour ozone maintenance plan.

EPA has considered this conformity determination in light of the current status of the Clean Air Interstate Rule (CAIR). EPA notes that the D.C. Circuit issued a decision on July 11, 2008 vacating the Clean Air Interstate Rule. North Carolina v. EPA, 531 F.3d 896 (D.C. Cir. 2008). On September 24, 2008, EPA and other parties in the case filed motions for rehearing asking the D.C. Circuit to reconsider its decision in the case. On December 23, 2008, the court granted EPA's motion for rehearing to the extent it agreed to remand CAIR without vacating it. However, the court made no other changes to the July 11, 2008 opinion, remanding the case to EPA for further rulemaking consistent with this opinion. Therefore, the CAIR rule remains in place, but EPA must promulgate another rule consistent with the court's July 11, 2008 opinion.

On August 2, 2010 (75 FR 45210) EPA proposed the Air Pollution Transport Rule (Transport Rule) as replacement for the remanded CAIR rule. EPA anticipates finalizing the Transport Rule in June 2011. Transportation conformity determinations should continue to use motor vehicle emissions budgets in approved SIPs. See Environmental Defense v. EPA, 167

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F.3d 641, 651 (finding that the Clean Air Act requires conformity determinations to be based on an approved SIP, where such a SIP exists).

We recommend that you find that the updated conformity determination for section 4 of proposed highway I69 demonstrates conformity as required by the conformity rule. If you have any questions regarding these comments, please contact Patricia Morris, of the EPA Region 5 staff, at (312) 353-8656.

Sincerely,

Doug Aburano
Chief
Control Strategies Section

cc: Chris Pederson
Section Chief
Indiana Department of Environmental Management

Larry Heil
Planning and Environmental Specialist
Federal Highway Administration - Indiana Division

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

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January 5, 2011

Robert F. Tally, Jr., Division Administrator
Federal Highway Administration
575 North Pennsylvania Street, Room 254
Indianapolis, Indiana 46204

Mr. Tally:

This letter provides the Indiana Department of Environmental Management's (IDEM) comments regarding the air quality requirements associated with the Indiana Department of Transportation (INDOT) air quality conformity demonstration for Greene County, Indiana. Greene County, Indiana is currently designated as an 8-hour ozone maintenance area and has approved motor vehicle emission budgets for volatile organic compounds and oxides of nitrogen.

IDEM has reviewed the December 2010 revision of the Greene County Draft Analysis of Volatile Organic Compound and Nitrogen Oxides Emissions document prepared for INDOT by Bernardin, Lockmueller & Associates, Inc. of Evansville, Indiana. This draft analysis indicates that the projected emissions associated with this section of the I-69 project in Greene County, Indiana appears to conform with the motor vehicle emission budgets as detailed in the 8-hour ozone redesignation request and maintenance plan that was approved by U.S. EPA on November 4, 2005.

Based on the information provided within this draft analysis, IDEM has no formal comments at this time. IDEM defers to the Federal Highway Administration for official determination of conformity concerning the Greene County, Indiana portion of the I-69 project and the associated documentation.

If you have questions or comments or need additional information please contact me at 800-451-6027 ext. 3-0425 or SSeals@idem.IN.gov.

Regards,

Shawn M. Seals
Senior Environmental Manager
Indiana Department of Environmental Management

Part C: Analysis of Volatile Organic Compound and Nitrogen Oxides Emissions with Public Comments and Responses

GREENE COUNTY

ANALYSIS OF VOLATILE ORGANIC COMPOUND AND NITROGEN OXIDES EMISSIONS

Prepared for the
Indiana Department of Transportation

December 7, 2010

Prepared by:
Bernardin, Lochmueller & Associates, Inc.
6200 Vogel Road
Evansville, Indiana 47715

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INTRODUCTION

Analysis of volatile organic compounds (VOC) and oxides of nitrogen (NO_X) emissions produced by motor vehicles in Greene County, Indiana, demonstrates that these ozone precursors will continue to decrease in future years. Moreover, this decrease will occur irrespective of the construction of I-69 or other transportation infrastructure improvements in the Indiana Department of Transportation (INDOT)'s Long Range Transportation Plan. Cleaner, lower-emitting vehicle fleets will continue to more than offset growth in vehicle miles of travel (VMT) and result in lower overall emissions inventories.

This report documents the process involved in this analysis as well as its findings and is presented in support of a conformity determination for the final environmental impact statement (FEIS) for I-69 Section 4. The goal was to analyze air pollutant emissions levels (VOC and NO_X) corresponding to the latest assumptions in the DEIS for I-69 Section 4 and compare them to the budget for ozone precursor emissions set by the Indiana Department of Environmental Management (IDEM) in its ozone maintenance plan for Greene County.

As per the EPA's final rule published in the Federal Register Vol. 69, No. 126 on July 1, 2004, "Transportation Conformity is required under the Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federally supported highway and transit project activities are consistent with ("Conform to") the purpose of the state air quality implementation plan (SIP). Conformity currently applies under EPA's rules to areas that are designated non-attainment or maintenance." Areas are designated "non-attainment" for violating the National Ambient Air Quality Standards (NAAQS). Final Rules published in the Federal Register Vol. 69, No. 84 on April 30, 2004 state "CAA definition of the non-attainment area that is defined in Section 107(d) (1) (A) (i) as an area that is violating the standard. If an area meets this definition, EPA is obligated to designate the area as non-attainment." The non-attainment areas can be re-designated as attainment/maintenance as per section 107(d) (3) of the Clean Air Act. EPA made a determination that the Greene County ozone non-attainment area has attained the 8-hour ozone NAAQS on November 14, 2005. This determination was based on three years of complete quality-assured ambient air quality monitoring data for the 2002-2004 seasons that demonstrated that the 8-hour ozone NAAQS has been attained in the area. In making this re-designation, EPA also approved the State's plans for maintaining the 8-hour ozone NAAQS through 2015 and beyond in this area as a revision to the Indiana State Implementation Plan (SIP). EPA also found adequate and approved the State's 2015 Motor Vehicle Emission Budgets (MVEBs) for the Greene County area which IDEM has determined to be 1.46 tpd for VOC and 1.54 tpd for NO_X. It should be noted that the MVEB exceeds the on-road mobile source NO_X emissions projected by IDEM for 2015. All plans, programs and projects must be reviewed for conformity with the standards to assure that they do not exceed the established budgets as determined in the SIP. Any project subject to the National Environmental Policy Act (NEPA) must be found to conform with the SIP before a final record of decision (ROD) may be issued (40 CFR 93.102).

The air quality analysis presented here involved four procedures. First, the updated Indiana Statewide Travel Demand Model (ISTDM) was used to determine the vehicle-miles-traveled (VMT) for a base year (2006) and for each of the analysis years (2015, 2025 and 2035). The modeled VMT was then used to develop growth rates which were applied to the official estimates of VMT from the Highway Performance Monitoring System (HPMS). Second, a post processing procedure was used to compute average speed for each facility type, and from that data, Mobile 6.2 input files were created. Third, the Mobile 6.2 emission factor model was used to determine the emission rates for VOCs and NO_X. Fourth, the VMT by functional classification was then multiplied by the emission rate factors to determine the total emissions inventories.

PROJECT ASSUMPTIONS

The most significant change since the Greene County emissions analysis that demonstrated conformity for I-69 Section 3 is the accelerated construction schedule for Section 4 and the associated open-to-traffic date of the end of 2014. The representation of I-69 in Greene County in future years reflects this timetable and the latest assumptions regarding the placement of interchanges included in the DEIS for Section 4.

Federal regulations (40 CFR 93.109) stipulate that in isolated rural maintenance areas, regionally significant projects should be included from the statewide long range transportation plan. INDOT is currently updating their Long Range Transportation Plan from 2005-2030 to 2010-2035, and integrating it with their Major Moves construction program. The new plan incorporates the increased near term construction associated with Major Moves, including the acceleration of Section 4, while reflecting a more conservative assumption in later years. Although the new Long Range Plan is still in draft form, it was agreed through interagency consultation on July 28, 2010, that it represented the best and latest planning assumptions.

TRAVEL DEMAND MODEL AND VMT GROWTH

The ISTDM is a mathematical computer model, using state of the art TransCAD software, which relates current and future travel demand to basic socioeconomic information. The model area covers all of Indiana including Greene County. All major roadways are represented in the travel model.

The Indiana State travel demand model uses the standard four steps of modeling: trip generation, trip distribution, mode choice, and traffic assignment. In addition, it considers travel by vehicles (trucks and autos) entering, leaving, and crossing Indiana, and it predicts truck traffic based in part on the representation of commodity flows. The ISTDM was re-validated for a new 2006 base year with improvements to the mode choice and truck models. During the model calibration process, model parameters were adjusted such that the model output matched, within accepted standards, several calibration criteria based on measured data. These criteria included items such as comparisons

against traffic counts, modeled vs. observed vehicle miles of travel, trip lengths by trip purpose, etc. The result of the recalibration was a travel model which replicated travel in Indiana for the year 2006 and is capable of producing reasonable traffic forecasts out to year 2035. This analysis makes use of the official version 5.0 of ISTDM finalized January 28, 2010.

Model outputs are expressed in terms of daily volumes for each roadway segment. The raw model results from each scenario have traffic estimates only for those facilities coded in the model. These modeled traffic estimates generally include facilities that are classified as major collector or higher. Travel on the lower classed roadways (collector and local), while not entirely absent, is under-represented in the model.

TABLE 1: HISTORIC HPMS VMT AND FORECAST GROWTH RATES FROM ISTDM

	Source	HPMS				INDOT	ISTDM									
	Year	2006	**2006**	2007	2009	July	2006	2006	2015		2025		2035		2035 + I-69 Bridge	
	Measure	Length	DVMT	DVMT	DVMT	Adjust.	Length	DVMT	DVMT	*Growth*	DVMT	*Growth*	DVMT	*Growth*	DVMT	*Growth*
	Units	Miles	1,000's	1,000's	1,000's	Factor	Miles	1,000's	1,000's	*Rate*	1,000's	*Rate*	1,000's	*Rate*	1,000's	*Rate*
1	**Rural Interstate**					1.1274			264	*	391	*	470	*	561	*
2	**Rural OPA**	24.1	**129**	128	251	1.0638	24.1	119	115	*0.965*	126	*1.057*	137	*1.154*	137	*1.156*
6	**Rural Min Art**	32.8	**144**	144	118	1.0638	33	138	129	*0.935*	137	*0.995*	145	*1.052*	144	*1.050*
7	**Rural Maj Col**	155.1	**460**	463	311	1.0526	154.2	327	245	*0.748*	280	*0.855*	310	*0.947*	311	*0.950*
8	**Rural Min Col**	191.3	**133**	134	95	1.0526	16.1	9	8	*0.996*	10	*1.121*	10	*1.215*	10	*1.215*
9	**Rural Local**	695.5	**129**	130	344	1.0526				*0.839*		*0.932*		*1.017*		*1.018*
14	**Urban OPA**	4.1	**53**	52	42	1.0111	4.1	38	39	*1.007*	41	*1.058*	42	*1.107*	42	*1.103*
16	**Urban Min Art**	4.5	**24**	24	19	1.0111	2	7	7	*1.013*	8	*1.063*	8	*1.115*	8	*1.116*
17	**Urban Col**	6.4	**5**	4	13	1.0111				*1.008*		*1.059*		*1.108*		*1.105*
19	**Urban Local**	35.3	**40**	40	74	1.0111				*1.008*		*1.059*		*1.108*		*1.105*
	Grand Total	1149.0	**1117**	1119	1266		233.5	637	807		991		1123		1214	

Adjustment factors, provided by INDOT, were applied to account for the fact that HPMS daily VMT represents an annual average day; whereas, VMT used for the emissions analysis must represent a summer day. Growth rates for predicting future year VMT are estimated by functional classification. For most functional classes, which are represented in the model network, the growth rate is simply taken as the ratio of modeled VMT in the forecast year versus the base year. For rural local roads, urban collectors and urban local roads, which are not represented in the model network for Greene County, growth rates were based on the growth of all rural or urban non-freeway VMT. For rural interstates, which only appear in Greene County in future year scenarios, the model VMT is used directly, without adjustment, since there is no base year HPMS VMT to which growth factors could be applied. The historic HPMS estimates of VMT in Greene County for 2006, 2007 and 2009 are displayed in Table 1 together with the ISTDM estimates of VMT for the base year and 2015, 2025 and 2035 forecast years and resulting growth rates. A second 2035 scenario also assumes construction of the I-69 Ohio River Bridge. This last scenario is not required to demonstrate conformity but is provided for information purposes only, to disclose maximum possible impacts under NEPA.

TRAVEL MODEL POST-PROCESSING AND OTHER MOBILE 6.2 INPUTS

In the Federal Register on March 2, 2010, US EPA formally adopted the new MOVES2010 model as its official mobile source emissions model and announced a two year grace period after which (March 2, 2012) it must be used for conformity purposes. Until that time, it is still permissible to use the Mobile6 emissions factor model. It was decided through interagency consultation on July 28, 2010, that it was appropriate to use the Mobile6 model for this analysis, so as to make a fair, "apples to apples" comparison with the SIP budgets which were developed using Mobile6.

Speeds are included in Mobile6 inputs to produce more accurate emissions rates. The methodology for estimating speeds used in developing the SIP budgets for Greene County was based on an implied default assumption regarding the distribution of traffic throughout the 24 hours of the day. This analysis used the hourly distribution of traffic from the 1995 Indiana Household Travel Survey to post-process the ISTDM results and generally produced slightly higher speeds for most functional classes than were assumed in the SIP development. The previous emissions analysis conducted for I-69 Section 3 estimated emissions both ways, using the SIP's horizon year speeds and using the speeds resulting from post-processing the ISTDM. The results of that analysis demonstrated that there were no significant differences in the emissions resulting from the two methodologies. It was therefore agreed through interagency consultation on July 28, 2010 that it was appropriate to use the ISTDM's post-processed speeds for this analysis.

TABLE 2: HOURLY DISTRIBUTION OF TRAFFIC

DISTRIBUTION OF TOTAL TRAFFIC BY HOUR			
HOUR OF DAY	PERCENT OF DAILY TRAFFIC	HOUR OF DAY	PERCENT OF DAILY TRAFFIC
1:00 AM	0.47%	1:00 PM	4.77%
2:00 AM	0.36%	2:00 PM	5.13%
2:00 AM	0.26%	3:00 PM	8.62%
4:00 AM	0.36%	4:00 PM	9.60%
5:00 AM	1.61%	5:00 PM	9.22%
6:00 AM	6.55%	6:00 PM	5.13%
7:00 AM	8.01%	7:00 PM	3.99%
8:00 AM	6.24%	8:00 PM	2.90%
9:00 AM	4.61%	9:00 PM	2.95%
10:00 AM	4.41%	10:00 PM	3.06%
11:00 AM	4.61%	11:00 PM	1.71%
12:00 AM	4.61%	12:00 PM	0.83%

Source: 1995 Indiana Household Travel Survey

In the post-processing of the ISTDM, accomplished by its POST_ALT program, an average speed and VMT are computed for each time period for each link. In the post-processing, peak period volumes are compared to a peak period capacity to determine a volume to capacity ratio. Capacities use HCM 2000 methodology (described in the model documentation). Volume to capacity (v/c) ratios for each link for each hour are then used to estimate a period specific speed. A BPR volume delay function was used to estimate the link speeds for each time period formulated as follows.

$$Speed_{congested} = \frac{Speed_{freeflow}}{1 + \alpha (v/c)^{\beta}}$$

The alpha and beta parameters are the same as assumed in the ISTDM and specific to each roadway segment. For the base year model in Greene County, alpha's range from 0.42 to 0.72 and betas range from 2.5 to 4.0.

After speeds were estimated for each modeled link and for each of the analysis years, the data was aggregated by FHWA functional classification for use in Mobile 6.2 using the AVERAGE SPEED command. The average speed for each functional class was calculated using a VMT weighted average. The VMT weighted average was computed by multiplying the speed for each link by the link's VMT. Next, the Speed*VMT values were summed for each functional class. The functional class sum was divided by the sum of that functional class's modeled VMT to yield an average speed.

The calculated congested speeds for Rural Interstates, Urban Interstates and Urban Expressways were adjusted for an assumed percentage of ramp VMT according to the procedures outlined in the Mobile6 User's Guide Section 2.8.8.2.d. Speed assumptions are listed in Tables 5 through 8 and in the Mobile6 input files contained in Appendix A.

Indiana specific VMT per vehicle type were also used to improve estimates of emission rates, as in the SIP. The distribution applied was derived by IDEM from the INDOT's 2002 state-wide HPMS data for vehicle classification for each of the twelve INDOT functional classes. The INDOT data covers thirteen vehicle groups which are different from the sixteen vehicle groups required by Mobile6. An adjustment was made by IDEM to convert the INDOT VMT fraction to a Mobile6 VMT fraction, and this data was provided by IDEM for the Greene County. The VMT fraction for each functional class was input to Mobile6 using the VMT FRACTION command. All VMT Fractions used in the analysis are listed in the Mobile6 input files contained in Appendix A.

The Mobile6 emissions analysis, as documented in Appendix A, also includes the use of an age distribution of registered vehicles in Greene County, except for I-69 which assumes the default national fleet age distribution. The vehicles on I-69 are presumed to have characteristics reflective of the national vehicle fleet, rather than of the vehicles registered within Greene County. The Greene County distribution is based on the Lake Michigan Air Directors Consortium's (LADCO) VIN decoding of 2004 registration data for Greene County from the Bureau of Motor Vehicles. Although INDOT has since procured updated registration data for 2009, it had not been quality assured at the time of

this analysis. The vehicle fleet age assumptions for this analysis were agreed to by interagency consultation on August 17, 2010.

Mobile6 also requires certain basic meteorological and other inputs for the estimation of emissions rates. The values for these assumptions must be the same as used in the development of the SIP budgets. For July in Greene County, the SIP assumptions are a minimum daily temperature of 65.0 degrees (Fahrenheit) and maximum daily temperature of 86.3 degrees, absolute humidity of 93.7 grains per pound, 34% cloud cover, 6 am sunrise and 8 pm sunset, and a fuel Reid vapor pressure of 9.0 psi.

ANALYSIS RESULTS

The analysis of volatile organic compounds (VOC) and oxides of Nitrogen (NO_X) emission levels for Greene County demonstrates that motor vehicle emissions have consistently decreased and can be expected to continue to decrease in the future. A summary of the analysis results is presented in Table 3 and in Figure 1.

TABLE 3: SUMMARY RESULTS

Year/Scenario	VMT (in 1,000's)	VOC (tons per day)	NO_X (tons per day)
2015 Budget – Maintenance Plan	-	**1.46**	**1.54**
2015 Forecast	1,314	0.88	1.38
2025 Forecast	1,566	0.64	0.77
2035 Forecast	1,753	0.69	0.67
*2035 Forecast with I-69 Ohio River Bridge**	*1,857*	*0.72*	*0.71*

**For information purposes only*

The state, in consultation with FHWA and US EPA, established budgets for VOC and NO_X in Greene County in 2015 and beyond. These budgets are part of the state's plan to maintain safe levels of ozone which attain the national ambient air quality standards (NAAQS) established by the US EPA. VOC and NO_X are regulated since they contribute directly to the production of ozone. The state's ozone maintenance plan for Greene County was approved by US EPA on November 14, 2005. The maintenance plan included estimates of VOC and NO_X emissions from motor vehicles in 2002 and forecasts of emissions in 2010 and 2015. The budgets were established by applying a safety margin to the 2015 estimates.

TABLE 4: HISTORIC RESULTS AND TRENDS

Year/Scenario	VMT (in 1,000's)	VOC (tons per day)	NO_X (tons per day)
2002 Estimate – Maintenance Plan	1,292	2.74	3.41
2009 Estimate – Historic HPMS VMT / SIP speeds	1,316	1.64	2.02
2010 Forecast – Maintenance Plan	*1,581*	*1.81*	*2.09*
2015 Forecast – Maintenance Plan	*1,764*	*1.33*	*1.40*
2015 Budget – Maintenance Plan	-	**1.46**	**1.54**

Official HPMS data (from 2004-2009) over multiple cycles of INDOT data collection indicate that VMT in Greene County has remained relatively stable relative to the 2002 estimate in the maintenance plan. However, emissions estimates based on HPMS data for 2009 (the most recent year for which data was available at the time of this analysis) demonstrate that emissions had already fallen below the maintenance plan's forecast for 2010 by 2009 despite no decline in VMT.

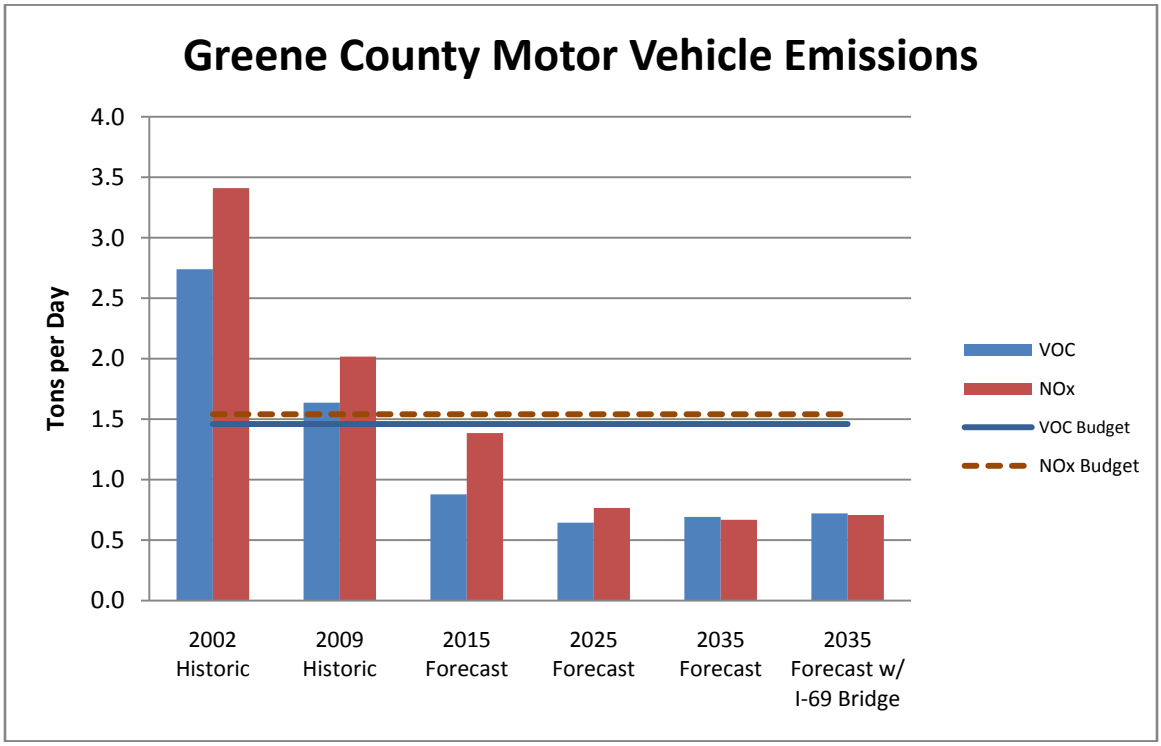

Figure 1: EMISSION ANALYSIS RESULTS

Although VMT in Greene County is forecast to grow in future years with the construction of I-69, emissions are forecast to continue their decline due to lower emission rates from Mobile6 in future years associated with increasingly lower emitting vehicle fleets. The decrease in emissions from the move to cleaner vehicles in future years more than offsets the increase in travel resulting from the construction of I-69 in the county. Detailed analysis results presented in Tables 5 through 8 demonstrate that regardless of whether the I-69 Ohio River Bridge is assumed to be completed by 2035 (see Table 8), future emissions are forecast well below their established budgets.

The draft version of this document is to be made available for public comment and agency review from October 8, 2010 through November 8, 2010. Public notice will be published twice in local print media and online at the project website.

TABLE 5: 2015 FORECAST - GREENE COUNTY

Functional Class	2006 HPMS VMT	July Adj. Fact.	ISTDM 2015 / 2006	2015 VMT	ISTDM Speed	VOC rate	NOx rate	VOC	NOx
					mph	*g/mi*	*g/mi*	*tpd*	*tpd*
Rural Interst.		1.127		**297,905.5**	73.2	0.402	1.683	0.13	0.55
Rural OPA	129,000	1.064	*0.965*	**132,403.2**	48.4	0.601	0.936	0.09	0.14
Rur Min Art	144,000	1.064	*0.935*	**143,239.5**	48.3	0.624	0.777	0.10	0.12
Rur Maj Col	460,000	1.053	*0.748*	**362,382.6**	47.4	0.64	0.713	0.26	0.28
Rur Min Col	133,000	1.053	*0.996*	**139,447.7**	40.3	0.671	0.756	0.10	0.12
Rural Local	129,000	1.053	*0.839*	**113,898.0**	29.2	0.724	0.695	0.09	0.09
Urban OPA	53,000	1.011	*1.007*	**53,979.8**	35.8	0.685	0.655	0.04	0.04
Urb Min Art	24,000	1.011	*1.013*	**24,575.2**	35.6	0.691	0.633	0.02	0.02
Urban Col	5,000	1.011	*1.008*	**5,096.7**	34.0	0.708	0.604	0.00	0.00
Urban Local	40,000	1.011	*1.008*	**40,773.8**		1.052	0.621	0.05	0.03
	1,117,000			**1,313,702.0**				**0.88**	**1.38**

TABLE 6: 2025 FORECAST - GREENE COUNTY

Functional Class	2006 HPMS VMT	July Adj. Fact.	ISTDM 2025 / 2006	2025 VMT	ISTDM Speed	VOC rate	NOx rate	VOC	NOx
					mph	*g/mi*	*g/mi*	*tpd*	*tpd*
Rural Interst.		1.127		**440,928.0**	73.2	0.267	0.602	0.13	0.29
Rural OPA	129,000	1.064	*1.057*	**145,050.2**	48.3	0.371	0.421	0.06	0.07
Rur Min Art	144,000	1.064	*0.995*	**152,446.8**	48.4	0.383	0.392	0.06	0.07
Rur Maj Col	460,000	1.053	*0.855*	**413,910.0**	47.4	0.393	0.379	0.18	0.17
Rur Min Col	133,000	1.053	*1.121*	**156,872.0**	40.3	0.428	0.39	0.07	0.07
Rural Local	129,000	1.053	*0.932*	**126,533.2**	29.2	0.454	0.37	0.06	0.05
Urban OPA	53,000	1.011	*1.058*	**56,684.1**	35.7	0.425	0.357	0.03	0.02
Urb Min Art	24,000	1.011	*1.063*	**25,799.0**	35.4	0.429	0.353	0.01	0.01
Urban Col	5,000	1.011	*1.059*	**5,351.8**	34.0	0.44	0.349	0.00	0.00
Urban Local	40,000	1.011	*1.059*	**42,814.7**		0.701	0.361	0.03	0.02
	1,117,000			**1,566,389.7**				**0.64**	**0.77**

TABLE 7: 2035 FORECAST - GREENE COUNTY

Functional Class	2006 HPMS VMT	July Adj. Fact.	ISTDM 2035 / 2006	2035 VMT	ISTDM Speed	VOC rate	NOx rate	VOC	NOx
					mph	*g/mi*	*g/mi*	*tpd*	*tpd*
Rural Interst.		1.127		**530,302.8**	73.2	0.258	0.393	0.15	0.23
Rural OPA	129,000	1.064	*1.154*	**158,339.9**	48.2	0.359	0.332	0.06	0.06
Rur Min Art	144,000	1.064	*1.052*	**161,095.5**	48.1	0.371	0.328	0.07	0.06
Rur Maj Col	460,000	1.053	*0.947*	**458,705.5**	47.4	0.38	0.325	0.19	0.16
Rur Min Col	133,000	1.053	*1.215*	**170,102.4**	40.3	0.415	0.329	0.08	0.06
Rural Local	129,000	1.053	*1.017*	**138,079.8**	29.2	0.441	0.318	0.07	0.05
Urban OPA	53,000	1.011	*1.107*	**59,302.6**	35.6	0.412	0.31	0.03	0.02
Urb Min Art	24,000	1.011	*1.115*	**27,064.8**	35.3	0.416	0.31	0.01	0.01
Urban Col	5,000	1.011	*1.108*	**5,601.5**	34.0	0.427	0.311	0.00	0.00
Urban Local	40,000	1.011	*1.108*	**44,811.8**		0.684	0.32	0.03	0.02
	1,117,000			**1,753,406.5**				**0.69**	**0.67**

TABLE 8: 2035 FORECAST ASSUMING I-69 OHIO RIVER BRIDGE BUILT - GREENE COUNTY

Functional Class	2006 HPMS VMT	July Adj. Fact.	ISTDM 2035 / 2006	**2035 w/ Bridge VMT**	**ISTDM Speed**	**VOC rate**	**NOx rate**	**VOC**	**NOx**
					mph	*g/mi*	*g/mi*	*tpd*	*tpd*
Rural Interst.		1.127		**632,736.2**	73.2	0.258	0.393	0.18	0.27
Rural OPA	129,000	1.064	*1.156*	**158,640.0**	48.2	0.359	0.332	0.06	0.06
Rur Min Art	144,000	1.064	*1.050*	**160,887.5**	48.2	0.371	0.328	0.07	0.06
Rur Maj Col	460,000	1.053	*0.950*	**459,879.3**	47.4	0.38	0.325	0.19	0.16
Rur Min Col	133,000	1.053	*1.215*	**170,073.5**	40.3	0.415	0.329	0.08	0.06
Rural Local	129,000	1.053	*1.018*	**138,278.0**	29.2	0.441	0.318	0.07	0.05
Urban OPA	53,000	1.011	*1.103*	**59,123.4**	35.7	0.412	0.31	0.03	0.02
Urb Min Art	24,000	1.011	*1.116*	**27,084.8**	35.3	0.416	0.31	0.01	0.01
Urban Col	5,000	1.011	*1.105*	**5,587.9**	34.0	0.427	0.311	0.00	0.00
Urban Local	40,000	1.011	*1.105*	**44,703.0**		0.684	0.32	0.03	0.02
	1,117,000			**1,856,993.7**				**0.72**	**0.71**

APPENDIX A – MOBILE 6.2 FILES

GREENE COUNTY VEHICLE REGISTRATION – INPUT FILE

```
REG DIST
* COUNTY 28, GREENE
* LDV
1 0.0355 0.0473 0.0410 0.0443 0.0643 0.0645 0.0569 0.0577 0.0529 0.0609
  0.0585 0.0573 0.0518 0.0452 0.0432 0.0456 0.0391 0.0285 0.0237 0.0194
  0.0166 0.0077 0.0041 0.0035 0.0304
* LDT1
2 0.0220 0.0294 0.0255 0.0187 0.0257 0.0255 0.0430 0.0330 0.0466 0.0490
  0.0675 0.0510 0.0386 0.0617 0.0442 0.0701 0.0624 0.0638 0.0578 0.0468
  0.0274 0.0235 0.0136 0.0109 0.0422
* LDT2
3 0.0501 0.0668 0.0579 0.0573 0.0929 0.0793 0.0828 0.0908 0.0500 0.0552
  0.0456 0.0445 0.0379 0.0325 0.0293 0.0251 0.0340 0.0095 0.0081 0.0118
  0.0084 0.0052 0.0031 0.0034 0.0186
* LDT3
4 0.0445 0.0593 0.0514 0.0518 0.0611 0.0661 0.0534 0.0466 0.0498 0.0695
  0.0602 0.0407 0.0352 0.0202 0.0248 0.0282 0.0289 0.0195 0.0193 0.0223
  0.0164 0.0109 0.0073 0.0052 0.1073
* LDT4
5 0.0564 0.0752 0.0645 0.0752 0.0627 0.0662 0.0734 0.0788 0.0394 0.0519
  0.0627 0.0197 0.0179 0.0107 0.0090 0.0107 0.0054 0.0090 0.0090 0.0107
  0.0215 0.0054 0.0072 0.0054 0.1522
```

MOBILE 6.2 INPUT FILE

```
******************** Header Section   ********************
MOBILE6 INPUT FILE : Greene County Emissions
DATABASE OUTPUT    :
WITH FIELDNAMES    :
AGGREGATED OUTPUT  :
POLLUTANTS         : HC NOX
REPORT FILE        : GreeneS4.txt
EMISSIONS TABLE    : GreeneS4.tb1
RUN DATA
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 1: 2035 w/I-69S HPMS Rural Interstate (M6 Freeway/Freeway Ramp)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 73.2 FREEWAY 97.0  0.0  0.0  3.0
VMT FRACTIONS      :
0.3525 0.0536 0.1783 0.0549 0.0253 0.1065 0.0106 0.0084
0.0061 0.0234 0.0279 0.0304 0.1088 0.0058 0.0028 0.0047
END OF RUN         :
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
REG DIST           : 28-reg.d
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 2: 2035 w/I-69S HPMS Rural OPA (M6 Non-Ramp)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.2 NON-RAMP
VMT FRACTIONS      :
0.4333 0.0658 0.2190 0.0675 0.0311 0.0573 0.0057 0.0045
0.0033 0.0126 0.0150 0.0164 0.0585 0.0033 0.0015 0.0052
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 3: 2035 w/I-69S HPMS Rural Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.2 ARTERIAL
VMT FRACTIONS      :
0.4662 0.0708 0.2357 0.0726 0.0334 0.0374 0.0037 0.0029
0.0022 0.0082 0.0098 0.0107 0.0382 0.0026 0.0013 0.0043
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 4: 2035 w/I-69S HPMS Rural Major Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 47.4 ARTERIAL
VMT FRACTIONS      :
0.4821 0.0732 0.2437 0.0751 0.0345 0.0275 0.0027 0.0022
0.0016 0.0060 0.0072 0.0078 0.0280 0.0024 0.0011 0.0049
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 5: 2035 w/I-69S HPMS Rural Minor Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 40.3 ARTERIAL
VMT FRACTIONS      :
0.4532 0.0689 0.2292 0.0706 0.0325 0.0399 0.0040 0.0031
0.0023 0.0088 0.0104 0.0114 0.0407 0.0026 0.0013 0.0211
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 6: 2035 w/I-69S HPMS Rural Local (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 29.2 ARTERIAL
VMT FRACTIONS      :
0.4789 0.0728 0.2421 0.0746 0.0343 0.0294 0.0029 0.0023
0.0017 0.0065 0.0077 0.0084 0.0300 0.0026 0.0013 0.0045
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 7: 2035 w/I-69S HPMS Urban OPA (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
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EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.7 ARTERIAL
VMT FRACTIONS          :
0.4868 0.0740 0.2462 0.0759 0.0349 0.0251 0.0025 0.0020
0.0014 0.0055 0.0066 0.0072 0.0257 0.0015 0.0007 0.0040
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 8: 2035 w/I-69S HPMS Urban Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.3 ARTERIAL
VMT FRACTIONS          :
0.4944 0.0751 0.2499 0.0770 0.0354 0.0203 0.0020 0.0016
0.0012 0.0045 0.0053 0.0058 0.0207 0.0018 0.0008 0.0042
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 9: 2035 w/I-69S HPMS Urban Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 34.0 ARTERIAL
VMT FRACTIONS          :
0.5024 0.0763 0.2540 0.0783 0.0360 0.0152 0.0015 0.0012
0.0009 0.0033 0.0040 0.0043 0.0155 0.0010 0.0005 0.0056
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 10: 2035 w/I-69S HPMS Urban Local (M6 Local Road) - 12.9
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
VMT BY FACILITY    : fvmtlocl.def
VMT FRACTIONS          :
0.5099 0.0775 0.2579 0.0795 0.0366 0.0106 0.0010 0.0008
0.0006 0.0023 0.0028 0.0030 0.0108 0.0028 0.0013 0.0026
END OF RUN        :
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 11: 2035 w/o I-69S HPMS Rural Interstate (M6 Freeway/Freeway Ramp)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 73.2 FREEWAY 97.0  0.0  0.0  3.0
VMT FRACTIONS          :
0.3525 0.0536 0.1783 0.0549 0.0253 0.1065 0.0106 0.0084
0.0061 0.0234 0.0279 0.0304 0.1088 0.0058 0.0028 0.0047
END OF RUN        :
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
REG DIST           : 28-reg.d
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 12: 2035 w/o I-69S HPMS Rural OPA (M6 Non-Ramp)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.2 NON-RAMP
VMT FRACTIONS          :
0.4333 0.0658 0.2190 0.0675 0.0311 0.0573 0.0057 0.0045
0.0033 0.0126 0.0150 0.0164 0.0585 0.0033 0.0015 0.0052
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 13: 2035 w/o I-69S HPMS Rural Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.1 ARTERIAL
VMT FRACTIONS          :
0.4662 0.0708 0.2357 0.0726 0.0334 0.0374 0.0037 0.0029
0.0022 0.0082 0.0098 0.0107 0.0382 0.0026 0.0013 0.0043
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 14: 2035 w/o I-69S HPMS Rural Major Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 47.4 ARTERIAL
VMT FRACTIONS          :
0.4821 0.0732 0.2437 0.0751 0.0345 0.0275 0.0027 0.0022
0.0016 0.0060 0.0072 0.0078 0.0280 0.0024 0.0011 0.0049
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 15: 2035 w/o I-69S HPMS Rural Minor Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 40.3 ARTERIAL
VMT FRACTIONS          :
0.4532 0.0689 0.2292 0.0706 0.0325 0.0399 0.0040 0.0031
0.0023 0.0088 0.0104 0.0114 0.0407 0.0026 0.0013 0.0211
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 16: 2035 w/o I-69S HPMS Rural Local (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 29.2 ARTERIAL
VMT FRACTIONS          :
0.4789 0.0728 0.2421 0.0746 0.0343 0.0294 0.0029 0.0023
0.0017 0.0065 0.0077 0.0084 0.0300 0.0026 0.0013 0.0045
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 17: 2035 w/o I-69S HPMS Urban OPA (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.6 ARTERIAL
VMT FRACTIONS          :
0.4868 0.0740 0.2462 0.0759 0.0349 0.0251 0.0025 0.0020
0.0014 0.0055 0.0066 0.0072 0.0257 0.0015 0.0007 0.0040
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 18: 2035 w/o I-69S HPMS Urban Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.3 ARTERIAL
VMT FRACTIONS          :
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0.4944 0.0751 0.2499 0.0770 0.0354 0.0203 0.0020 0.0016
0.0012 0.0045 0.0053 0.0058 0.0207 0.0018 0.0008 0.0042
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 19: 2035 w/o I-69S HPMS Urban Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
AVERAGE SPEED      : 34.0 ARTERIAL
VMT FRACTIONS          :
0.5024 0.0763 0.2540 0.0783 0.0360 0.0152 0.0015 0.0012
0.0009 0.0033 0.0040 0.0043 0.0155 0.0010 0.0005 0.0056
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 20: 2035 w/o I-69S HPMS Urban Local (M6 Local Road) - 12.9
CALENDAR YEAR      : 2035
EVALUATION MONTH   : 7
VMT BY FACILITY    : fvmtlocl.def
VMT FRACTIONS          :
0.5099 0.0775 0.2579 0.0795 0.0366 0.0106 0.0010 0.0008
0.0006 0.0023 0.0028 0.0030 0.0108 0.0028 0.0013 0.0026
END OF RUN         :
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 30: 2025 Rural Interstate (M6 Freeway/Freeway Ramp)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 73.2 FREEWAY 97.0  0.0  0.0  3.0
VMT FRACTIONS          :
0.3525 0.0536 0.1783 0.0549 0.0253 0.1065 0.0106 0.0084
0.0061 0.0234 0.0279 0.0304 0.1088 0.0058 0.0028 0.0047
END OF RUN         :
******************** Run Section      ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
REG DIST           : 28-reg.d
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 31: 2025 Rural OPA (M6 Non-Ramp)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.3 NON-RAMP
VMT FRACTIONS          :
0.4333 0.0658 0.2190 0.0675 0.0311 0.0573 0.0057 0.0045
0.0033 0.0126 0.0150 0.0164 0.0585 0.0033 0.0015 0.0052
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 32: 2025 Rural Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.4 ARTERIAL
VMT FRACTIONS          :
0.4662 0.0708 0.2357 0.0726 0.0334 0.0374 0.0037 0.0029
0.0022 0.0082 0.0098 0.0107 0.0382 0.0026 0.0013 0.0043
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 33: 2025 Rural Major Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 47.4 ARTERIAL
VMT FRACTIONS          :
0.4821 0.0732 0.2437 0.0751 0.0345 0.0275 0.0027 0.0022
0.0016 0.0060 0.0072 0.0078 0.0280 0.0024 0.0011 0.0049
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 34: 2025 Rural Minor Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 40.3 ARTERIAL
VMT FRACTIONS          :
0.4532 0.0689 0.2292 0.0706 0.0325 0.0399 0.0040 0.0031
0.0023 0.0088 0.0104 0.0114 0.0407 0.0026 0.0013 0.0211
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 35: 2025 Rural Local (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 29.2 ARTERIAL
VMT FRACTIONS          :
0.4789 0.0728 0.2421 0.0746 0.0343 0.0294 0.0029 0.0023
0.0017 0.0065 0.0077 0.0084 0.0300 0.0026 0.0013 0.0045
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 36: 2025 Urban OPA (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.7 ARTERIAL
VMT FRACTIONS          :
0.4868 0.0740 0.2462 0.0759 0.0349 0.0251 0.0025 0.0020
0.0014 0.0055 0.0066 0.0072 0.0257 0.0015 0.0007 0.0040
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 37: 2025 Urban Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.4 ARTERIAL
VMT FRACTIONS          :
0.4944 0.0751 0.2499 0.0770 0.0354 0.0203 0.0020 0.0016
0.0012 0.0045 0.0053 0.0058 0.0207 0.0018 0.0008 0.0042
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 38: 2025 Urban Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
AVERAGE SPEED      : 34.0 ARTERIAL
VMT FRACTIONS          :
0.5024 0.0763 0.2540 0.0783 0.0360 0.0152 0.0015 0.0012
0.0009 0.0033 0.0040 0.0043 0.0155 0.0010 0.0005 0.0056
******************** Scenario Section ********************
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SCENARIO RECORD    : Scenario 39: 2025 Urban Local (M6 Local Road) - 12.9
CALENDAR YEAR      : 2025
EVALUATION MONTH   : 7
VMT BY FACILITY    : fvmtlocl.def
VMT FRACTIONS      :
0.5099 0.0775 0.2579 0.0795 0.0366 0.0106 0.0010 0.0008
0.0006 0.0023 0.0028 0.0030 0.0108 0.0028 0.0013 0.0026
END OF RUN         :
******************** Run Section ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 49: 2015 Rural Interstate (M6 Freeway/Freeway Ramp)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 73.2 FREEWAY 97.0  0.0  0.0  3.0
VMT FRACTIONS      :
0.3525 0.0536 0.1783 0.0549 0.0253 0.1065 0.0106 0.0084
0.0061 0.0234 0.0279 0.0304 0.1088 0.0058 0.0028 0.0047
END OF RUN         :
******************** Run Section ********************
* These min/max temperatures are July averages from Greene County
MIN/MAX TEMP       : 65.0  86.3
ABSOLUTE HUMIDITY  : 93.7
CLOUD COVER        : 0.34
SUNRISE/SUNSET     : 6  8
FUEL RVP           : 9.0
NO REFUELING       :
REG DIST           : 28-reg.d
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 50: 2015 Rural OPA (M6 Non-Ramp)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.4 NON-RAMP
VMT FRACTIONS      :
0.4333 0.0658 0.2190 0.0675 0.0311 0.0573 0.0057 0.0045
0.0033 0.0126 0.0150 0.0164 0.0585 0.0033 0.0015 0.0052
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 51: 2015 Rural Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 48.3 ARTERIAL
VMT FRACTIONS      :
0.4662 0.0708 0.2357 0.0726 0.0334 0.0374 0.0037 0.0029
0.0022 0.0082 0.0098 0.0107 0.0382 0.0026 0.0013 0.0043
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 52: 2015 Rural Major Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 47.4 ARTERIAL
VMT FRACTIONS      :
0.4821 0.0732 0.2437 0.0751 0.0345 0.0275 0.0027 0.0022
0.0016 0.0060 0.0072 0.0078 0.0280 0.0024 0.0011 0.0049
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 53: 2015 Rural Minor Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 40.3 ARTERIAL
VMT FRACTIONS      :
0.4532 0.0689 0.2292 0.0706 0.0325 0.0399 0.0040 0.0031
0.0023 0.0088 0.0104 0.0114 0.0407 0.0026 0.0013 0.0211
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 54: 2015 Rural Local (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 29.2 ARTERIAL
VMT FRACTIONS      :
0.4789 0.0728 0.2421 0.0746 0.0343 0.0294 0.0029 0.0023
0.0017 0.0065 0.0077 0.0084 0.0300 0.0026 0.0013 0.0045
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 55: 2015 Urban OPA (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.8 ARTERIAL
VMT FRACTIONS      :
0.4868 0.0740 0.2462 0.0759 0.0349 0.0251 0.0025 0.0020
0.0014 0.0055 0.0066 0.0072 0.0257 0.0015 0.0007 0.0040
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 56: 2015 Urban Minor Arterial (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 35.6 ARTERIAL
VMT FRACTIONS      :
0.4944 0.0751 0.2499 0.0770 0.0354 0.0203 0.0020 0.0016
0.0012 0.0045 0.0053 0.0058 0.0207 0.0018 0.0008 0.0042
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 57: 2015 Urban Collector (M6 Arterial/Collector)
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
AVERAGE SPEED      : 34.0 ARTERIAL
VMT FRACTIONS      :
0.5024 0.0763 0.2540 0.0783 0.0360 0.0152 0.0015 0.0012
0.0009 0.0033 0.0040 0.0043 0.0155 0.0010 0.0005 0.0056
******************** Scenario Section ********************
SCENARIO RECORD    : Scenario 58: 2015 Urban Local (M6 Local Road) - 12.9
CALENDAR YEAR      : 2015
EVALUATION MONTH   : 7
VMT BY FACILITY    : fvmtlocl.def
VMT FRACTIONS      :
0.5099 0.0775 0.2579 0.0795 0.0366 0.0106 0.0010 0.0008
0.0006 0.0023 0.0028 0.0030 0.0108 0.0028 0.0013 0.0026
END OF RUN         :
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APPENDIX B – COMMENTS AND RESPONSES

From: Tim Maloney [mailto:maloneyt@hecweb.org]
Sent: Sunday, November 07, 2010 10:14 PM
To: airquality@i69indyevn.org
Subject: comments on draft air quality conformity analysis for Greene County

November 7, 2010

Rickie Clark, Public Hearing Manager
INDOT
100 N. Senate Ave., N855
Indianapolis, IN 46204

Comments on Draft Air Quality Conformity Analysis for Greene County

Dear Mr. Clark

The Hoosier Environmental Council submits the following comments on the Draft Air Quality Conformity Analysis.

This draft analysis is based on Greene County's status as a "maintenance" area under the ozone NAAQS. However, the analysis is incomplete since it does not account for the likelihood that Greene County's ozone attainment status could change prior to the project's estimated completion date.

The U.S. EPA is proposing to lower the National Ambient Air Quality Standard for ozone, and is expected to set the standard in the range of .060 to .070 ppm. Greene County's monitored ozone levels exceed this range (IDEM, September 2010), and therefore the county may be redesignated as nonattainment for ozone once the standard is lowered. If the standard is lowered, resulting in Greene County's redesignation, then a new SIP will be required which would contain lower motor vehicle emission budgets. INDOT should incorporate this information and adjust its conformity analysis accordingly.

This information on EPA's proposed ozone standard change was available at the time the draft conformity analysis was prepared. Thus any analysis and proposed conformity findings that fail to consider this information is flawed and incomplete. Since the report does not contain current and complete information, the draft analysis should be revised and resubmitted for public review and comment.

Tim Maloney
Senior Policy Director
Hoosier Environmental Council
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F: 317.686.4794
tmaloney@hecweb.org
Join Us. Become a member at www.hecweb.org.

Response:
INDOT cannot speculate on when, if or how EPA will update the NAAQS, nor is it required to address any new NAAQS as a part of this analysis. The federal rule-making process includes proposing rules before they are finalized for many reasons, including the accommodation of public comments. In response to comments, proposed rules are often changed or sometimes not finalized at all. With regard to the proposed update of the NAAQS for ozone, the EPA has already delayed this action more than once. Even if EPA does finalize a new standard, under federal conformity rules conformity analyses which have already begun and established the budgets to be used for the analysis through interagency consultation, as was done for the I-69 Section 4 Greene County analysis on July 28, 2010, are allowed to demonstrate conformity to the originally agreed upon budgets. Conformity to new budgets established in response to updates of the NAAQS is generally not required for two years after new NAAQS are finalized.

Comments to the Greene County Air Quality Report, dated October 2010 prepared by Benardin-Lochmueller and Associates, Inc.

November 7, 2010

1. The public has not been given sufficient notice to comment on the Greene County AQI Analysis. The comment period in the Legal Notice states the period to be October 8, 2010 through November 7, 2010. However the notice was not published in the local Greene County paper until one week later, on November 15, 2010, Page 8. I am requesting that the public be given a new notice and a full 30 days for review and comment to this important document.
2. There is an incomplete date on the cover page of the report. Only the month and year are noted anywhere in the report. The Public Notice states that the document was available for review on October 8th, but how is the public to know if they are reviewing the most current document since no specific publication date is noted on the report itself.
3. I disagree with the statement that Greene County will see continued decrease VOC and NOx levels "irrespective of the construction of I-69…" in the introduction.
4. The introduction and throughout, refers to the latest assumptions in the Section 4 FEIS, yet the Section 4 FEIS has not yet been published, in fact, the comment period to the Section 4 DEIS just concluded. How can the FEIS already have been prepared? The commenting public does not have access to this document, therefore the reasonable conclusion is that the commenting public is excluded from examining and providing meaningful comments. I request that NO decision be made regarding the Greene County AQI Analysis. Additionally the public comment period should be reset when ALL current and relevant information is available for public review.
5. The model used predicts truck traffic based upon the representative commodity flows, however there will be a tremendous difference between the current state for Greene County and when I-69 is made available for through-truck traffic if the assumptions in the DEIS are to be believed.
    a. See general comments on modeling included later in these comments.
6. It appears that the model data was modified to fit the final conclusion. Several model modifications were noted. Was the altered modeling software then re-certified by EPA? Determination of the acceptability of a model is a Regional Office responsibility. This is not a responsibility that can be handed off to INDOT to suit their study needs.
7. The assumption that the Ohio Bridge for I-69 is simply not justified since no funding has, nor is likely to be available for the construction.
8. All the assumptions used seemed to infer that all the assumed and predicted traffic will use I-69, however no funding source has been identified for completion of sections 4-6. If the northern sections are not built, then all the assumptions in the analysis are in error.
9. Table 2 is quite dated, (1995 data). More current and relevant information should be obtained and used. Travel patterns and time of day travel have likely changed considerably since 1995.
10. Page 5 states that vehicles on I-69 are assumed to have characteristics reflective of the national vehicle fleet. By what data was the assumption made. It would appear that this assumption was made in an effort to influence final outcomes. With I-69 being a NAFTA designated route, it is a safe assumption that many non-conforming vehicles will be traveling through Greene County. Many are likely to be owned/operated by firms/persons who are from outside the U.S.

11. Additionally, vehicles registered in Greene County tend to be older, less efficient models as opposed to vehicles registered in more urban areas. One cannot assume that residents will purchase or drive more efficient vehicles in the near to long term.
12. The SIP assumptions used for the meteorological inputs and not consistent with recent trends with regards to the maximum daily temperature. Global warming is having an effect in Greene County, with many days exceeding 90 degrees (F) and nearing 100. The 86.3 maximum needs to be changed to reflect the trend towards much higher temperatures.
13. The Section 4 DEIS makes is clear that VMT will significantly increase due to I-69. The Greene County AQI analysis acknowledges this, yet still forecasts lower emissions. The forecasts certainly do not take into account the in-direct impacts of I-69 to Greene County due to induced growth. With the planned intersections, increased traffic with start/stops and idling at establishments at those intersections will contribute significantly to the emissions in the county. These increased emissions do not seem to be accounted for in the data or the analysis.
14. I-69 is a regional interstate. The influence of emissions from adjacent counties through which I-69 traverses must be taken into account as they will significantly impact the AQI for Greene County. Example, there is a rest-stop planned for Daviess County where is can be assumed that a number of diesel trucks will be entering/existing and idling for long hours. This type of influence on Greene County needs to be incorporated into the analysis. This is but one example, others will exist as well.
15. The data in Table 3 for the 2015 Budget appears to be well above the EPA standard.
16. Tables 5 – 8, the ISTDM speed noted for Rural Interstates is simply not realistic. Any person who drives on these types of roadways knows all too well that most drive considerably faster than the 73.2 mph noted. This also assumes the posted speed is 70 mph.
17. Table 5-6, what is the basis for the nearly cutting the VOC and NOx g/mi rate in half? Additionally, where is the supporting data for the VOC tpd remaining the same and the NOx being cut nearly in half? There appears to be conflicting data in the table based upon other information contained in the analysis.
18. Modelling – The extent to which a specific air quality model is suitable for the evaluation of source impact depends upon several factors. These include:

a. The meteorological and topographic complexities of the area
b. The level of detail and accuracy needed for the analysis
c. The technical competence of those undertaking the modeling
d. The resources available
e. The detail and accuracy of the data base

19. Appropriate data should be available before any attempt is made to apply a model. It does not appear that this analysis had all the precise, current and detailed information to reach the conclusions stated. A model applied improperly or with inappropriately chose data, can lead to serious misjudgments regarding the impacts.

Submitted by;

William A. Boyd
6990 S. Stone Road
Bloomfield, IN 47424

Response:

1. This comment is in error. Public notice was published in the Greene County Daily World on October 8th and again on October 15th. The publisher's affidavit appears below.

11-09-'10 10:17 FROM-The Daily World 812-847-9513 T-101 P002/002 F-322

LEGAL NOTICE

REQUEST FOR PUBLIC REVIEW AND COMMENT OF DRAFT AIR QUALITY CONFORMITY ANALYSIS FOR GREENE COUNTY

Notice is hereby given that an air quality conformity analysis for Greene County, Titled: Greene County Analysis of Volatile Organic Compound and Nitrogen Oxides Emissions - Draft, is now being offered for public review and comment. Greene County is designated a maintenance area for ozone by EPA. Federally funded road projects in Greene County that will have a regionally significant effect on air quality must show conformity to the State Implementation Plan (SIP) budgets approved by EPA on November 14, 2005. Any project subject to the National Environmental Policy Act (NEPA) must be found to conform with the SIP before a final Record of Decision (ROD) may be issued (40 CFR 93.102). The draft air quality conformity analysis for Greene County will be offered for public review for a 30-day period between October 8, 2010 and November 7, 2010, at the following locations: Bloomfield-Eastern Greene County Public Library, 125 S. Franklin St., Bloomfield, IN 47424

Linton Public Library, 95 SE 1st St., Linton, IN 47441

INDOT, 100 N. Senate Ave., N755, Indianapolis, IN 46204

I-69 Section 4 Project Office, 3802 Industrial Blvd., Unit 2, Bloomington, IN 47403

It can also be found on the I-69 website: www.i69indyevn.org

Public comments may be made by mail to be received by November 7, 2010, and should be addressed to:

Greene County Air Quality

Rickie Clark, Public Hearing Manager

INDOT

100 N. Senate Ave., N855

Indianapolis, IN 46204

Or comments may be made via e-mail at airquality@i69indyevn.org

ascribed by State Board of Accounts

General Form No. 99P (Rev. 200

INDOT (Governmental Unit)

Greene County, Indiana

To Greene County Daily World
P.O. Box 129
Linton, IN 47441

PUBLISHER'S CLAIM

LINE COUNT

Display Master (Must not exceed two actual lines, neither of which shall total more than four solid lines of the type in which the body of the advertisement is set) -- number of equivalent lines

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Body -- number of lines 86

Tail -- number of lines

Total number of lines in notice 86

COMPUTATION OF CHARGES

86 lines, 1 columns wide equals 86 equivalent lines at .50 cents per line

Additional charges for notices containing rule or tabular work (50 per cent of above amount)

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TOTAL AMOUNT OF CLAIM $ 43.08

DATA FOR COMPUTING COST

Width of single column in picas

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$ 43.08

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 2 times. The dates of publication being as follows:

Oct 8, 15, 2010

Additionally, the statement checked below is true and correct:

Newspaper does not have a Web site.

X Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper.

Newspaper has a Web site, but due to technical problem or error, public notice was posted on

Newspaper has a Web site but refuses to post the public notice.

Oct 15 2010

Title Notary Public

2. There is no requirement that an emissions analysis report specify a date by day, but one has been included on the final report.
3. The statement in the introduction of the report that decreases in VOC and NO_x levels will continue in the future "irrespective of the construction of I-69" is demonstrated by the subsequent analysis in conjunction with the SIP analysis for the maintenance plan which did not include I-69. Together, the two analyses demonstrate that emissions levels will decrease in Greene County whether or not I-69 is built. See Tables 3 and 4 of the report. The comment offers no substantive evidence to contradict these analyses.
4. References to the Section 4 Final Environmental Impact Statement were a typographical error and have been corrected to note the consistency of the assumptions of the conformity analysis with the Draft Environmental Impact Statement.
5. "Assumptions of the DEIS" are taken to refer to induced development in response to the construction of I-69. The ISTDM5 estimates of commodity flows, upon which its truck forecasts are based, reflect the induced development resulting from the construction of I-69 not current development and commodity flow patterns. See INDOT Truck Model Documentation (4/3/2009) and also the response to comment 13.
6. The model was re-calibrated to a new base year, 2006, in response to INDOT's need to maintain the currency of its model and the data upon which it is based for planning in general and specifically in preparation for its efforts to update its long range plan. The bulk of the update was completed in 2009 before it was even determined that this conformity analysis would be necessary. Although the conformity rule establishes certain minimum specifications for travel models, they are only applicable to urbanized non-attainment areas with a population over 200,000 that are serious, severe or extreme ozone or serious carbon monoxide non-attainment areas. These requirements therefore do not apply to Greene County. Moreover, EPA does not have a certification process for travel models, but has agreed through interagency consultation that the ISTDM5 is an acceptable and appropriate tool for this analysis.
7. The scenario with the Ohio River Bridge for I-69 is provided only as a sensitivity analyses for disclosing worst case impacts under NEPA. Conformity is demonstrated using the 2035 scenario without the bridge.
8. The assumptions regarding the completion of other projects, including the northern sections of I-69, were agreed upon through interagency consultation on July 28, 2010. However, forecasts made for the scenario in which Sections 1-4 of I-69 are complete but Sections 5 & 6 are not have invariably shown less VMT in counties through which I-69 passes than under the assumption that all sections are complete. Hence, emissions in Greene County would be less under the assumption that the northern sections of I-69 are not completed, and the analysis represents the worst case assumption in which they are complete.
9. INDOT purchased an add-on sample to the 2008-2009 National Household Travel Survey in order to obtain new information on travel patterns within the state. However, at this time, final weights have not been developed for this data by FHWA, and it was thus not possible to incorporate it in this analysis. The 1995 data therefore still represents the latest planning assumptions for this analysis.

10. The assumption regarding the vehicle fleet composition was agreed to through interagency consultation on August 17, 2010. It is not reasonable to think that many vehicles on I-69 will be owned/operated by firms/persons from outside the U.S. Studies such as INDOT has had conducted to evaluate the feasibility of dedicated truck lanes on I-70 demonstrate that rural interstate facilities in Indiana generally serve regional trips of more than fifty and less than five hundred miles in length. It is therefore reasonable to assume that the vehicle fleet on I-69 will be representative of the national vehicle fleet.
11. Again, the assumption regarding the vehicle fleet composition was agreed to through interagency consultation on August 17, 2010. The age distribution of the vehicle fleet within Greene County is based on real historic data for Greene County. It does reflect the fact that Greene County vehicles tend to be older, less efficient models than those registered in urban areas.
12. Conformity rules require that conformity analyses use the same meteorological assumptions as used in the SIP.
13. The ISTDM5 traffic forecasts do take into account induced growth due to indirect impacts of I-69. The ISTDM5 has future year datasets with and without induced growth from I-69. The datasets reflecting the induced growth were used for the conformity analysis. The induced growth assumed was taken from the I-69 Corridor Model, see documentation on the Corridor Model for its development.
14. Conformity rules dictate that emissions analyses for conformity demonstrations must be consistent with the SIP analyses used to develop the budgets against which conformity must be demonstrated. Since the SIP analysis used to develop Greene County's budgets did not include mobile emissions outside Greene County, these emissions are precluded from conformity analyses for Greene County.
15. The EPA standards for ozone are expressed as concentrations in the ambient air in parts per million over a one hour or eight hour period. Tables 3 and 4 report VOC and NO_x emissions in tons per day (tpd). This is clearly noted in Figure 1, but was not in the tables, so units of tpd have been added to the tables in the final report.
16. The speed of 73.2 mph predicted for I-69 is an average speed, reflecting the fact that while some drivers drive faster than this speed, others (such as many trucks) drive slower. The speeds in the ISTDM5 were based on several real world speed studies, including one extensive study in southwest Indiana. The comment provides no substantive information to contradict the ISTDM5 or the data with which it was developed.
17. As explained in the text of the report, Tables 5-6 are the result of the emissions analysis using EPA's Mobile 6.2 emission factor model. The inputs to the Mobile model are documented in the report's Appendix A. The EPA's Mobile model is thus the source of the forecast that the NO_x emissions rate will be approximately cut in half over the forecast period, while the VOC emissions rate will decline less precipitously.
18. Federal conformity rules require that conformity analyses make use of the EPA's official air quality models, in the case of this analysis, the EPA's Mobile 6.2 model was used. It was agreed in interagency consultation on July 28, 2010 that this was the appropriate air quality model for this analysis.

19. All data assumptions were agreed to through interagency consultation and were based on the latest planning data available. The conformity rules specify that the latest planning assumptions at the time of the analyses be used because while at any point in time delaying an analysis may allow the use of more recent data for one assumption, it may simultaneously mean data for other assumptions becomes less current.