



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*  
Governor

*Thomas W. Easterly*  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
Toll Free (800) 451-6027  
[www.idem.IN.gov](http://www.idem.IN.gov)

December 11, 2012

Ms. Susan Hedman  
Regional Administrator  
U.S. Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604-3950

Dear Ms. Hedman:

Re: MOBILE6.2 to MOVES MVEB  
Replacement Update to the Indiana Portion  
of the Cincinnati-Hamilton, Ohio-Kentucky-  
Indiana Maintenance Area under the 1997  
8-Hour Ozone Standard

The Indiana Department of Environmental Management (IDEM) submits the enclosed MOBILE6.2 to Motor Vehicle Emissions Simulator (MOVES) Motor Vehicle Emissions Budget (MVEB) replacement update for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-hour ozone standard. IDEM requests that the United States Environmental Protection Agency (U.S. EPA) process this final submittal for approval into Indiana's State Implementation Plan.

IDEM provided an opportunity for a public hearing on the MVEB replacement update to the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana maintenance area if a public hearing request was received by November 20, 2012. A hearing was scheduled for November 28, 2012. No request for a public hearing was received and the hearing was cancelled. In addition, IDEM received no comments during the public notice process. Documents related to the public participation process are included in Appendix C of this submittal.

This MOBILE6.2 to MOVES MVEB replacement update incorporates onroad emission estimates and revised MVEBs using U.S. EPA's recently adopted MOVES model. The onroad emission estimates were calculated using the MOVES-based emission factors and data extracted from the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana area's travel-demand model.

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MVEBs are being revised in anticipation of the mandatory use of the MOVES model in future transportation conformity determinations. Preliminary use of the new model indicates that emission estimates can be considerably different than similar calculations using MOBILE6.2, which was used to create the MVEBs in the original ozone maintenance plan.

Onroad safety margins, established through the interagency consultation process, are included for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs). These onroad safety margins are allocated to onroad emission estimates in order to account for the wide array of assumptions that are factored into the calculation process. With the addition of onroad safety margins applied to mobile sources, the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana maintenance area will continue to remain well below the overall safety margins for all sources. MVEBs are also constrained to ensure that total NO<sub>x</sub> and VOC emissions (i.e., all source categories) do not exceed attainment year emissions to ensure continued maintenance of the 1997 8-hour ozone standard.

This submittal consists of one (1) hard copy of the required documentation. An electronic version of the submittal in PDF format that is identical to the hard copy has been sent to Pamela Blakley, Chief of U.S. EPA Region 5's Control Strategies Section.

IDEM respectfully requests that U.S. EPA proceed with review of the MOBILE6.2 to MOVES MVEB replacement update and revised transportation conformity budgets and approval into Indiana's State Implementation Plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-hour ozone standard. If you have any questions or need additional information, please contact Scott Deloney, Chief, Air Programs Branch, at (317) 233-5694.

Sincerely,



Keith Baugues  
Assistant Commissioner  
Office of Air Quality

KB/sad/sms

Enclosures:

Onroad Emissions MOBILE6.2 to MOVES Replacement Submittal for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard and Appendices  
Electronic MOVES-based modeling input and output data files

Cc: Doug Aburano, U.S. EPA Region 5 (w/ enclosures)  
Ed Doty, U.S. EPA Region 5 (w/ enclosures)  
Pamela Blakley, U.S. EPA Region 5 (w/ enclosures)  
Pat Morris, U.S. EPA Region 5 (w/ enclosures)  
Steve Rosenthal, U.S. EPA Region 5 (no enclosures)

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Jennifer Dines, Ohio EPA (w/ enclosures)  
Mark R. Policinski, OKI (w/ enclosures)  
Andy Reser, OKI (w/ enclosures)  
Scott Deloney, IDEM (no enclosures)  
Shawn Seals, IDEM (w/ enclosures)

# Onroad Emissions MOBILE6.2 to MOVES Replacement Submittal

For the Indiana portion of the  
Cincinnati-Hamilton, Ohio-  
Kentucky-Indiana Maintenance  
Area under the 1997 8-Hour Ozone  
Standard

Final

December 2012

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## **Introduction**

On January 21, 2010, the Indiana Department of Environmental Management (IDEM) submitted a *Request for Redesignation and Maintenance Plan for Ozone Attainment in the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana 8-Hour Ozone Nonattainment Area*. The United States Environmental Protection Agency (U.S. EPA) subsequently approved the Indiana redesignation of the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area to attainment for ozone on May 11, 2010 (75 FR 26118). Onroad emissions for the January 21, 2010, submittal were calculated using MOBILE6.2. U.S. EPA has encouraged mobile source stakeholders to transition to the new Motor Vehicle Emissions Simulator (MOVES) model as expeditiously as possible. Therefore, IDEM is providing this MOBILE6.2 to MOVES replacement update to the previously submitted 8-hour ozone maintenance plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area that incorporates MOVES-based onroad emissions.

## **Emission Inventory**

The tables, “2005 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” and “2008 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” were included in Appendix C of the original Redesignation Petition and Maintenance Plan. The tables, “2015 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” and “2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” were included in Appendix E of the original Redesignation Petition and Maintenance Plan. The consolidated table, “2005, 2008, 2015, and 2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” (to be considered a replacement of the existing separate 2005, 2008, 2015, and 2020 tables included in Appendices C and E as detailed above) has been revised to incorporate updated onroad emission estimates for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) for the years 2005, 2008, 2015, and 2020 and results in a different overall safety margin for the area. It should be noted that, “2005, 2008, 2015, and 2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources” includes only Ohio and Indiana MOVES-based onroad emissions consistent with the manner in which the Motor Vehicle Emission Budgets (MVEBs) were established in the original Ohio and Indiana State Implementation Plans (SIPs).

**2005 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area  
All Anthropogenic Sources  
(MOBILE6.2-based Onroad Emissions)**

<b>(Tons per Summer Day – MOBILE6.2-based)</b>				
<b>State</b>	<b>County</b>	<b>Sector</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Indiana	Dearborn County	AREA	0.26	2.07
Indiana	Dearborn County	NONROAD	1.26	0.82
Indiana	Dearborn County	ONROAD	<del>1.44</del>	<del>1.00</del>
Indiana	Dearborn County	EGU	25.31	0.33
Indiana	Dearborn County	POINT	5.09	2.91
Kentucky	Boone County	AREA	4.99	8.13
Kentucky	Boone County	NONROAD	12.96	1.71
Kentucky	Boone County	ONROAD	<del>10.27</del>	<del>4.33</del>
Kentucky	Boone County	EGU	23.80	0.17
Kentucky	Boone County	POINT	0.14	2.40
Kentucky	Campbell County	AREA	1.41	4.77
Kentucky	Campbell County	NONROAD	6.33	1.76
Kentucky	Campbell County	ONROAD	<del>5.98</del>	<del>2.52</del>
Kentucky	Campbell County	EGU	0.00	0.00
Kentucky	Campbell County	POINT	0.00	0.25
Kentucky	Kenton County	AREA	4.17	8.53
Kentucky	Kenton County	NONROAD	8.43	2.33
Kentucky	Kenton County	ONROAD	<del>10.39</del>	<del>4.32</del>
Kentucky	Kenton County	EGU	0.00	0.00
Kentucky	Kenton County	POINT	0.04	1.20
Ohio	Butler County	AREA	2.15	11.96
Ohio	Butler County	NONROAD	10.25	6.88
Ohio	Butler County	ONROAD	<del>18.80</del>	<del>9.94</del>
Ohio	Butler County	EGU	3.88	0.03
Ohio	Butler County	POINT	12.03	3.64
Ohio	Clermont County	AREA	1.65	6.98
Ohio	Clermont County	NONROAD	5.03	4.33
Ohio	Clermont County	ONROAD	<del>13.04</del>	<del>6.86</del>
Ohio	Clermont County	EGU	42.96	0.49
Ohio	Clermont County	POINT	0.15	0.24
Ohio	Clinton County	AREA	0.42	3.24
Ohio	Clinton County	NONROAD	2.26	1.77
Ohio	Clinton County	ONROAD	<del>5.07</del>	<del>3.02</del>
Ohio	Clinton County	EGU	0.00	0.00
Ohio	Clinton County	POINT	0.00	0.00
Ohio	Hamilton County	AREA	5.19	33.04
Ohio	Hamilton County	NONROAD	20.57	17.45
Ohio	Hamilton County	ONROAD	<del>56.51</del>	<del>29.47</del>
Ohio	Hamilton County	EGU	15.23	0.28
Ohio	Hamilton County	POINT	6.72	2.66
Ohio	Warren County	AREA	1.15	8.40
Ohio	Warren County	NONROAD	6.10	4.79
Ohio	Warren County	ONROAD	<del>15.15</del>	<del>7.97</del>
Ohio	Warren County	EGU	0.00	0.00
Ohio	Warren County	POINT	2.68	0.53

**2008 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area  
All Anthropogenic Sources  
(MOBILE6.2-based Onroad Emissions)**

<b>(Tons per Summer Day – MOBILE6.2-based)</b>				
<b>State</b>	<b>County</b>	<b>Sector</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Indiana	Dearborn County	AREA	0.26	2.42
Indiana	Dearborn County	NONROAD	1.14	0.74
Indiana	Dearborn County	ONROAD	<del>1.14</del>	<del>0.75</del>
Indiana	Dearborn County	EGU	27.34	0.35
Indiana	Dearborn County	POINT	3.21	3.23
Kentucky	Boone County	AREA	5.02	8.41
Kentucky	Boone County	NONROAD	11.02	5.07
Kentucky	Boone County	ONROAD	<del>8.53</del>	<del>4.00</del>
Kentucky	Boone County	EGU	23.15	0.17
Kentucky	Boone County	POINT	0.12	2.64
Kentucky	Campbell County	AREA	1.32	4.34
Kentucky	Campbell County	NONROAD	5.34	1.51
Kentucky	Campbell County	ONROAD	<del>4.88</del>	<del>2.29</del>
Kentucky	Campbell County	EGU	0.00	0.00
Kentucky	Campbell County	POINT	0.02	0.28
Kentucky	Kenton County	AREA	4.06	7.88
Kentucky	Kenton County	NONROAD	7.33	1.95
Kentucky	Kenton County	ONROAD	<del>8.37</del>	<del>3.85</del>
Kentucky	Kenton County	EGU	0.00	0.00
Kentucky	Kenton County	POINT	0.03	1.17
Ohio	Butler County	AREA	2.18	10.31
Ohio	Butler County	NONROAD	8.89	5.68
Ohio	Butler County	ONROAD	<del>16.05</del>	<del>7.87</del>
Ohio	Butler County	EGU	2.87	0.03
Ohio	Butler County	POINT	10.53	2.77
Ohio	Clermont County	AREA	1.67	6.05
Ohio	Clermont County	NONROAD	4.22	3.68
Ohio	Clermont County	ONROAD	<del>11.05</del>	<del>5.42</del>
Ohio	Clermont County	EGU	22.61	0.27
Ohio	Clermont County	POINT	0.18	0.09
Ohio	Clinton County	AREA	0.43	2.85
Ohio	Clinton County	NONROAD	2.01	1.65
Ohio	Clinton County	ONROAD	<del>3.87</del>	<del>2.33</del>
Ohio	Clinton County	EGU	0.00	0.00
Ohio	Clinton County	POINT	0.00	0.00
Ohio	Hamilton County	AREA	5.27	28.80
Ohio	Hamilton County	NONROAD	17.21	14.66
Ohio	Hamilton County	ONROAD	<del>46.80</del>	<del>22.70</del>
Ohio	Hamilton County	EGU	12.92	0.24
Ohio	Hamilton County	POINT	6.17	2.85
Ohio	Warren County	AREA	1.17	7.30
Ohio	Warren County	NONROAD	5.19	4.10
Ohio	Warren County	ONROAD	<del>12.76</del>	<del>6.26</del>
Ohio	Warren County	EGU	0.00	0.00
Ohio	Warren County	POINT	3.14	0.82

**2015 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area  
All Anthropogenic Sources  
(MOBILE6.2-based Onroad Emissions)**

<b>(Tons per Summer Day – MOBILE6.2-based)</b>				
<b>State</b>	<b>County</b>	<b>Sector</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Indiana	Dearborn County	AREA	0.27	1.79
Indiana	Dearborn County	NONROAD	0.78	0.62
Indiana	Dearborn County	ONROAD	<del>0.60</del>	<del>0.50</del>
Indiana	Dearborn County	EGU	25.30	0.44
Indiana	Dearborn County	POINT	5.12	3.51
Kentucky	Boone County	AREA	5.03	8.50
Kentucky	Boone County	NONROAD	9.77	4.55
Kentucky	Boone County	ONROAD	<del>4.63</del>	<del>3.17</del>
Kentucky	Boone County	EGU	24.97	0.18
Kentucky	Boone County	POINT	0.11	2.86
Kentucky	Campbell County	AREA	1.30	4.20
Kentucky	Campbell County	NONROAD	4.57	1.29
Kentucky	Campbell County	ONROAD	<del>2.54</del>	<del>1.74</del>
Kentucky	Campbell County	EGU	0.00	0.00
Kentucky	Campbell County	POINT	0.02	0.30
Kentucky	Kenton County	AREA	4.02	7.66
Kentucky	Kenton County	NONROAD	6.15	1.76
Kentucky	Kenton County	ONROAD	<del>4.23</del>	<del>2.85</del>
Kentucky	Kenton County	EGU	0.00	0.00
Kentucky	Kenton County	POINT	0.03	1.31
Ohio	Butler County	AREA	2.19	9.76
Ohio	Butler County	NONROAD	5.91	4.95
Ohio	Butler County	ONROAD	<del>7.55</del>	<del>4.87</del>
Ohio	Butler County	EGU	2.86	0.02
Ohio	Butler County	POINT	11.98	4.25
Ohio	Clermont County	AREA	1.67	5.74
Ohio	Clermont County	NONROAD	2.76	3.13
Ohio	Clermont County	ONROAD	<del>5.10</del>	<del>3.29</del>
Ohio	Clermont County	EGU	50.07	0.52
Ohio	Clermont County	POINT	0.16	0.26
Ohio	Clinton County	AREA	0.43	2.72
Ohio	Clinton County	NONROAD	1.39	1.26
Ohio	Clinton County	ONROAD	<del>2.02</del>	<del>1.47</del>
Ohio	Clinton County	EGU	0.00	0.00
Ohio	Clinton County	POINT	0.00	0.00
Ohio	Hamilton County	AREA	5.30	27.38
Ohio	Hamilton County	NONROAD	11.18	12.70
Ohio	Hamilton County	ONROAD	<del>21.11</del>	<del>13.44</del>
Ohio	Hamilton County	EGU	28.32	0.31
Ohio	Hamilton County	POINT	7.39	2.97
Ohio	Warren County	AREA	1.17	6.94
Ohio	Warren County	NONROAD	3.22	3.39
Ohio	Warren County	ONROAD	<del>6.23</del>	<del>4.02</del>
Ohio	Warren County	EGU	0.00	0.00
Ohio	Warren County	POINT	2.70	0.57

**2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area  
All Anthropogenic Sources  
(MOBILE6.2-based Onroad Emissions)**

<b>(Tons per Summer Day – MOBILE6.2-based)</b>				
<b>State</b>	<b>County</b>	<b>Sector</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>
Indiana	Dearborn County	AREA	0.27	1.79
Indiana	Dearborn County	NONROAD	0.65	0.60
Indiana	Dearborn County	ONROAD	<del>0.42</del>	<del>0.42</del>
Indiana	Dearborn County	EGU	26.03	0.46
Indiana	Dearborn County	POINT	5.19	3.69
Kentucky	Boone County	AREA	5.03	8.50
Kentucky	Boone County	NONROAD	9.48	4.36
Kentucky	Boone County	ONROAD	<del>3.45</del>	<del>2.96</del>
Kentucky	Boone County	EGU	26.35	0.19
Kentucky	Boone County	POINT	0.12	3.01
Kentucky	Campbell County	AREA	1.30	4.20
Kentucky	Campbell County	NONROAD	4.34	1.22
Kentucky	Campbell County	ONROAD	<del>1.81</del>	<del>1.55</del>
Kentucky	Campbell County	EGU	0.00	0.00
Kentucky	Campbell County	POINT	0.03	0.31
Kentucky	Kenton County	AREA	4.02	7.66
Kentucky	Kenton County	NONROAD	5.75	1.73
Kentucky	Kenton County	ONROAD	<del>3.01</del>	<del>2.56</del>
Kentucky	Kenton County	EGU	0.00	0.00
Kentucky	Kenton County	POINT	0.03	1.42
Ohio	Butler County	AREA	2.19	9.76
Ohio	Butler County	NONROAD	4.64	4.80
Ohio	Butler County	ONROAD	<del>5.37</del>	<del>4.50</del>
Ohio	Butler County	EGU	2.95	0.02
Ohio	Butler County	POINT	11.91	4.56
Ohio	Clermont County	AREA	1.67	5.74
Ohio	Clermont County	NONROAD	2.17	2.96
Ohio	Clermont County	ONROAD	<del>3.63</del>	<del>3.04</del>
Ohio	Clermont County	EGU	51.49	0.53
Ohio	Clermont County	POINT	0.16	0.27
Ohio	Clinton County	AREA	0.43	2.72
Ohio	Clinton County	NONROAD	1.13	1.08
Ohio	Clinton County	ONROAD	<del>1.41</del>	<del>1.22</del>
Ohio	Clinton County	EGU	0.00	0.00
Ohio	Clinton County	POINT	0.00	0.00
Ohio	Hamilton County	AREA	5.30	27.38
Ohio	Hamilton County	NONROAD	8.73	12.19
Ohio	Hamilton County	ONROAD	<del>14.44</del>	<del>12.00</del>
Ohio	Hamilton County	EGU	29.13	0.31
Ohio	Hamilton County	POINT	7.56	3.12
Ohio	Warren County	AREA	1.17	6.94
Ohio	Warren County	NONROAD	2.38	3.15
Ohio	Warren County	ONROAD	<del>4.63</del>	<del>3.88</del>
Ohio	Warren County	EGU	0.00	0.00
Ohio	Warren County	POINT	2.70	0.57

**2005, 2008, 2015, and 2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area  
All Anthropogenic Sources including Only Ohio and Indiana Onroad Emissions  
(MOVES-Based Onroad Emissions)**

<b>(Tons per Summer Day – MOVES-based)</b>				
<b>Sector</b>	<b>2005 NO<sub>x</sub></b>	<b>2008 NO<sub>x</sub></b>	<b>2015 NO<sub>x</sub></b>	<b>2020 NO<sub>x</sub></b>
Area	21.39	21.38	21.38	21.38
Nonroad	73.19	62.35	45.73	39.27
Onroad	<b>157.38</b>	<b>131.28</b>	<b>81.96</b>	<b>63.59</b>
Point	138.03	112.29	159.03	163.65
<b>Total</b>	<b>389.99</b>	<b>327.30</b>	<b>309.41</b>	<b>289.20</b>
Overall Safety Margin	NA	NA	17.89	38.10
<b>Sector</b>	<b>2005 VOC</b>	<b>2008 VOC</b>	<b>2015 VOC</b>	<b>2020 VOC</b>
Area	87.12	78.36	74.69	74.69
Nonroad	41.84	39.04	33.65	32.09
Onroad	<b>93.68</b>	<b>95.55</b>	<b>48.75</b>	<b>37.23</b>
Point	15.13	14.91	17.50	18.46
<b>Total</b>	<b>237.77</b>	<b>227.86</b>	<b>174.59</b>	<b>162.47</b>
Overall Safety Margin	NA	NA	53.27	65.39

Onroad emission estimates in table, “2005, 2008, 2015, and 2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources including Only Ohio and Indiana Onroad Emissions” were calculated using U.S. EPA’s MOVES model-produced emission factors and data extracted from the area’s travel-demand model. The MOVES model implements a significantly different approach to emissions estimation than the previous model (MOBILE6.2). Preliminary use of the MOVES model indicates that emission estimates can be considerably different than similar calculations using MOBILE6.2, which was used to create the original MVEBs for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area. A general summary of the MOVES methodology used in this area can be found in Appendix A. In addition, MOVES input and output files are being provided electronically with this submittal. Growth and control strategy assumptions for non-mobile sources (i.e. area, nonroad, and point) from the original submittal for the years 2005, 2008, 2015, and 2020 were developed before the economic challenges of the last several years. Because of this, the factors included in the original submittal may project more growth than will actually occur in the future. As a result, the growth and control strategy assumptions for the non-mobile sources for the years 2005, 2008, 2015, and 2020 continue to be valid and do not affect the overall conclusions of the plan.

Onroad safety margins have been included for onroad emission estimates to accommodate the wide array of assumptions that are factored into the calculation process. Since assumptions change over time, it is necessary to have an onroad safety margin that will accommodate the impact of refined assumptions in the process. The plan continues to meet all applicable Clean Air Act (CAA) requirements as the revised emission inventories clearly illustrate that total NO<sub>x</sub> and VOC emissions in the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana

Area will continue to decline leading to local reductions between 2008 (base year) and 2020 (maintenance plan horizon).

**Transportation Conformity Budgets**

Table 5.1 was included on Page 25 of the original Redesignation Petition and Maintenance Plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area. Table 5.1 – A (to be considered a replacement of Table 5.1) has been revised to incorporate U.S. EPA’s MOVES model-produced emission factors and data extracted from the region’s travel-demand model. Table 5.1 from the original submittal included onroad emissions for Ohio, Kentucky, and Indiana. For consistency throughout this replacement, Table 5.1 – A includes MOVES-based onroad emissions for only Ohio and Indiana.

**Table 5.1  
Emission Estimations for On-Road Mobile Sources  
for the Cincinnati-Hamilton OH-KY-IN Ozone Nonattainment Area  
(MOBILE-Based Onroad Emissions)**

<b>Cincinnati-Hamilton OH-KY-IN NA Area</b>	<b>2005</b>	<b>2008</b>	<b>2015</b>	<b>2020</b>
VOC (tons/day)	69.43	55.47	35.35	32.14
NO <sub>x</sub> (tons/day)	136.73	113.45	51.04	38.17
<b>Lawrenceburg Township (Dearborn County Indiana) subtotal</b>				
VOC (tons/day)	1.00	0.75	0.50	0.42
NO <sub>x</sub> (tons/day)	1.44	1.14	0.60	0.42
<b>Lawrenceburg Township subtotal %</b>				
VOC (tons/day)	1.44	1.35	1.41	1.31
NO <sub>x</sub> (tons/day)	1.05	1.00	1.18	1.10

**Table 5.1 - A**  
**Emission Estimates for On-Road Mobile Sources**  
**for the Cincinnati-Hamilton OH-KY-IN Ozone Nonattainment Area**  
**(MOVES-Based Onroad Emissions)**

<b>Cincinnati-Hamilton OH-KY-IN NA Area</b>	<b>2005</b>	<b>2008</b>	<b>2015</b>	<b>2020</b>
VOC (tons/day)	93.68	95.55	48.75	37.23
NO <sub>x</sub> (tons/day)	157.38	131.28	81.96	63.59
<b>Lawrenceburg Township (Dearborn County Indiana) subtotal</b>				
VOC (tons/day)	1.31	1.35	0.69	0.53
NO <sub>x</sub> (tons/day)	2.18	1.82	1.14	0.89
<b>Lawrenceburg Township subtotal %</b>				
VOC (tons/day)	1.40	1.41	1.42	1.42
NO <sub>x</sub> (tons/day)	1.39	1.39	1.39	1.40

Table 5.2 was also included on Page 25 of the original Redesignation Petition and Maintenance Plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area. Table 5.2 – A (to be considered a replacement of Table 5.2) has been revised to incorporate MVEBs calculated using U.S. EPA’s MOVES model-produced emission factors and data extracted from the region’s travel-demand model as detailed in Table 5.1 - A.

**Table 5.2**  
**Motor Vehicle Emission Budgets (MVEB) for the**  
**Ohio and Indiana Portions of the Cincinnati-Hamilton OH-KY-IN**  
**Ozone Nonattainment Area**  
**(MOBILE6.2-Based Onroad Emissions)**

	<b>2015</b>	<b>2020</b>
<b>VOC (tons/day)</b>	<del>31.73</del>	<del>28.82</del>
<b>NOx (tons/day)</b>	<del>49.00</del>	<del>34.39</del>

**Table 5.2 - A**  
**Motor Vehicle Emission Budgets (MVEB) for the**  
**Ohio and Indiana Portions of the Cincinnati-Hamilton OH-KY-IN**  
**Ozone Nonattainment Area**  
**(MOVES-Based Onroad Emissions)**

	<b>2015</b>	<b>2020</b>
<b>VOC (tons/day)</b>	56.06	42.81
<b>NO<sub>x</sub> (tons/day)</b>	94.25	73.13

Through the interagency consultation process, it was determined that a maintenance plan interim year budget of 2015 and a horizon year budget of 2020, would be appropriate. The interagency consultation group approved onroad margins of safety of fifteen percent (15%) for both VOC and NO<sub>x</sub> onroad emission estimates for the years 2015 and 2020. A summary of this interagency consultation discussion can be found in Appendix B. These revised emission inventories clearly illustrate that onroad VOC and NO<sub>x</sub> emissions in the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area will continue to decline leading to local reductions between 2008 (base year) and 2015 (maintenance plan interim), as well as 2008 (base year) and 2020 (maintenance plan horizon).

Furthermore, when compared to the overall safety margin as defined in the Code of Federal Regulations (CFR) at 40 CFR 93.101, it is evident the onroad safety margin allocation is reasonable and appropriate. More specifically, even with the allocation of an onroad safety margin to mobile sources, emissions will continue to remain well below the overall safety margin for all sources as detailed in table, “2005, 2008, 2015, and 2020 Entire Cincinnati-Hamilton, OH-KY-IN Nonattainment Area All Anthropogenic Sources including Only Ohio and Indiana Onroad Emissions”. MVEBs are constrained to ensure that the total emissions (i.e., all source categories) do not exceed the 2008 attainment year emissions of either VOC or NO<sub>x</sub>, thereby ensuring continued maintenance of the 1997 8-hour ozone standard.

**Conclusion**

This MOBILE6.2 to MOVES replacement update to the previously submitted 8-hour ozone maintenance plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area incorporates onroad emission estimates and a revised MVEB using U.S. EPA’s recently adopted MOVES model. MVEBs have been revised in anticipation of the mandatory use of the MOVES model in future transportation conformity determinations. The onroad emission estimates were calculated using the MOVES-based emission factors and data extracted from the area’s travel-demand model. Onroad safety margins for VOCs and NO<sub>x</sub>, established through the interagency consultation process, are included in order to account for the wide array of assumptions that are factored into the calculation process. MVEBs are also constrained to ensure that total VOC and NO<sub>x</sub> emissions (i.e., all source categories) do not exceed attainment year (2008) emissions to ensure continued maintenance of the 1997 8-hour ozone standard. With the addition of MOVES-based onroad safety margins applied to mobile sources, the Indiana portion of the Cincinnati-

Hamilton, Ohio-Kentucky-Indiana Area will continue to remain well below the overall safety margins for all sources into the future. As such, the 8-hour ozone maintenance plan for the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Area continues to meet all applicable CAA requirements.

# Appendix A

Cincinnati-Hamilton,  
Ohio-Kentucky-Indiana  
Maintenance Area  
MOVES Methodology

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# Mobile Source Emissions Inventory for Cincinnati Ozone Maintenance Area – MOVES emissions model

*Includes a portion of Dearborn County, Indiana, the counties of Boone, Campbell, Kenton in Kentucky, and the counties of Butler, Clermont, Clinton, Hamilton, and Warren in Ohio. Emission estimates for the Year 2005, 2008, 2015, 2020, and 2030 developed in support of revision to Ozone State Implementation Plan*

April 2012

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*Prepared for the Indiana Department of Environmental Management, the Kentucky Division for Air Quality and the Ohio Environmental Protection Agency by*

**OKI Regional Council of Governments**



## Acknowledgments

<b>Title</b>	Mobile Source Emissions Inventory for Cincinnati Ozone Maintenance Area
<b>Abstract</b>	This report was prepared for the Indiana Department of Environmental Management, the Kentucky Division for Air Quality and the Ohio Environmental Protection Agency. The Cincinnati Ozone Maintenance area includes a portion of Dearborn County Indiana, the counties of Boone, Campbell, Kenton in Kentucky, and the counties of Butler, Clermont, Clinton, Hamilton, and Warren in Ohio. Clinton County is outside of OKI's MPO area with emission estimates prepared by the Ohio Department of Transportation. This report includes emission estimates for the years 2005, 2008, 2015, 2020 and 2030 was generated to support a revision to the SIPs for the 8-hour Ozone standard. EPA's Motor Vehicle Emission Simulation (MOVES) 2010 was used to generate the emission rates.
<b>Date</b>	April 2012
<b>Agency</b>	Ohio-Kentucky-Indiana Regional Council of Governments Mark Policinski, Executive Director Robert Koehler, P.E., Deputy Director
<b>Project Manager</b>	Andrew J. Reser, AICP
<b>Project Staff</b>	Harikishan Perugu, PTP Larry Buckler

The preparation of this document was financed cooperatively by the Federal Highway Administration, the Federal Transit Administration, the Commonwealth of Kentucky Transportation Cabinet, the Ohio Department of Transportation, and the units of local and county government in the OKI region. The opinions, findings, and conclusions expressed in this document are those of the OKI Regional Council of Governments and are not necessarily those of the U.S. Department of Transportation. This report does not constitute a standard, specification, or regulation.

# MOBILE Source Emissions Inventory for the Cincinnati Ozone Maintenance area

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This report was prepared for the Indiana Department of Environmental Management, the Kentucky Division for Air Quality and the Ohio Environmental Protection Agency. The Cincinnati Ozone Maintenance area includes a portion of Dearborn County Indiana, the counties of Boone, Campbell, Kenton in Kentucky, and the counties of Butler, Clermont, Clinton, Hamilton, and Warren in Ohio. Clinton County Ohio is outside OKI's MPO boundaries. The Ohio Department of Transportation prepares emission estimates for Clinton County. This report includes emission estimates for the years 2005, 2008, 2015, 2020 and 2030 generated to support the SIPs for the 8-hour ozone standard. EPA's Motor Vehicle Emissions Simulator (MOVES) 2010 model was used to generate the vehicle emission rates. In December 2009, MOVES replaced MOBILE6.2 as the EPA's official emission factor model. The OKI travel demand model version 7.6 was used to generate VMT and speed estimates. MOVES emission rates were generated for VOC's, and NO<sub>x</sub>.

OKI, as the MPO, is responsible for transportation planning and air quality/transportation conformity. Transportation conformity is a mechanism to ensure that federal funding and approval are given to those transportation activities that are consistent with the air quality goals of the State Implementation Plans (SIPs) for Indiana, Kentucky and Ohio. The SIPs include an inventory of projected emissions from vehicles. One or more of the analysis years in the projected inventory may be designated as the motor vehicle emissions budget (MVEB). This budget establishes a maximum allowable limit on future emissions from vehicles (mobile sources). OKI's transportation plans and programs must be shown to be in conformity with all SIP provisions. The conformity process is a quantitative analysis, using U.S.EPA's vehicle emissions software (currently MOVES), demonstrating that forecasted regional vehicle emissions do not exceed the established budget.

Table 1 shows daily mobile source emissions for the combined Indiana and Ohio portions of the Maintenance area, including Clinton County. Table 2 shows daily mobile source emissions for the Kentucky portion of the Maintenance area. Separate MVEB's are typically designated for these two areas. An additional safety margin should be added to the MVEB's due uncertainty with growth assumptions utilized in the OKI travel demand model and MOVES. Daily mobile source emissions for each county are shown in Table 3.

Table 1					
Mobile Source Emissions Inventory for the Indiana and Ohio Portions of the Cincinnati Ozone Maintenance Area (tons per day)					
	2005	2008	2015	2020	2030
<b>VOC</b>	93.68	95.54	48.75	37.24	31.81
<b>NOx</b>	157.38	131.28	81.95	63.59	56.48

Table 2					
Mobile Source Emissions Inventory for the Kentucky Portion of the Cincinnati Ozone Maintenance Area (tons per day)					
	2005	2008	2015	2020	2030
<b>VOC</b>	25.20	16.53	9.08	5.89	4.53
<b>NOx</b>	80.14	55.34	31.55	18.75	14.37

Table 3  
Mobile Source Emissions by State/County for the Cincinnati Ozone Maintenance Area (tpd)

State	2005	2008	2015	2020	2030
<b>Indiana</b>					
<b>Dearborn NA</b>					
<b>VMT</b>	599,761	613,027	686,339	730,126	800,277
<b>VOC</b>	1.31	1.35	0.69	0.53	0.45
<b>NOx</b>	2.18	1.82	1.14	0.89	0.80
<b>Ohio</b>					
<b>Butler</b>					
<b>VMT</b>	7,804,476	8,133,554	8,721,511	9,277,916	10,169,344
<b>VOC</b>	16.70	17.12	8.72	6.68	5.72
<b>NOx</b>	27.76	23.15	14.53	11.36	10.16
<b>Clermont</b>					
<b>VMT</b>	5,391,578	5,599,530	5,810,859	6,181,573	6,775,503
<b>VOC</b>	11.13	11.41	5.81	4.45	3.81
<b>NOx</b>	18.50	15.42	9.68	7.57	6.77
<b>Hamilton</b>					
<b>VMT</b>	23,170,766	23,481,421	25,598,858	27,231,982	29,848,450
<b>VOC</b>	49.03	50.26	25.59	19.61	16.80
<b>NOx</b>	81.49	67.95	42.65	33.35	29.82
<b>Warren</b>					
<b>VMT</b>	6,263,010	6,464,217	6,571,210	6,990,432	7,662,077
<b>VOC</b>	12.59	12.90	6.57	5.03	4.31
<b>NOx</b>	20.92	17.44	10.95	8.56	7.65
<b>OKI OH/IN Total</b>					
<b>VMT</b>	43,229,591	44,291,749	47,388,777	50,412,029	55,255,652
<b>VOC</b>	90.76	93.03	47.38	36.31	31.10
<b>NOx</b>	150.85	125.78	78.95	61.73	55.20
<b>Clinton, OH</b>					
<b>VMT</b>	1,956,501	1,939,190	2,215,886	2,349,923	2,736,782
<b>VOC</b>	2.92	2.51	1.37	0.93	0.71
<b>NOx</b>	6.53	5.50	3.01	1.86	1.28
<b>OH/IN VOC Total</b>	93.68	95.54	48.75	37.24	31.81
<b>OH/IN NOx Total</b>	157.38	131.28	81.95	63.59	56.48
<b>Kentucky</b>	<b>2005</b>	<b>2008</b>	<b>2015</b>	<b>2020</b>	<b>2030</b>
<b>Boone</b>					
<b>VMT</b>	4,186,006	4,355,527	4,712,497	5,129,347	5,802,955
<b>VOC</b>	9.71	6.37	3.50	2.27	1.75
<b>NOx</b>	30.88	21.32	12.16	7.22	5.54

<b>Campbell</b>					
<b>VMT</b>	2,437,698	2,495,174	2,727,746	2,969,033	3,358,939
<b>VOC</b>	5.62	3.69	2.03	1.31	1.01
<b>NOx</b>	17.87	12.34	7.04	4.18	3.20
<b>Kenton</b>					
<b>VMT</b>	4,182,042	4,197,027	4,791,791	5,215,655	5,900,597
<b>VOC</b>	9.87	6.47	3.56	2.31	1.77
<b>NOx</b>	31.40	21.68	12.36	7.34	5.63
<b>OKI KY Total</b>					
<b>VMT</b>	10,805,746	11,047,728	12,232,034	13,314,036	15,062,492
<b>VOC</b>	25.20	16.53	9.08	5.89	4.53
<b>NOx</b>	80.14	55.34	31.55	18.75	14.37
<b>NA Area Total</b>					
<b>VOC</b>	118.88	112.07	57.84	43.13	36.34
<b>NOx</b>	237.52	186.62	113.50	82.34	70.85

## Mobile Source Emission Forecast Process

### Emission Factor Model

OKI's conformity assessment utilized U.S.EPA's emissions model MOVES 2010 to develop emission factors for VOC and NO<sub>x</sub>. Table 4 summarizes the settings used in the MOVES run specification file. Table 5 lists the data used in the MOVES County-Data Manager. Further technical details on the use of MOVES are found in the appendix to the OKI report "Mobile Source Emissions Inventory for Cincinnati PM2.5 Nonattainment Area", revised December 2010.

Table 4

MOVES RunSpec Parameter	Settings
MOVES 2010a, default database 20100829	
Scale	County, Emission Rates
Time Span	Time aggregation = Hour July weekday, July meteorological data All hours of day selected Weekdays only
Geographic Bounds	Two Custom Domains 1) 4 Ohio counties and Lawrenceburg IN, 2) 3 Kentucky counties
Vehicles/Equipment	All source types, gasoline and diesel
Road Type	All road types including off-network
Pollutants and Processes	All Ozone categories, Total Energy Consumption
Strategies	Modified AVFT strategy file to reflect 0% CNG buses in the transit fleet
General Output	Units= grams, joules and miles
Output Emissions	Time = hour, Location =county, on-road emission rates by road type and source use type.

Advanced Performance	none
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Table 5

County Data Manager	Data Source
Source Type Population	Local and default. Local data from KYTC (2011) and ODOT (2010) from motor vehicle registration data. Default data used for source types 41, 61 and 62.
Vehicle Type VMT	Local and default. HPMSVTypeYear VMT=daily VMT from OKI travel demand model with EPA's daily to annual VMT converter applied. monthVMTFraction = default. dayVMTFraction=default, hourVMTFraction=local.
I/M Programs	Default modified to reflect discontinued I/M program in 2006
Fuel Formulation	Modified to reflect low RVP fuel program in Southwest Ohio
Fuel Supply	Default
Meteorology Data	Local. MOBILE6 converted values for Ohio and Kentucky values from Kentucky Division for Air Quality.
Ramp Fraction	Local. OKI travel demand model.
Road Type Distribution	Local. OKI travel demand model.
Age Distribution	Local and default. Local data from KYTC (2011) and ODOT (2010) from motor vehicle registration data. Default data used for source types 41, 61 and 62.
Average Speed Distribution	Local. OKI travel demand model.

### OKI Travel Demand Model

Vehicle miles traveled and vehicle hours were estimated using the OKI Travel Demand Model Version 7.6. The OKI Travel Demand Model is composed of CUBE Voyager programs and a series of FORTRAN programs written by OKI. It is a state of the practice model that uses the standard 4 phase sequential modeling approach of trip generation, distribution, modal choice and assignment. The model uses demographic and land use data and capacity and free-flow speed characteristics for each roadway segment in the network to produce a "loaded" highway network with forecasted traffic volumes with revised speeds based on specified speed/capacity relationships.

Travel analysis zones are the basic geographic unit for estimating travel in the OKI model. The OKI region is subdivided into 1608 traffic analysis zones to permit detail as well as manageability. A variety of socioeconomic data items are used in the OKI transportation planning process. These data are used primarily to forecast future travel patterns by serving as independent variables in OKI trip generation equations. The following categories of planning data are utilized:

- Population (household and group quarter)

- Households
- Household vehicles
- Employment (by employment category and zone of work)
- Labor force participation (by zone of residence)
- Area type

The principal data requirements of the OKI travel demand forecasting model are population and employment. From these variables, other characteristics including households, labor force, and personal vehicles may be derived. Chapter 5 of *OKI 2030 Regional Transportation Plan 2008 Update* provides a complete demographic overview of the region.

OKI utilizes both base year (2005) and future year data (2010, 2020 and 2030) in the planning process. Planning data are maintained at the Traffic Analysis Zone (TAZ) level, and originate in the 2000 Census of Population and Housing. Base year 2005 and future year data for each variable are developed through various methods. More detailed explanation of base year and future year data generation for each of the above-mentioned categories of planning data follows. All of the variables represent the latest OKI planning assumptions.

## Population

Base and Future Year Data: Population data for base year 2005 and future years 2010, 2020 and 2030 originate with the 2000 Census of Population and Housing. Utilizing ArcView GIS, population data at the zonal level for 2000 was derived from the area proportion allocation of block level population.

As a tri-state regional planning agency, OKI uses county level projections as prepared by the respective state data centers (Ohio Department of Development Office of Strategic Research, Kentucky State Data Center and Indiana Business Research Center) as control totals. The most current projections (years 2005 to 2030) were released by the Ohio and Indiana state data centers in 2003 and the Kentucky State Data Center in 2004. Population projections at the zonal level are calculated by multiplying household size by the projected zonal households. Household size is factored so that, in each county, the sum of the zonal populations equals the control total.

## Households

Base Year Data: Household data for base year 2005 originates with the 2000 Census of Population and Housing. Utilizing the geographic information system ArcMap, household data at the zonal level for 2000 was derived from the area proportion allocation of block level households. Year 2000 household data was updated to 2005 with residential building permits issued between January 2000 and December 2004. The residential building locations were geo-coded in ArcMap, then aggregated to the TAZs. The housing unit totals for each TAZ were converted to households by applying a vacancy rate, an adjustment for permitted but unbuilt units, and subtracting demolitions (where data was available). These households were then added to the year Census 2000 zonal household total to arrive at 2005 households for each TAZ.

Future Year Data: The preparation of household projections was accomplished by calculating the number of households for a projected county population using ratios of householders to total population by age specific cohorts derived from the 2000 Census for each analysis year. Disaggregation to TAZs was determined by historical trends, existing and future land use, topography, flood plain information, availability of land, local knowledge and other factors.

## Household Vehicles

Base and Future Year Data: Base and future year household vehicle data were obtained from the 2000 Census of Population and Housing. The 2000 Census is the only source of household vehicle data available at the block group level. Average vehicles per household were calculated for block groups then applied to the TAZs associated with each block group. The 2005, 2010, 2020 and 2030 vehicles per household level was held at the 2000 level based on the fact that, since 2002, the number of vehicles per household has exceeded the number of drivers per household.

## Labor Force

Base and Future Year Data: The OKI labor force is a function of the population as determined by a labor force participation ratio (the number of employed persons in the labor force per persons 16 and over). Household data for base year 2005 originates with the 2000 Census of Population and Housing. Utilizing the geographic information system ArcMap, household data at the zonal level for 2000 was derived from the area proportion allocation of block group level employed labor force. The labor force projections for 2005, 2010, 2020 and 2030 were based on the most recent projections of national labor force participation rates by age and sex cohorts from the U.S. Department of Labor, Bureau of Labor Statistics for each of those years. These rates were then applied to the projected county age/sex cohorts and adjusted to eliminate the unemployed to arrive at a county employed labor force control total. Employed labor force at the zonal level is calculated by multiplying the labor force participation rate by the zonal population. The labor force participation rate is adjusted so that, in each county, the sum of the zonal labor force counts equals the control total.

## Employment

Base Year Data: Quarterly Census of Employment and Wages (QCEW or ES202) data for 2005 was utilized as the primary tool to calculate employment at the zonal level. Individual business records containing physical location, number of employees and SIC code were geocoded through ArcMap and aggregated to the TAZ level. This data set was supplemented by other sources of data to complete the commuting employment picture in the OKI region. Each zone's employment was divided according to the SIC code into three classes (retail, office, industrial) based upon the potential for generating trips.

Future Year Data: For future year employment projection, calculation was first made of the employment at the regional level. At the regional level, employment is a calculation of the region's employed labor force minus workers who live in the region but commute out to work, plus workers who live outside the region but commute in to work. The regional total was disaggregated first to the county level based on historic trends and expected changes in the county's share of the region's employment

and then to the TAZ level. Disaggregation to TAZs was determined by historical trends, existing and future land use, topography, flood plain information, availability of land, local knowledge and other factors.

## Area Type

Base and Future Year Data: For each analysis year, each TAZ is assigned an area type designation as CBD, Urban, Suburban or Rural based on population and employment densities.

## Model Calibration

OKI's Travel Demand Model has been validated to observed traffic volumes for the model base year 2005. The modeling network encompasses the entire ozone Maintenance area with the exception of Clinton County, Ohio. The modeling network also includes Greene, Miami and Montgomery counties in Ohio and the remainder of Dearborn County Indiana. The difference between estimated vehicle miles traveled (VMT) and 2005 observed VMT is less than 1%. A highway screenline analysis compares the screenline observed and simulated traffic volume discrepancies with the ODOT standard of maximum desirable deviation. The comparison shows that the model performs at a satisfactory level and all the errors were under the ODOT curve. Further information can be found in OKI's 2007 report, "*OKI/MVRPC Travel Demand Model Methodology/ Validation Report*". For the calibration, OKI used over 3000 traffic counts collected through 2006 by the Ohio Department of Transportation (ODOT), the Kentucky Transportation Cabinet, many county and local governments, transportation engineering consultants, and OKI. These traffic counts cover nearly 50% percent of the links in the OKI portion of the modeling network. The methodology provides consistency with past emission inventory and conformity analysis work performed by OKI.

## Local Inputs and Post-Model Processing

OKI incorporates a variety of sources of local data to both improve and confirm the accuracy of VMT, as well as other travel-related parameters. Free flow speeds used on the highway and transit networks are based on travel time studies performed locally. The OKI post-processing program, IMPACT, uses the loaded highway network to generate VMT by hour, VMT by speed distribution and VMT by facility type. These tables are then included as input into MOVES. Two separate sets of VMT tables are generated: one for the four Ohio counties plus Dearborn County Indiana, and a second for the three Kentucky counties. The VMT by hour tables utilize hourly traffic distribution and directional split factors for different roadway types as developed by OKI. The main source of the data was the permanent traffic counting stations located throughout the OKI region for the years of 2004-2006. This data was supplemented with data collected at coverage count stations (locations with counts taken on only one-two days). The stations were classified by area type: urban and rural, and functional classification: freeway, arterial and collector. Speeds representing various "loaded" conditions (with traffic volumes) are estimated using techniques from the 1997 Highway Capacity Manual. This permits the estimation of speeds as conditions vary from hour to hour on the different facility types throughout the region. The IMPACT program performs the appropriate summation by area and roadway type as well as regional totals. OKI has also developed seasonal conversion factors to adjust traffic volumes to summer

conditions. The factors were derived from local data collected at permanent traffic counting stations during 1994-1997 utilizing the average daily traffic monthly conversion factors for June, July and August. Further information on OKI's IMPACT program is documented in the report, *"Travel Demand Model Summary Reporting and Impact Summary Reporting: OKI/MVRPC Travel Demand Model User's Guide"*, OKI 2003.

# Appendix B

Indiana Portion of the Cincinnati-  
Hamilton, Ohio-Kentucky-Indiana  
Area Interagency Consultation  
Group Meeting Minutes/Summary

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## **Interagency Consultation Group (ICG) Conference Call Minutes**

### **For the MOBILE6.2 to MOVES MVEB Replacement Update Related to the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard**

#### **ICG Conference Call Date and Time**

- May 31, 2012 at 9am Eastern

#### **ICG Attendees**

- Shawn Seals (IDEM), Patricia Morris (EPA), Steve Smith (INDOT), Larry Heil (FHWA-Indiana), Greg Katter (INDOT), Jenifer Dines (OEPA), Erica Fetty (OEPA), Andy Reser (OKI), John Gowins (KYDAQ), and Leigh Oesterline (FHWA-Ohio)

#### **ICG Discussion Topics and Conclusions**

1. For the Ozone MVEB Replacement submittal, mobile source margins of safety and minor rounding inconsistencies were discussed.
  - A. After discussion, the consensus of the ICG was that the 15% mobile source margin of safety for VOC and NO<sub>x</sub> emissions does not result in an exceedance of the all sources margins of safety, and is reasonable and appropriate for inclusion in MVEB Replacement submittal. The Indiana and Ohio submittals will include an MVEB that include onroad emissions for only these two states. The subsequent Kentucky submittal will include a separate MVEB for only Kentucky onroad emissions. The attached spreadsheet demonstrates that a 15% mobile source margin of safety for VOC and NO<sub>x</sub> emissions fall well below the all sources margins of safety and, as such, will be reflected in the Ozone MVEB Replacement submittal.
  - B. It was noted that there are minor rounding differences between the source document (Version 2.12) for onroad emissions provided by OKI. The Indiana and Ohio MVEB replacement submittals will include values including two decimal points. These values will be totaled based on the two decimal point values and reflect mathematically accurate values.

# Appendix C

## Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area Public Participation Documentation

- **Legal Notice of Public Hearing**
  - **IDEM Webmaster Certification of Legal Notice Publication**
  - **Screenshot Verification of Legal Notice Posting on IDEM Website**
- **Summary of Comments and Responses Thereto**
  - **No Comments Received**

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## **LEGAL NOTICE OF PUBLIC HEARING**

### **Motor Vehicle Emission Budgets Replacement Update to the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard**

**After December 1, 2012, legal notices for public hearings shall no longer be published in newspapers, but will be found on the Indiana Department of Environmental Management web site at: <http://www.in.gov/idem/5474.htm>.**

Notice is hereby given under 40 CFR 51.102 that the Indiana Department of Environmental Management (IDEM) is accepting written comment and providing an opportunity for public hearing regarding the Motor Vehicle Emission Budget (MVEB) replacement update to the Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana maintenance area under the 1997 8-hour ozone standard. Onroad emissions for the original submittal were calculated using the MOBILE6.2 mobile model and are now being replaced with the United States Environmental Protection Agency's (U.S. EPA's) recently adopted Motor Vehicle Emissions Simulator (MOVES) mobile model. All interested persons are invited and will be given reasonable opportunity to express their views concerning the submittal of the proposed MVEB replacement update to the maintenance area of Indiana's portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana.

The purpose of this notice is to solicit public comment on Indiana's proposed MVEB replacement update. The Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana area was designated as nonattainment for the 1997 8-hour ozone standard and subject to the requirements of Section 172 of the Clean Air Act (CAA). One of the compliance requirements mandated by Section 175A(b) of the CAA, is the development of a plan demonstrating that ozone maintenance areas will continue to meet the 8-hour ozone standard for the next ten years, which includes MVEBs for onroad sources, beyond the current maintenance period. This submittal of the proposed MVEB replacement update to the maintenance area of Indiana's portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana is being drafted and submitted consistent with U.S. EPA guidance. Upon completion of this public notice process, the MOBILE6.2-based to MOVES-based MVEB replacement updates will be submitted to U.S. EPA for approval into the State Implementation Plan.

Copies of the draft documents will be available on or before October 19, 2012, to any person upon request and at the following locations:

- Indiana Department of Environmental Management, Office of Air Quality, Indiana Government Center-North, 100 North Senate Avenue, 10<sup>th</sup> Floor-East Wing, Indianapolis, Indiana
- Lawrenceburg Public Library, 150 Mary Street, Lawrenceburg, Indiana

The draft documents will also be available on the following web page:

<http://www.in.gov/idem/4658.htm>

An electronic version of all MOVES mobile model input and output files will be available at the public hearing or upon request.

Any person may submit written comments on the MVEB replacement update to the maintenance area of Indiana’s portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana on or before November 30, 2012. Written comments should be directed to Mr. Shawn Seals, Mail Code 61-50, Office of Air Quality, Indiana Department of Environmental Management, 100 North Senate Avenue, Indianapolis, Indiana 46204; or fax (317) 233-5967; or email at [SSeals@idem.in.gov](mailto:SSeals@idem.in.gov). Interested parties may also present oral or written comments at the public hearing, if held.

A public hearing on the MVEB replacement update to the maintenance area of Indiana portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana will be held if a public hearing request is received by November 20, 2012. A hearing has been scheduled for November 28, 2012. The meeting will convene at 6:00 p.m. (local time) at the Lawrenceburg Public Library, Ewbank Meeting Room 1 and 2, 150 Mary Street, Lawrenceburg, Indiana 47025. If a request for a public hearing is not received by November 20, 2012, the hearing will be cancelled. Interested parties can check the online IDEM calendar at <http://www.in.gov/idem/calendar.html> or contact Mr. Shawn Seals at the provided contact information after November 20, 2012, to see if the hearing has been cancelled.

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*Individuals requiring reasonable accommodations for participation in this hearing, if held, should contact the IDEM Americans with Disabilities Act (ADA) coordinator at:*

Attn: ADA Coordinator  
Indiana Department of Environmental Management – Mail Code 50-10  
100 North Senate Avenue  
Indianapolis, IN 46204-2251

*Or call (317) 233-1785 (voice) or (317) 232-6565 (TDD). Please provide a minimum of 72 hours notification.*

**IDEM WEBMASTER CERTIFICATION OF LEGAL NOTICE PUBLICATION**

December 11, 2012

**CERTIFICATE OF PUBLICATION**

This is to certify that the Indiana Department of Environmental Management (IDEM) Notice of the opportunity for a Public Hearing regarding the following:

- Request to Parallel Process the Draft MOBILE6.2 to MOVES MVEB Replacement Update to the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard

was published on IDEM's web site on October 23, 2012. It remained posted on the site until at least November 30, 2012.

The notice in full was available online at the following web address, under "Dearborn" county.

<http://www.in.gov/idem/6394.htm>

Web publication of the notice was at the request of Scott Deloney, Branch Chief, Programs Branch, Office of Air Quality, IDEM.

By:

A handwritten signature in black ink, appearing to read "Mike Finklestein". The signature is stylized with a large loop at the end.

Mike Finklestein  
IDEM Webmaster

Attachments:  
Copy of web page as published.

# SCREENSHOT VERIFICATION OF LEGAL NOTICE POSTING ON IDEM WEBSITE

The screenshot shows a Windows desktop environment. The taskbar at the bottom includes the Start button, an active window for 'IDEM: Public Notices: Southeast Indiana', and another window for 'Inbox - Microsoft Outlook'. The system tray shows the time as 8:39 AM. The desktop background is green with various icons for applications like Microsoft Word, Adobe Acrobat, and Roxio Creator.

The main window is a Windows Internet Explorer browser displaying the IDEM website. The address bar shows 'http://www.in.gov/idem/6394.htm'. The browser's Favorites bar contains several 'Sign In' links and 'Welcome to CITES'. The website content includes a navigation menu on the left with categories like 'Information For', 'Environmental Information', and 'Your Community'. A main heading reads 'Southeast Indiana'. Below this is a table of public notices.

Subscriptions: Want to know about new notices as soon as they're posted? You can now subscribe to this regional public notice page. By subscribing to a region, you will be sent an e-mail or text message to your phone every time IDEM adds information to this regional page. This allows you to stay current on all posting and never miss a new posting. To subscribe, click on the subscription link in the le hand column.

Name or Facility	County(ies) Affected	Type of Notice/Event	Publication Dates	Public Comment?	Comments Accepted	Additional Information
Charlestown (city) WWTP	Clark	<a href="#">NPDES Draft Renewal (PDF)</a>	10/04/2012 - 11/05/2012	Yes	Project Manager: John Donnellan	Address on Notice
Koetter Woodworking Inc.	Clark	<a href="#">Renewal of a Part 70 Operating Permit (PDF)</a>	10/06/2012 - 11/05/2012	Yes	Address on Notice	
P & E Area WWTP	Clark	<a href="#">NPDES Final Termination (PDF)</a>	10/12/2012 - 10/30/2012	Yes	Project Manager: Leigh Voss	Address on Notice
Altec, LLC.	Clark	<a href="#">NPDES 15-8 "Termination" General Permit (PDF)</a>	09/14/2012 - 10/02/2012	No	Project Manager: Joe Gwinn	
Request to Parallel Process the Draft MOBILES 2 to MOVES MVEB Replacement Update to the Indiana Portion of the Cincinnati-Hamilton, Ohio-Kentucky-Indiana Maintenance Area under the 1997 8-Hour Ozone Standard	Dearborn	<a href="#">Legal Notice and Opportunity for Public Hearing (PDF)</a>	10/23/2012 - 11/30/2012	Yes	Address on Notice	
Tradewinds Marina Channel Dredging	Dearborn	<a href="#">401 Water Quality Certification Public Notice (PDF)</a>	10/19/2012 - 11/09/2012	Yes	Project Manager: Aaron McMahon	Applicant Name: Mr. William Gindele Applicant Company: A&L, LLC. (dba Tradewinds)

The 'Date and Time Properties' dialog box is open, showing the date as October 23, 2012, and the time as 8:39:07 AM. The current time zone is Eastern Daylight Time.