Air Quality Conformity Analysis Report

Lebanon County MPO 2015 TIP and 2040 LRTP

The Lebanon County Metropolitan Planning Organization (LEBCO MPO) Portion of the Harrisburg-Lebanon-Carlisle 1997 Annual $PM_{2.5}$ Nonattainment Area

and

The LEBCO MPO Portion of the Harrisburg–Lebanon–Carlisle-York 2006 24-Hour $PM_{2.5}$ Nonattainment Area

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The LEBCO MPO and Pennsylvania Department of Transportation

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Summary of Attachments

Attachment A: Project List
Attachment B: Detailed Emission Results
Attachment C: Sample MOVES Input Files

Overview

This report provides an analysis of the air quality implications of the current Lebanon County Metropolitan Planning Organization (LEBCO MPO) 2015-2018 Transportation Improvement Program (TIP) and 2040 Long Range Transportation Plan (LRTP). The analysis demonstrates transportation conformity under the 1997 annual fine particulate ($PM_{2.5}$) National Ambient Air Quality Standards (NAAQS) and the 2006 24-hour $PM_{2.5}$ NAAQS. The air quality conformity analysis reflects an assessment of the regionally significant, non-exempt transportation projects included in both the TIP and the LRTP.

This document replaces the previously approved conformity demonstration of the TIP and LRTP, and ensures that the findings meet all current criteria established by the U.S. Environmental Protection Agency (EPA) for the applicable NAAQS. A new conformity determination has been completed to provide a regional forecast of emissions based on planned air quality significant projects and the latest available planning assumptions.

Background on Transportation Conformity

Transportation conformity is a way to ensure that federal funding and approval are awarded to transportation activities that are consistent with air quality goals. Under the Clean Air Act (CAA), transportation and air quality modeling procedures must be coordinated to ensure that the TIP and the LRTP are consistent with the area's applicable State Implementation Plan (SIP). The SIP is a federally approved and enforceable plan by which each area identifies how it will attain and/or maintain the health-related primary and welfare-related secondary NAAQS.

In order to receive transportation funding and approvals from the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA), state and local transportation agencies must demonstrate that the plans, programs, or projects meet the transportation conformity requirements of the CAA as set forth in the transportation conformity rule. Under the transportation conformity rule, transportation plans are expected to conform to the applicable SIP in nonattainment or maintenance areas. The integration of transportation and air quality planning is intended to ensure that transportation plans, programs, and projects will not:

- Cause or contribute to any new violation of any applicable NAAQS.
- Increase the frequency or severity of any existing violation of any applicable NAAQS.
- Delay timely attainment of any applicable NAAQS, any required interim emissions reductions, or other NAAQS milestones.

The transportation conformity determination includes an assessment of future highway emissions for defined analysis years, including the end year of the LRTP. Emissions are estimated using the latest available planning assumptions and available analytical tools, including EPA's latest approved on-highway mobile sources emissions model, the Motor Vehicle Emission Simulator (MOVES). The conformity determination provides a tabulation of the analysis results for applicable precursor pollutants, showing that the required conformity test was met for each analysis year.

Report Contents

This document includes a summary of the methodology and data assumptions used for the conformity analysis. As shown in **Exhibit 1**, attachments containing additional detail have been provided with the document. In addition, modeling input and output files have been reviewed by the Environmental Protection Agency (EPA) Region III and the Pennsylvania Department of Environmental Protection (DEP).

EXHIBIT 1: SUMMARY OF ATTACHMENTS

Attachment	Title	Description
A	Project List	Provides a list of regionally significant highway projects that have been updated or added to the TIP and LRTP.
B	Detailed Emission Results	Provides a detailed summary of emissions by roadway type.
C	MOVES Sample Run Specification	Provides example MOVES data importer (XML) and run specification (MRS) files.

National Ambient Air Quality Standard Designations

The CAA requires the EPA to set NAAQS for pollutants considered harmful to public health and the environment. A nonattainment area is any area that does not meet the primary or secondary NAAQS. Once a nonattainment area meets the standards and additional redesignation requirements in the CAA [Section 107(d)(3)(E)], EPA will designate the area as a maintenance area. Lebanon County has been designated nonattainment under the following NAAQS: the 1997 annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS. Transportation conformity requires nonattainment and maintenance areas to demonstrate that all future transportation projects will not prevent an area from reaching its air quality attainment goals.

Ozone:

Ozone is formed by chemical reactions occurring under specific atmospheric conditions. Precursor pollutants that contribute to the formation of ozone include volatile organic compounds (VOC) and oxides of nitrogen (NO_X), both of which are components of vehicle exhaust. VOCs may also be produced through the evaporation of vehicle fuel, as well as by displacement of vapors in the gas tank during refueling. By controlling VOC and NO_X emissions, ozone formation can be mitigated. Both precursor pollutants are analyzed in the transportation conformity process.

1997 8-hour Ozone NAAQS

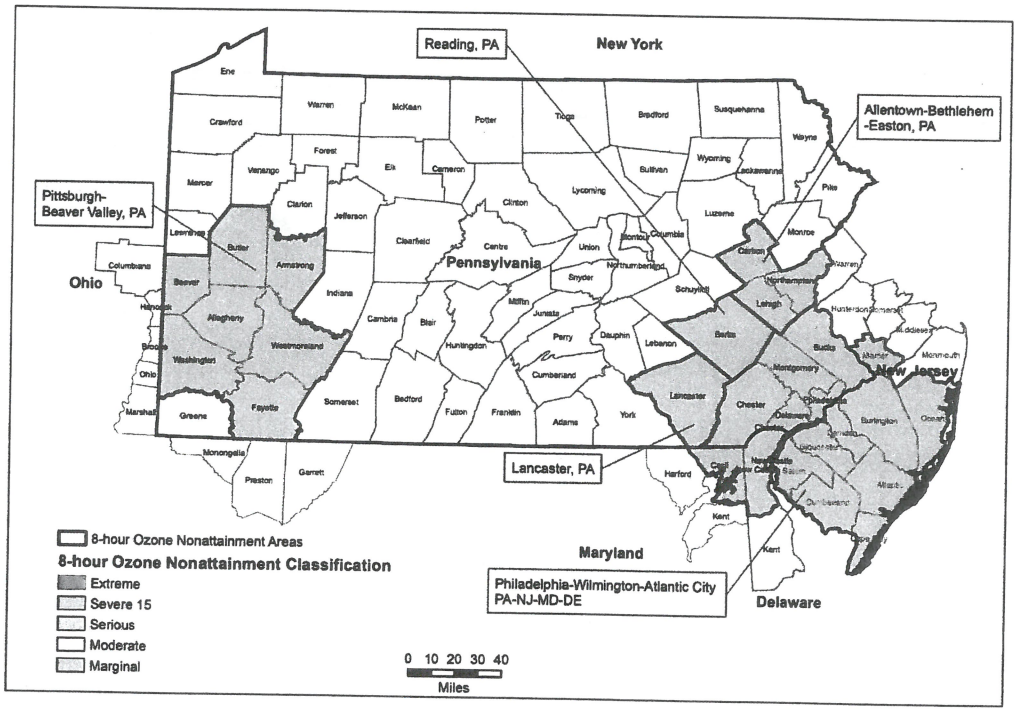
The EPA published the 1997 8-hour Ozone NAAQS on July, 18, 1997, (62 FR 38856), with an effective date of September 16, 1997. An area was in nonattainment of the 1997 8-hour Ozone NAAQS if the 3-year average of the individual fourth highest air quality monitor readings, averaged over 8 hours throughout the day, exceeded the NAAQS of 0.08 parts per million (ppm). On May 21, 2013, the EPA published a rule revoking the 1997 8-hour Ozone NAAQS, for the purposes of transportation conformity,

effective one year after the effective date of the 2008 8-hour Ozone NAAQS area designations (77 FR 30160). As of July 20, 2013, the Lebanon County no longer needs to demonstrate conformity to the 1997 8-hour Ozone NAAQS. However, future SIP revisions must address EPA's anti-backsliding requirements.

2008 8-hour Ozone NAAQS

The EPA published the 2008 8-hour Ozone NAAQS on March 27, 2008, (73 FR 16436), with an effective date of May 27, 2008. EPA revised the ozone NAAQS by strengthening the standard to 0.075 ppm. Thus, an area is in nonattainment of the 2008 8-hour Ozone NAAQS if the 3-year average of the individual fourth highest air quality monitor readings, averaged over 8 hours throughout the day, exceeds the NAAQS of 0.075 ppm. Lebanon County area was designated as an attainment area under the 2008 8-hour Ozone NAAQS, effective July 20, 2012 (77 FR 30088). As a result, transportation conformity is not required for the 8-hour Ozone NAAQS. **Exhibit 2** illustrates the statewide designations under the 2008 8-Hour Ozone NAAQS in Pennsylvania.

EXHIBIT 2: 2008 8-HR OZONE NAAQS AREA DESIGNATIONS



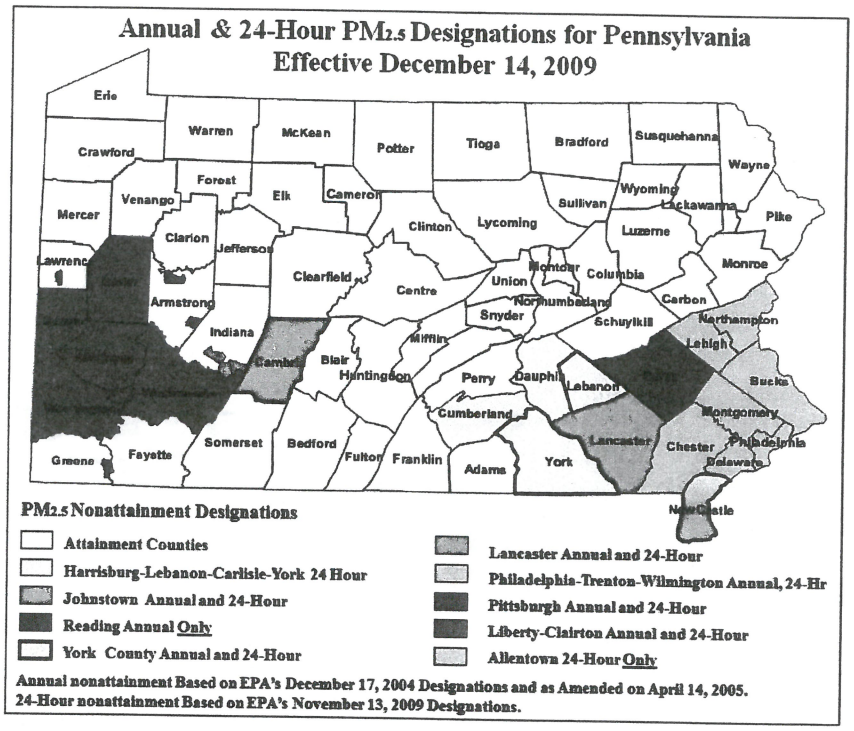
Fine Particulate Matter ($PM_{2.5}$):

Fine particulate matter ($PM_{2.5}$) can be emitted directly into the atmosphere (sources include exhaust and dust from brake and tire wear) or formed in the atmosphere by combinations of precursor pollutants (secondary formation). Sulfates and nitrates are two types of pollutants that contribute to secondary formation. Sulfate emissions are a result of power plant and industry emissions, while nitrate emissions result from automobiles, power plants, and other combustion sources. Scientific studies have

shown a significant correlation between exposure to fine particulates and severe health issues such as heart disease, lung disease, and premature death.

Lebanon County was designated as a nonattainment area under both the 1997 Annual and the 2006 24-Hour Annual NAAQS. **Exhibit 3** illustrates the statewide designations under the 1997 and 2006 $PM_{2.5}$ NAAQS.

EXHIBIT 3: 1997 ANNUAL AND 2006 24-HOUR $PM_{2.5}$ NAAQS AREA DESIGNATIONS



The pollutants that could be analyzed in the conformity analysis are: [1] direct $PM_{2.5}$ emissions (tail pipe emissions, brake and tire wear), [2] re-entrained road dust, and [3] precursors NO_X, VOC, Sulfur Oxides (SO_X) and Ammonia (NH_3). The EPA has ruled that until the EPA or the Pennsylvania Department of Environmental Protection (DEP) find that other precursor pollutants are significant contributors, and a SIP revision is approved stating such findings, direct $PM_{2.5}$ emissions and NOx are the only pollutants that must be analyzed for transportation conformity (40 CFR 93.119(f)(8)–(10)).

1997 $PM_{2.5}$ Annual Standard

The EPA published the 1997 Annual $PM_{2.5}$ NAAQS on July 18, 1997, (62 FR 38652), with an effective date of September 16, 1997. An area is in nonattainment of the 1997 Annual $PM_{2.5}$ NAAQS if the 3 year average of the annual mean $PM_{2.5}$ concentrations (for designated monitoring sites within an area) exceed 15.0 micrograms per cubic meter ($\mu g/m^3$). Lebanon County was designated as a nonattainment area under the 1997 Annual $PM_{2.5}$ NAAQS, effective April 5, 2005 (70 FR 944).

A redesignation request and maintenance plan, applicable to both the 1997 Annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS has been proposed by DEP. At the time of this conformity analysis, the region does not have adequate or approved motor vehicle emission budgets (MVEBs), and will therefore use the interim conformity test for the 1997 Annual $PM_{2.5}$ NAAQS. According to the EPA Transportation Conformity Regulations (40 CFR 93.109(c)(3)), prior to the approval of MVEBs in a SIP revision, $PM_{2.5}$ nonattainment areas may use either the "build-no build" test or the "no-greater-than baseline" test. Following interagency consultation, the "no-greater-than-baseline" test, with 2002 as the baseline year, is used for annual $PM_{2.5}$ direct emissions and $PM_{2.5}$ precursors. The only $PM_{2.5}$ precursor that is required to be analyzed is NOx. The conformity determination also demonstrates conformity to the proposed maintenance plan MVEBs. When the MVEBs are found adequate by EPA, they will serve as the sole conformity test for this standard.

2006 $PM_{2.5}$ 24-Hour Standard

The EPA published the 2006 24-hour $PM_{2.5}$ NAAQS on October 17, 2006, (71 FR 61144), with an effective date of December 18, 2006. The EPA revised the 24-hour $PM_{2.5}$ NAAQS by strengthening the standard from 65 $\mu g/m^3$ (62 FR 38652) to 35 $\mu g/m^3$. In the same rulemaking, EPA retained the current 1997 Annual $PM_{2.5}$ NAAQS of 15 $\mu g/m^3$. The revised 24-hour $PM_{2.5}$ NAAQS supersedes the 24-hour $PM_{2.5}$ NAAQS promulgated in 1997. An area is in nonattainment of the 2006 24-hour $PM_{2.5}$ NAAQS if the 98th percentile of the annual 24-hour concentrations, averaged over three years, is greater than 35 $\mu g/m^3$. Lebanon County was designated as a nonattainment area as part of the Harrisburg-Lebanon-Carlisle-York nonattainment designation area under the 2006 24-hour $PM_{2.5}$ NAAQS, effective December 14, 2009 (74 FR 58688).

A redesignation request and maintenance plan, applicable to both the 1997 Annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS has been proposed by DEP. At the time of this conformity analysis, the region does not have adequate or approved MVEBs, and will therefore use the interim conformity test for the 2006 24-hour $PM_{2.5}$ NAAQS. According to the EPA Transportation Conformity Regulations (40 CFR 93.109(c)(3)), prior to the approval of MVEBs in a SIP revision, $PM_{2.5}$ nonattainment areas may use either the "build-no-build" test or the "no-greater-than-baseline" test. Following interagency consultation, the "no-greater-than-baseline" test, with 2008 as the baseline year, is used for 24-hour $PM_{2.5}$ direct emissions and $PM_{2.5}$ precursors. The only $PM_{2.5}$ precursor that is required to be analyzed is NO_X. The conformity determination also demonstrates conformity to the proposed maintenance plan MVEBs. When the MVEBs are found adequate by EPA, they will serve as the sole conformity test for this standard.

Interagency Consultation

As required by the federal transportation conformity rule, the conformity process includes a significant level of cooperative interaction among federal, state, and local agencies. For this air quality conformity analysis, interagency consultation was conducted as required by the Pennsylvania Conformity SIP. This included conference call(s) or meeting(s) of the Pennsylvania Transportation-Air Quality Work Group

(including the Pennsylvania Department of Transportation (PennDOT), DEP, EPA, FHWA, FTA and representatives from larger MPOs within the state).

Meeting and conference calls where conducted on March 13, 2013; June 5, 2013; September 25, 2013; December 4, 2013 and March 19, 2014 to review all input planning assumptions, methodologies and analysis years.

Analysis Methodology and Data

This transportation conformity analysis was conducted using EPA's MOVES model. MOVES is an upgrade to EPA's modeling tools and replaces MOBILE6.2 as the official model for estimating emissions from highway vehicles for SIP emission inventories and transportation conformity (75 FR 9411), effective March 2, 2010. MOVES must be used for new regional conformity analyses that begin after March 2, 2013 (77 FR 11394). EPA released MOVES2010a in September 2010 (75 FR 79370). In April 2012, EPA released MOVES2010b (http://www.epa.gov/otaq/models/moves/) to allow MOVES users to benefit from several improvements to general model performance. MOVES2010b does not affect the criteria pollutant emissions results of MOVES2010a and is not considered a new model.

Planning assumptions are updated following EPA and FHWA joint guidance (EPA420-B-08-901) that clarifies the implementation of the latest planning assumption requirements in 40 CFR 92.110. This analysis utilizes the latest available traffic, vehicle fleet and environmental data to estimate regional highway emissions. Pennsylvania updates state-level planning assumptions on a 3-year cycle and this information is integrated into the conformity analyses.

The analysis methodology and data inputs for this analysis were developed through interagency consultation and used available EPA guidance documents that included:

- *Policy Guidance on the Use of MOVES2010 and Subsequent Minor Revisions for State Implementation Plan Development, Transportation Conformity, and Other Purposes*, US EPA Office of Air and Radiation, EPA-420-B-12-010, April 2012.
- *Using MOVES to Prepare Emission Inventories in State Implementation Plans and Transportation Conformity: Technical Guidance for MOVES2010, 2010a and 2010b.* US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, EPA-420-B-12-028, April 2012.
- *Motor Vehicle Emission Simulator (MOVES) – User Guide for MOVES2010b*, US EPA Office of Transportation and Air Quality, EPA-420-B-12-001b; June 2012

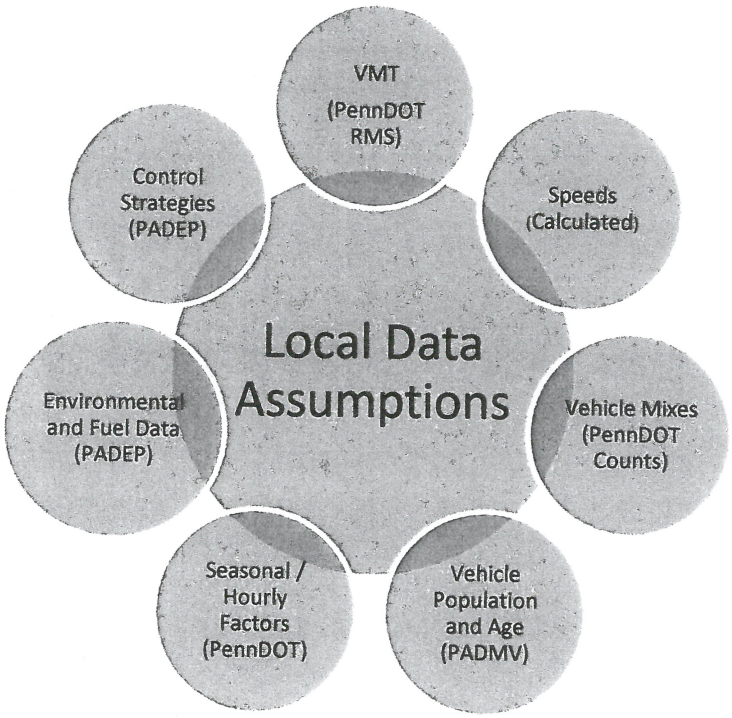
A mix of local and national default (internal to MOVES) data are used in the analysis. As illustrated in **Exhibit 4**, local data has been used for data items that have a significant impact on emissions, including: vehicle miles of travel (VMT), vehicle population, congested speeds, and vehicle type mix, as well as environmental and fuel assumptions. Local data inputs to the analysis process reflect the latest available planning assumptions using information obtained from PennDOT, DEP and other local/national sources.

The methodology used for this analysis is consistent with the methodology used to develop SIP inventories. This includes the use of custom post-processing software (PPSUITE) to calculate hourly speeds and prepare key traffic input files to the MOVES emission model.

PPSUITE consists of a set of programs that perform the following functions:

- Analyzes highway operating conditions.
- Calculates highway speeds.
- Compiles VMT and vehicle type mix data.
- Prepares MOVES runs and processes MOVES outputs.

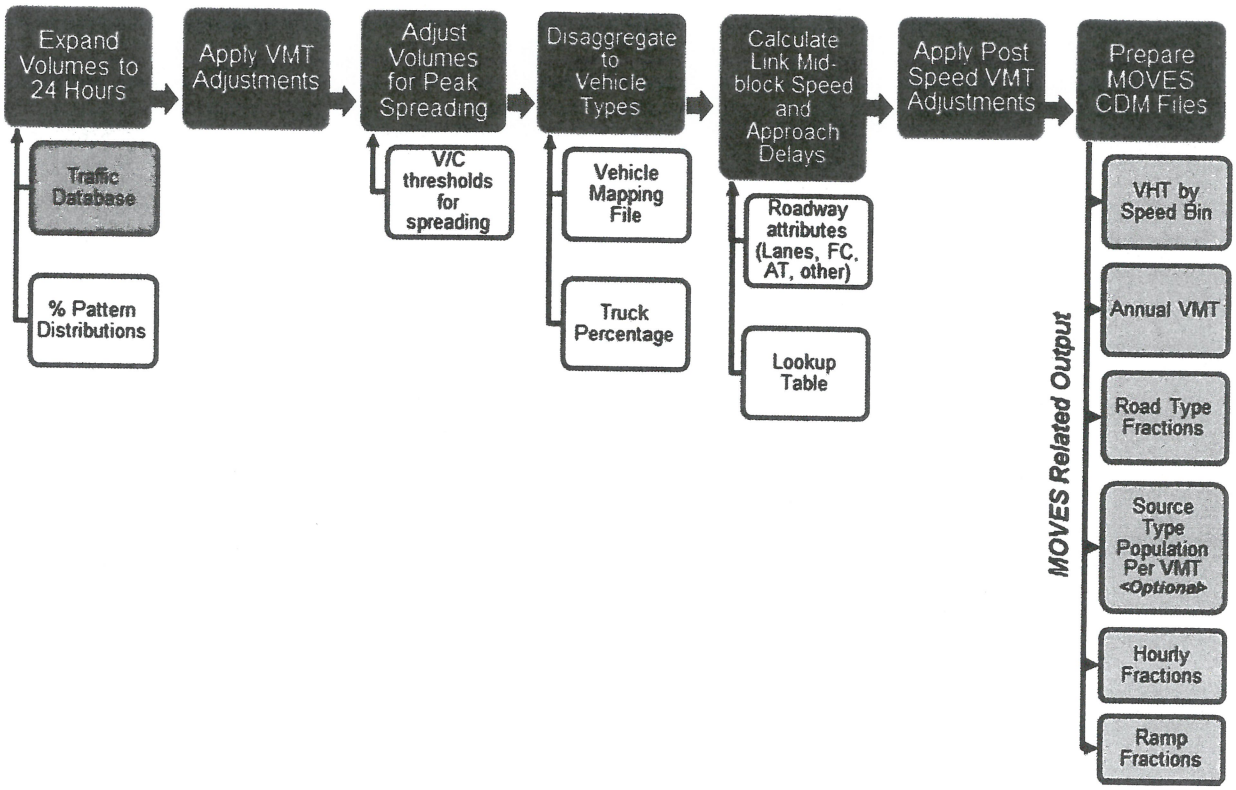
EXHIBIT 4: LOCAL DATA INPUTS USED FOR CONFORMITY RUNS



PPSUITE is a widely used and accepted tool for estimating speeds and processing emissions rates. The PPSUITE tool has been used for developing on-highway mobile source inventories in SIP revisions, control strategy analyses, and conformity analyses in other states. The software was developed to utilize accepted transportation engineering methodologies. The PPSUITE process is integral to producing traffic-related input files to the MOVES emission model. **Exhibit 5** summarizes the key functions of PPSUITE within the emission calculation process. Other MOVES input files are prepared externally to the PPSUITE software, including vehicle population, vehicle age, environmental and fuel input files.

The CENTRAL software is also used in this analysis. CENTRAL is a menu-driven software platform that executes the PPSUITE and MOVES processes in batch mode. The CENTRAL software allows users to execute runs for a variety of input options and integrates custom MYSQL steps into the process. CENTRAL provides important quality control and assurance steps, including file naming and storage automation.

EXHIBIT 5: EMISSION CALCULATION PROCESS



Key MOVES Input Data

A large number of inputs to MOVES are needed to fully account for the numerous vehicle and environmental parameters that affect emissions. These inputs include traffic flow characteristics, vehicle descriptions, fuel parameters, I/M program parameters and environmental variables. MOVES includes a default national database of meteorology, vehicle fleet, vehicle activity, fuel and emission control program data for every county; EPA, however, cannot certify that the default data is the most current or best available information for any specific area. As a result, local data, where available, is recommended for use when conducting a regional conformity analysis. A mix of local and default data is used for this analysis. These data items are discussed in the following sections.

Roadway Data

The roadway data inputs to emissions calculations for this conformity analysis are based on information from the RMS database maintained by PennDOT's Bureau of Planning and Research (BPR). PennDOT

obtains this information from periodic visual and electronic traffic counts. RMS data is dynamic, since it is continually reviewed and updated from new traffic counts and field visits conducted by PennDOT. Information on roadways included in the USDOT National Highway System is reviewed, at minimum, on an annual basis, while information on other roadways is reviewed at least biennially. On a triennial basis, a current "snapshot" of the RMS database is taken and downloaded to provide an updated record of the Commonwealth's highway system for estimating emissions. The RMS database contains all state highways, including the Pennsylvania Turnpike, divided into segments approximately 0.5 miles in length. These segments are usually divided at important intersections or locations where there is a change in the physical characteristics of the roadway (e.g. the number of lanes changes). There are approximately 82,000 state highway segments across all 67 Pennsylvania counties. The following information is extracted from RMS for emission calculations:

- Lanes.
- Distances.
- Volumes representing Average Annual Daily Traffic (AADT).
- Truck percentages.
- PennDOT urban/rural classifications.
- PennDOT functional class codes.
- Number of signals (based on linkage to PennDOT's Geographic Information System (GIS) signal location data).

RMS volumes and distances are used in calculating highway VMT totals for each county. As discussed in the next section, adjustments are needed to convert the volumes to an average summer weekday, winter weekday, and monthly day (including weekends and weekdays), as applicable to the pollutant/precursor being analyzed. In addition, the traffic volumes must be forecast to support future years. Lane values and traffic signals are important inputs for determining the congestion and speeds for individual highway segments. Truck percentages are used in the speed determination process in order to split volumes to individual vehicle types used by MOVES software. Road segments are classified not only by function, but also by whether it is located in an urban, small urban or rural area. The PennDOT urban/rural (UR) and functional classes (FC) designations are important indicators of the type and function of each roadway segment. These variables provide valuable insights into other characteristics not contained in the RMS data, which are used for speed and emission calculations.

VMT forecast growth rates are based on PennDOT's VMT forecasting system, as documented in the report "Statistical Evaluation of Projected Traffic Growth, Traffic Growth Forecasting System: Final Report, March 14, 2005". The PennDOT forecasting system includes the development of VMT forecasts and growth rates for four functional classifications in each Pennsylvania county: urban interstate, urban non-interstate, rural interstate, and rural non-interstate. The forecasts use statistical relationships based on historic HPMS VMT trends and future county socioeconomic projections based on the 2012 Woods and Poole Economics, Inc. State Profile (http://www.woodsandpoole.com/). The statistical models incorporate historical VMT trends, socioeconomic data (households, mean household income), and a relative measure of transportation capacity (lane miles per capita). PennDOT's BPR maintains and

updates these growth rates on a periodic basis based on new demographic projections and updated information on HPMS VMT. The results of the updated VMT forecasts have been shared with the participants in the Pennsylvania Transportation-Air Quality Working Group.

Other Supporting Traffic Data

Other traffic data is used to adjust and disaggregate traffic volumes. Key sources used in these processes include the following:

- *Highway Performance Monitoring System (HPMS VMT)*: According to EPA guidance, baseline inventory VMT computed from the RMS highway segment volumes must be adjusted to be consistent with HPMS VMT totals. The VMT contained in the HPMS reports are considered to represent average annual daily traffic (AADT), an average of all days in the year, including weekends and holidays. Adjustment factors are calculated for the 2011 analysis year. These factors are used to adjust locally modeled roadway data VMT to be consistent with the reported HPMS totals, and are applied to all county and facility group combinations within the region. These adjustments are important to account for local roadway VMT not represented within the regional travel demand model.
- *Seasonal Factors*: The traffic volumes estimated from the RMS are adjusted to summer or average monthly conditions (as needed for annual processing), using seasonal adjustment factors prepared by PennDOT's BPR in their annual traffic data report published on the BPR website (http://www.dot.state.pa.us/ Search: Research and Planning). The seasonal factors are also used to develop MOVES daily and monthly VMT fraction files, allowing MOVES to determine the portion of annual VMT that occurs in each month of the year.
- *Hourly Patterns*: Speeds and emissions vary considerably depending on the time of day. In order to produce accurate emission estimates, it is important to estimate the pattern by which roadway volume varies by breaking the data down into hourly increments. Pattern data is in the form of a percentage of the daily volumes for each hour. Distributions are provided for all the counties within the region and by each facility type grouping. The hourly pattern data has been developed from 24-hour vehicle count data compiled by PennDOT's BPR, using the process identified in PennDOT's annual traffic data report. The same factors are also used to develop the MOVES hourly fraction file.

Vehicle Class

Emission rates within MOVES also vary significantly by vehicle type. MOVES produces emission rates for thirteen MOVES vehicle source input types. VMT, however, is input to MOVES by six HPMS vehicle groups. **Exhibit 6** summarizes the distinction between each classification scheme.

EXHIBIT 6: MOVES SOURCE TYPES AND HPMS VEHICLE GROUPS

SOURCE TYPES		HPMS Class Groups	
11	Motorcycle	10	Motorcycle
21	Passenger Car	20	Passenger Car
31	Passenger Truck	30	Passenger/Light Truck
32	Light Commercial Truck	40	Buses
41	Intercity Bus	50	Single Unit Trucks
42	Transit Bus	60	Combination Trucks
43	School bus		
51	Refuse Truck		
52	Single Unit Short-haul Truck		
53	Single Unit Long-haul Truck		
54	Motor Home		
61	Combination Short-haul Truck		
62	Combination Long-haul Truck		

The emissions estimation process includes a method to disaggregate the traffic volumes to the thirteen source types and then to recombine the estimates to the six HPMS vehicle classes. Vehicle type pattern data is used by PPSUITE to distribute the hourly roadway segment volumes among the thirteen MOVES source types. Similar to the 24-hour pattern data, this data contains percentage splits to each source type for every hour of the day. The vehicle type pattern data is developed from several sources of information:

- PennDOT truck percentages from the RMS database.
- Hourly distributions for trucks and total traffic compiled by PennDOT's BPR.
- Transit data from PennDOT and the National Transit Database Transit Profiles (https://www.ntdprogram.gov).
- School bus registration data from PennDOT's Bureau of Motor Vehicles Registration Database.

Vehicle type percentages are also input into the capacity analysis section of PPSUITE to adjust the speeds in response to truck volume. Larger trucks take up more roadway space compared to an equal number of cars and light trucks, which is accounted for in the speed estimation process by adjusting capacity using information from the Transportation Research Board's fifth edition of the *Highway Capacity Manual*. (http://hcm.trb.org/).

Vehicle Ages

Vehicle age distributions are input to MOVES for each of the thirteen source types. These distributions reflect the percentage of the vehicle fleet falling under each vehicle model year (MY), to a maximum age of 31 years. The vehicle age distributions were prepared from the most recently available registration download from PennDOT's Bureau of Motor Vehicles Registration Database. Due to data limitations,

information for light duty vehicles (including source types 11, 21, 31 and 32) was used as local data for MOVES inputs, while heavy-duty vehicles (including source types 41, 42, 43, 51, 52, 53, 54, 61, and 62) used the internal MOVES national default data. The registration data download is based on MOBILE6.2 vehicle categories. The data was converted to source types using the EPA convertor spreadsheets provided with the MOVES emission model.

Vehicle Population

The vehicle population information, including the number and age of vehicles, impacts forecasted start and evaporative emissions within MOVES. Similar to vehicle ages, MOVES requires vehicle populations for each of the thirteen source type categories. County vehicle registration data was used to estimate vehicle population for light-duty vehicles, transit buses, and school buses. Other heavy-duty vehicle population values were based on VMT for each source type using the vehicle mix and pattern data discussed previously. PPSUITE automatically applies MOVES default ratios of VMT and source type population (e.g. the number of miles per vehicle by source type) to the local VMT estimates to produce vehicle population.

For the preparation of source type population for other required conformity analysis years, base values were adjusted using forecast population and household data for the area. Growth rates were limited so as to not exceed the VMT growth assumptions.

Meteorology Data

Average monthly minimum temperatures, maximum temperatures, and humidity values are consistent with the regional State Implementation Plan (SIP) modeling conducted by DEP. The data was obtained from WeatherBank, Inc. EPA's MOBILE6.2-MOVES meteorological data convertor spreadsheet (http://www.epa.gov/oms/models/moves/tools.htm) was used to prepare the hourly temperature inputs needed for the MOVES model, based on the available data.

Fuel Parameters

The MOVES default fuel formulation and fuel supply data were reviewed and updated based on available local volumetric fuel property information. The gasohol market penetration and Reid Vapor Pressure (RVP) values were updated, but MOVES default data was used for the remaining parameters. Key assumptions include:

- 8.7 RVP used for summer months [Local data].
- 10% ethanol used throughout the year [MOVES defaults].

I/M Program Parameters

The inspection maintenance (I/M) program inputs to the MOVES model are based on previous and current programs within each county (all PA I/M programs are based on county boundaries). All analysis years include Pennsylvania's statewide I/M program. The default I/M program parameters included in

MOVES were examined for each county and necessary changes were made to the default parameters to match the actual local program.

The I/M program requirements vary by region (five regions) and include on-board diagnostics (OBD) technology that uses the vehicle's computer for model years 1996 and newer to identify potential engine and exhaust system problems that could affect emissions. The program, named PAOBDII, is implemented by region as follows:

- *Philadelphia Region* - Bucks, Chester, Delaware, Montgomery and Philadelphia Counties
  [Includes tailpipe exhaust testing using ASM2015 or equipment for pre-1996 vehicles up to 25 years old]
- *Pittsburgh Region* - Allegheny, Beaver, Washington and Westmoreland Counties.
  [Includes tailpipe exhaust testing using PA 97 equipment for pre-1996 vehicles up to 25 years old]
- *South Central and Lehigh Valley Region* - Berks, Cumberland, Dauphin, Lancaster, Lebanon, Lehigh, Northampton and York Counties.
  [Gas cap and visual inspection only]
- *North Region* - Blair, Cambria, Centre, Erie, Lackawanna, Luzerne, Lycoming, and Mercer Counties.
  [Gas cap and visual inspection only]
- *Other 42 Counties* – Includes the remaining 42 counties not included above.
  [Visual inspection only]

Other Vehicle Technology and Control Strategy Data

Current federal vehicle emissions control and fuel programs are incorporated into the MOVES software. These include the National Program standards covering vehicles MY2012-MY2016. Modifications of default emission rates are required to reflect the early implementation of the National Low Emission Vehicle (NLEV) Program in Pennsylvania. To reflect these impacts, EPA has released instructions and input files that can be used to model these impacts. This analysis used the August 2010 version of the input files (http://www.epa.gov/oms/models/moves/tools.htm).

The Pennsylvania Clean Vehicles (PCV) Program, adopted in 1998, incorporated the California Low Emission Vehicle Regulations (CA LEV II) by reference. The PCV Program allowed automakers to comply with the NLEV program as an alternative to this Pennsylvania program until MY2006. Beginning with MY2008, all "new" passenger cars and light-duty trucks with a gross vehicle weight rating (GVWR) of 8,500 pounds or less sold/leased and titled in Pennsylvania must be certified by the California Air Resources Board (CARB) or be certified for sale in all 50 states. For this program, a "new" vehicle is a qualified vehicle with an odometer reading less than 7,500 miles. DEP and PennDOT both work with the public, including manufacturers, vehicle dealers and consumers, to ensure that vehicles sold and purchased in Pennsylvania or vehicles purchased from other states by Pennsylvania residents comply with the requirements of the PCV Program, in order to be titled in Pennsylvania. Additionally, PennDOT ensures that paperwork for title and registration includes proof of CARB- or 50-state emission certification or that the vehicle owner qualifies for an exemption to the requirements, as listed on PennDOT's MV-9 form and in the PCV Program regulation. When necessary, information from

PennDOT's title and registration process may be used to audit vehicle title transactions to determine program compliance.

The impacts of this program are modeled for all analysis years beyond 2008 using the same instructions and tools downloaded for the early NLEV analysis. EPA provided input files to reflect state programs similar to the CAL LEV II program. Modifications to those files were made to reflect a 2008 program start date for Pennsylvania.

Analysis Process Details

The previous sections have summarized the input data used for computing speeds and emission rates for this conformity analysis. This section explains how PPSUITE and MOVES use that input data to produce emission estimates. **Exhibit 7** provides a more detailed overview of the PPSUITE analysis procedure using the available traffic data information described in the previous sections.

VMT Preparation

Producing an emissions inventory with PPSUITE requires a process of disaggregation and aggregation. Data is available and used on a very detailed scale – individual roadway segments for each of the 24 hours of the day. This data needs to be processed individually to determine the distribution of vehicle hours of travel (VHT) by speed and then aggregated by vehicle class to determine the input VMT to the MOVES emission model. Key steps in the preparation of VMT include:

- *Assemble VMT* - The RMS database contains the roadway segments, distances and travel volumes needed to estimate VMT. PPSUITE processes each segment by simply multiplying the assigned travel volume by the distance to obtain VMT.
- *Apply Seasonal Adjustments* – PPSUITE adjusts the traffic volumes to the appropriate analysis season using a typical summer weekday for 24-Hour $PM_{2.5}$ and an average monthly day to support annual $PM_{2.5}$ analyses. These traffic volumes are assembled by PPSUITE and extrapolated over the course of a year to produce the annual VMT file input to MOVES.
- *Disaggregate to Hours* - After seasonal adjustments are applied, the traffic volumes are distributed to each hour of the day. This allows for more accurate speed calculations (effects of congested hours) and allows PPSUITE to prepare the hourly VMT and speeds for input to MOVES.
- *Peak Spreading* - After distributing the daily volumes to each hour of the day, PPSUITE identifies hours that are unreasonably congested. For those hours, PPSUITE then spreads a portion of the volume to other hours within the same peak period, thereby approximating the "peak spreading" that normally occurs in such over-capacity conditions. This process also helps prevent hours with unreasonably congested speeds from disproportionately impacting emission calculations.
- *Disaggregation to Vehicle Types* - EPA requires VMT estimates to be prepared by the six HPMS vehicle groups, reflecting specific local characteristics. As described in the previous section, the hourly volumes are disaggregated into thirteen MOVES source types based on data from PennDOT

and NTD, in combination with MOVES defaults. The thirteen MOVES source types are then recombined into six HPMS vehicle classes.

- *Apply HPMS VMT Adjustments* - Volumes must also be adjusted to account for differences with the HPMS VMT totals, as described in previous sections. VMT adjustment factors are provided as inputs to PPSUITE and are applied to each of the roadway segment volumes. VMT adjustment factors are also applied to runs for future years.
- *Apply VMT Growth Adjustments* Volumes must also be adjusted to estimate future year VMT. VMT growth factors are provided as inputs to PPSUITE, and are applied to each of the roadway segment volumes. The VMT growth factors were developed from the PennDOT BPR Growth Rate forecasting system.

Speed Estimation

Emissions for many pollutants (including VOC and NOx) vary significantly with travel speed. VOC emissions generally decrease as speed increases, while NO_X emissions decrease at low speeds and increases at higher speeds, as illustrated in **Exhibit 8**. Because emissions are so sensitive to speed changes, EPA recommends special attention be given to developing reasonable and consistent speed estimates. EPA also recommends that VMT be disaggregated into subsets that have roughly equal speeds, with separate emission factors for each subset. At a minimum, speeds should be estimated separately by road type.

The computational framework used for this analysis meets and exceeds the recommendation above relating to speed estimates. Speeds are individually calculated for each roadway segment and hour. Rather than accumulating the roadway segments into a particular road type and calculating an average speed, each individual link hourly speed is represented in the MOVES vehicle hours of travel (VHT) by a speed bin file. This MOVES input file allows the specification of a distribution of hourly speeds. For example, if 5% of a county's arterial VHT operates at 5 mph during the AM peak hour and the remaining 95% operates at 65 mph, this can be represented in the MOVES speed input file. For the roadway vehicle emissions calculations, speed distributions are input to MOVES by road type and source type for each hour of the day.

To calculate speeds, PPSUITE first obtains initial capacities (i.e., how much volume the roadway can serve before heavy congestion) and free-flow speeds (speeds assuming no congestion) from a speed/capacity lookup table. As described previously, this data contains default roadway information indexed by the area and facility type codes. For areas with known characteristics, values can be directly coded to the database and the speed/capacity default values can be overridden. For most areas where known information is unavailable, the speed/capacity lookup tables provide valuable default information regarding speeds, capacities, signal characteristics, and other capacity adjustment information used for calculating congested delays and speeds. The result of this process is an estimated average travel time for each hour of the day for each highway segment. The average travel time multiplied by traffic volume produces vehicle hours of travel (VHT).

EXHIBIT 7: PPSUITE SPEED/EMISSION ESTIMATION PROCEDURE

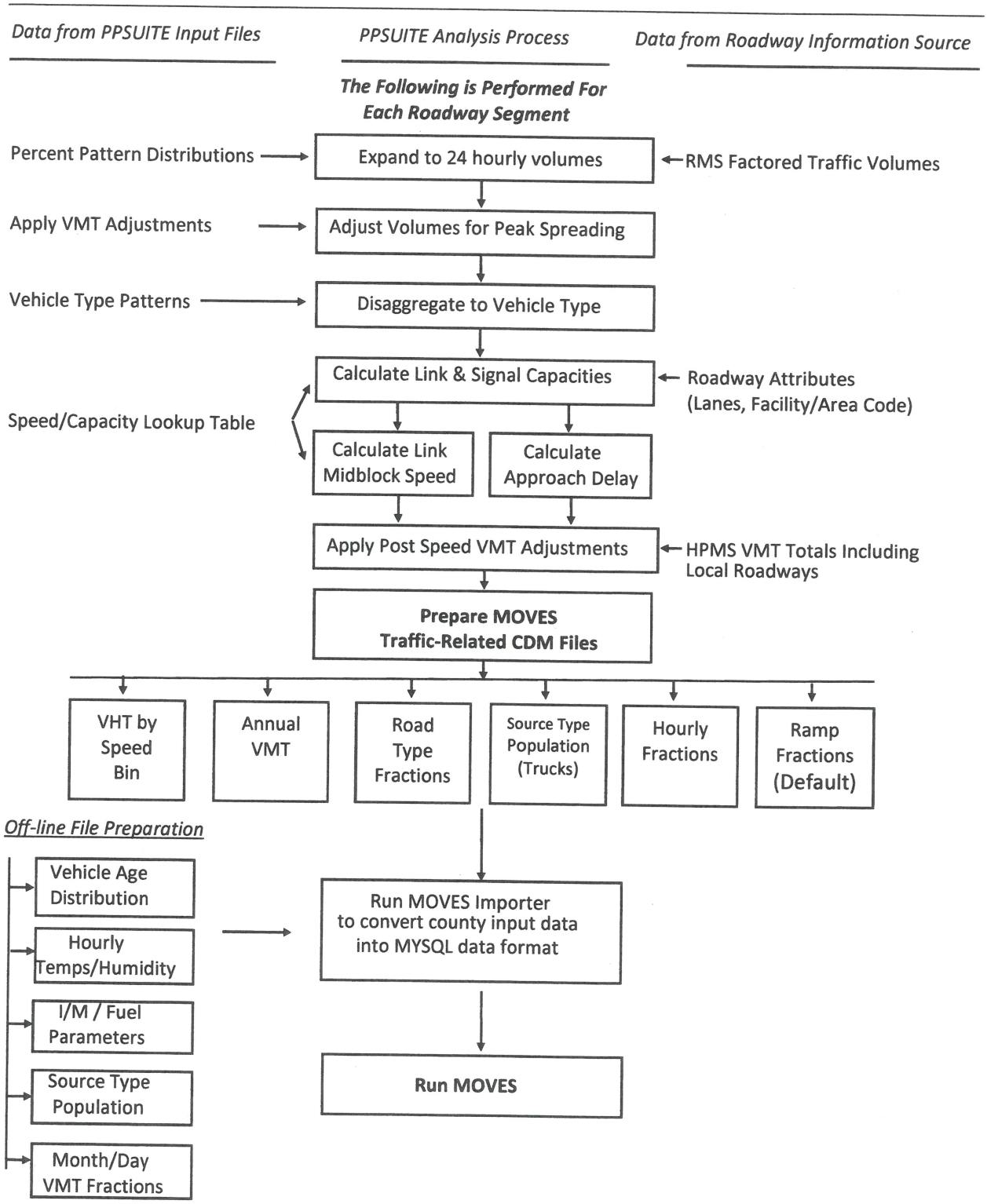
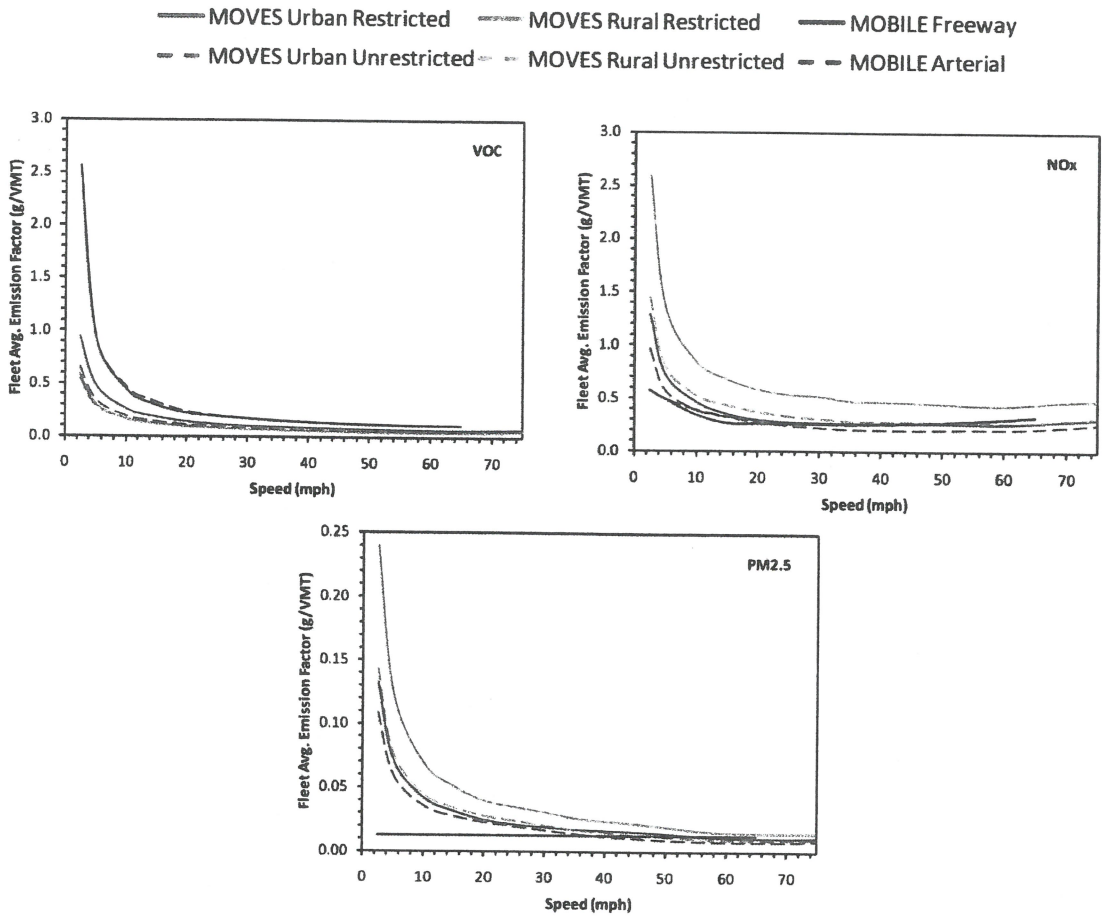


EXHIBIT 8: EMISSION FACTOR VS. SPEED VARIANCES (VOC, NOX, AND $PM_{2.5}$)



Source: Figure 3 from Implications of the MOVES2010 Model on Mobile Source Emission Estimates, Air & Waste Management Association, July 2010.

Developing the MOVES Traffic Input Files

The PPSUITE software is responsible for producing the following MOVES input files during any analysis run:

- VMT by HPMS vehicle class.
- VHT by speed bin.
- Road type distributions.
- Hourly VMT fractions.
- Ramp fractions.

These files are text formatted files with a *.csv extension. The files are provided as inputs within the MOVES County Data Manager (CDM) and are described below:

- *VMT Input File*: VMT is the primary traffic input affecting emission results. The roadway segment distances and traffic volumes are used to prepare estimates of VMT. PPSUITE performs these calculations and outputs the MOVES annual VMT input file to the County Data Manager (CDM). The annual VMT is computed by multiplying the RMS roadway adjusted VMT by 365 days (366 days in a leap year).

- *VHT by Speed Bin File*: As described in the previous section, the PPSUITE software prepares the MOVES VHT by speed bin file, which summarizes the distribution of speeds across all links into each of the 16 MOVES speed bins for each hour of the day by road type. This robust process is consistent with the methods and recommendations provided in EPA's April 2012 Technical Guidance for MOVES2010, 2010a and 2010b (http://www.epa.gov/otaq/models/moves/) and ensures that MOVES emission rates are used to the fullest extent.

- *Road Type Distributions*: Within MOVES, typical drive cycles and associated operating conditions vary by roadway type. MOVES defines five different roadway types as follows:

  1 Off-Network.
  2 Rural Restricted Access.
  3 Rural Unrestricted Access.
  4 Urban Restricted Access.
  5 Urban Unrestricted Access.

  For this analysis, the MOVES road type distribution file is automatically generated by PPSUITE using defined equivalencies. The off-network road type includes emissions from vehicle starts, extended idling, and evaporative emissions. Off-network activity in MOVES is primarily determined by the Source Type Population input.

- *Ramp Fractions*: Since ramps are not directly represented within the RMS database information, the assumption is that 8% of total Freeway VHT is Ramp VHT, consistent with EPA's April 2012 technical guidance Technical Guidance for MOVES2010b.

MOVES Runs

After computing speeds and aggregating VMT and VHT, PPSUITE prepares traffic-related inputs needed to run EPA's MOVES software. Additional required MOVES inputs are prepared externally from the processing software and include temperatures, I/M program parameters, fuel characteristics, vehicle fleet age distributions, and source type population. The MOVES county importer is run in batch mode. This program converts all data files into the MYSQL format used by the MOVES model. At that point, a MOVES run specification file (*.mrs) is created which specifies options and key data locations for the run. The MOVES run is then executed in batch mode. A summary of key MOVES run specification settings is shown in **Exhibit 9**. MOVES can be executed using either an inventory or rate-based approach. For this analysis, MOVES is applied using the inventory-based approach. Using this approach, actual VMT and population are provided as inputs to the model; MOVES is responsible for producing the total emissions for the region.

EXHIBIT 9: MOVES RUN SPECIFICATION FILE PARAMETER SETTINGS

Parameter	Setting
MOVES Version	MOVES2010b
MOVES Default Database Version	MOVESDB20121030
Scale	COUNTY
Analysis Mode	Inventory
Time Span	**Annual Runs:** 12 months, Weekday and Weekend, 24 hours **July Weekday Runs:** July month, Weekday, 24 hours
Input Time Aggregation	Hour
Geographic Selection	County [FIPS]
Vehicle Selection	All source types Gasoline, Diesel, CNG
Road Type	All road types including off-network
Pollutants and Processes	All $PM_{2.5}$ categories, NO_X
Database selection	Early NLEV database PA-Specific CAL LEVII database
General Output	Units: Emission = grams; Distance = miles; Time = hours; Energy = Million BTU
Output Emissions	Time = Day (July weekday runs)/Month (annual runs), Emissions by Process ID, Source Type, and Road Type

Conformity Analysis Results

Transportation conformity analyses of the current TIP and LRTP have been completed for Lebanon County. The analyses were performed according to the requirements of the Federal transportation conformity rule at 40 CFR Part 93, Subpart A. The analyses utilized the methodologies, assumptions and data as presented in previous sections. Interagency consultation has been used to determine applicable emission models, analysis years and emission tests.

Emission Tests

There are currently no approved SIP MVEBs for Lebanon County under the 1997 Annual $PM_{2.5}$ NAAQS or the 2006 24-hour $PM_{2.5}$ NAAQS. A redesignation request, applicable to both the 1997 Annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS has been proposed by DEP with the MVEBs (for Lebanon County) summarized in **Exhibit 10**. To support comparisons to 24-hour emission estimates, the proposed annual MVEBs have been divided by 365 to produces MVEBs in tons/day.

EXHIBIT 10: PROPOSED ANNUAL $PM_{2.5}$ MOTOR VEHICLE EMISSION BUDGETS

County / Pollutant	2017 Budget (tons/year)	2025 Budget (tons/year)	2017 Budget (tons/day)	2025 Budget (tons/day)
$PM_{2.5}$	76	52	0.21	0.14
NOx	2,252	1,446	6.17	3.96

Until these budgets are found adequate by EPA, the LEBCO MPO must continue to demonstrate conformity using the interim emission tests. Per the interagency consultation process the interim emission tests have been defined as:

- 1997 $PM_{2.5}$ Annual NAAQS – "no-greater-than--baseline" test, 2002 baseline year.
- 2006 $PM_{2.5}$ 24-hour NAAQS - "no-greater-than-baseline" test, 2008 baseline year.

Analysis Years

Section 93.119(g) of the Federal Transportation Conformity Regulations requires that emissions analyses be conducted for specific analysis years as follows:

- A near-term year, one to five years in the future.
- The last year of the LRTP's forecast period.
- Attainment year of the standard if within timeframe of TIP and LRTP.
- An intermediate year or years such that if there are two years in which analysis is performed, the two analysis years are no more than ten years apart.

All analysis years were determined through the interagency consultation process. LEBCO and the other MPOs within the nonattainment area share the same 2040 LRTP horizon year. **Exhibit 11** provides the analysis years used for this conformity analysis.

EXHIBIT 11: TRANSPORTATION CONFORMITY ANALYSIS YEARS

Analysis Year	Description	Applicable To Annual PM2.5	Applicable To 24-Hour PM2.5
2002	Base Year for Interim Conformity Test	**Yes**	No
2008	Base Year for Interim Conformity Test	No	**Yes**
2017	Near-Term Analysis Year/ Proposed Budget Year	**Yes**	**Yes**
2025	Interim Year/ Proposed Budget Year	**Yes**	**Yes**
2035	Interim Year	**Yes**	**Yes**
2040	Last Year of LRTP	**Yes**	**Yes**

Components of the $PM_{2.5}$ Regional Emissions Analysis

$PM_{2.5}$ can be the result of either direct or indirect emissions. Direct transportation emissions can be the result of brake or tire-wear, particulates in exhaust emissions, or dust raised by on-road vehicles or construction equipment. Possible indirect transportation related emissions of $PM_{2.5}$ include: NH_3, NO_X, SO_X, and VOC. The EPA has ruled that regional analysis of direct $PM_{2.5}$ emissions must include both exhaust and brake/tire-wear emissions. EPA's current regulations specify that road dust should be included in the regional analysis of direct $PM_{2.5}$ emissions only if the EPA or the state air agency have found it to be a significant contributor to the region's nonattainment. Neither the EPA nor the state air agency has determined road dust to be a significant contributor in the nonattainment area for this conformity determination.

Until a SIP revision is approved proving that NO_X is insignificant, EPA's current regulations state that indirect $PM_{2.5}$ emissions must be analyzed for NO_X. Conversely, VOC, SO_X and NH_3 must be analyzed only if the state(s) or the EPA determines one or more of these pollutants significant. Therefore, NO_X is the only indirect $PM_{2.5}$ component analyzed for the nonattainment area in this conformity determination.

Regionally Significant Highway Projects

For the purposes of conformity analysis, model highway networks are created for each analysis year. For the horizon years, regionally significant projects from the LRTP were coded onto the networks. Detailed assessments were only performed for those new projects which may have a significant effect on emissions in accordance with 40 CFR Parts 51 and 93. Only those projects which would increase

capacity or significantly impact vehicular speeds were considered. Projects such as bridge replacements and roadway restoration projects, which constitute the majority of the TIP and LRTP list, have been excluded from consideration since they are considered exempt under 40 CFR 93.126-127. A list of highway projects is shown in **Attachment A**.

Analysis Results

An emissions analysis has been completed for the 1997 Annual $PM_{2.5}$ NAAQS and the 2006 24-hour $PM_{2.5}$ NAAQS. The results of the analysis are summarized in the tables below. Base year (2002 and 2008) emission results have been obtained from separate modeling conducted for PennDOT and DEP based on historic reported vehicle miles of travel. Forecast years have been estimated using the procedures and assumptions provide in this conformity report. A detailed emission summary is also provided in **Attachment B**. Example MOVES importer (XML) and run specification (MRS) files are provided in **Attachment C**.

Exhibit 12 summarizes the annual $PM_{2.5}$ and NO_X emissions. Emissions are compared against the 2002 base year emissions. All future analysis year emissions are below the 2002 base year emissions. The analysis results are also below the proposed 2017 and 2025 proposed SIP budgets listed in **Exhibit 10**.

EXHIBIT 12: ANNUAL $PM_{2.5}$ EMISSION ANALYSIS RESULTS AND CONFORMITY TEST
(Annual)

Pollutant	*2002 BASELINE (tons/year)*	*2017 (tons/year)*	*2025 (tons/year)*	*2035 (tons/year)*	*2040 (tons/year)*
$PM_{2.5}$	***194***	*57*	*37*	*35*	*37*
NO_X	***6,234***	*1,781*	*1,058*	*970*	*1,042*
Conformity Result		**Pass**	**Pass**	**Pass**	**Pass**

Exhibit 13 summarizes the 24-hour $PM_{2.5}$ and NO_X emissions for summer weekday conditions. Emissions are compared against the 2008 year emissions. All future analysis year emissions are below the 2008 base year emissions. These 24-hour results are also below the proposed 2017 and 2025 proposed SIP budgets adjusted to 24-hour tons/day listed in **Exhibit 10**.

EXHIBIT 13: 24-HOUR $PM_{2.5}$ EMISSION ANALYSIS RESULTS AND CONFORMITY TEST
(Summer Weekday)

Pollutant	*2008 BASELINE (tons/day)*	*2017 (tons/day)*	*2025 (tons/day)*	*2035 (tons/day)*	*2040 (tons/day)*
$PM_{2.5}$	***0.39***	*0.14*	*0.09*	*0.08*	*0.08*
NO_x	***11.34***	*4.79*	*2.77*	*2.51*	*2.70*
Conformity Result		**Pass**	**Pass**	**Pass**	**Pass**

Conformity Determination

Financial Constraint

The planning regulations, Sections 450.322(b)(11) and 450.324(e), require the transportation plan to be financially constrained while the existing transportation system is being adequately operated and maintained. Only projects for which construction and operating funds are reasonably expected to be available are included. LEBCO, in conjunction with PennDOT, FHWA and FTA, has developed an estimate of the cost to maintain and operate existing roads, bridges and transit systems in Lebanon County and have compared the cost with the estimated revenues and maintenance needs of the new roads over the same period. The TIP and LRTP have been determined to be financially constrained.

Public Participation

The TIP and LRTP have undergone the public participation requirements as well as the comment and response requirements according to the procedures established in compliance with 23 CFR part 450, the LEBCO Public Participation Plan, and Pennsylvania's Conformity SIP. The draft document was made available for a 30-day public review and comment beginning on May 8, 2014 and public meeting on June 2, 2014.

Conformity Statement

The conformity rule requires that the TIP and LRTP conform to the applicable SIP(s) and be adopted by the MPO/RPO before any federal agency may approve, accept, or fund projects. Conformity is determined by applying criteria outlined in the transportation conformity regulations to the analysis.

The TIP and LRTP for Lebanon County are found to conform to the applicable air quality SIP(s) or EPA conformity requirements. This finding of conformity positively reflects on the efforts of the LEBCO and its partners in meeting the regional air quality goals, while maintaining and building an effective transportation system.

Resources

MOVES Model

Modeling Page within EPA's Office of Mobile Sources Website contains a downloadable model, MOVES users guide and other information. See (http://www.epa.gov/omswww/models.htm)

Policy Guidance on the Use of MOVES2010 and Subsequent Minor Revisions for State Implementation Plan Development, Transportation Conformity, and Other Purposes, US EPA Office of Air and Radiation, EPA-420-B-12-010, April 2012.

Using MOVES to Prepare Emission Inventories in State Implementation Plans and Transportation Conformity: Technical Guidance for MOVES2010, 2010a and 2010b. US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, EPA-420-B-12-028, April 2012.

Motor Vehicle Emission Simulator (MOVES) – User Guide for MOVES2010b, US EPA Office of Transportation and Air Quality, EPA-420-B-12-001b; June 2012

Traffic Engineering

Highway Capacity Manual, fifth edition (HCM2010), Transportation Research Board, presents current knowledge and techniques for analyzing the transportation system.

Traffic Data Collection and Factor Development Report, 2008 Data, Pennsylvania Department of Transportation, Bureau of Planning and Research.

Highway Vehicle Emissions Analysis Glossary

AADT: Average Annual Daily Traffic, average of ALL days.

CAA: Clean Air Act as amended.

CARB: California Air Resources Board.

CFR: Code of Federal Regulations.

County Data Manager (CDM): User interface developed to simplify importing specific local data for a single county or a user-defined custom domain without requiring direct interaction with the underlying MySQL database in the MOVES emission model.

Emission rate or factor: Expresses the amount of pollution emitted per unit of activity. For highway vehicles, this is usually expressed in grams of pollutant emitted per mile driven.

FC: Functional code. Applied to road segments to identify their type (freeway, local, etc.).

FHWA: Federal Highway Administration.

FR: Federal Register.

FTA: Federal Transit Administration.

Growth factor: Factor used to convert volumes to future years.

HPMS: Highway Performance Monitoring System.

I/M: Vehicle emissions inspection/maintenance programs are required in certain areas of the country. The programs ensure that vehicle emission controls are in good working order throughout the life of the vehicle. The programs require vehicles to be tested for emissions. Most vehicles that do not pass must be repaired.

MOVES: Motor Vehicle Emission Simulator. The latest model EPA has developed to estimate emissions from highway vehicles.

MVEB: motor vehicle emissions budget.

Pattern data: Extrapolations of traffic patterns (such as how traffic volume on road segment types varies by time of day, or what kinds of vehicles tend to use a road segment type) from segments with observed data to similar segments.

PPSUITE: Post-Processor for Air Quality. A set of programs that estimate speeds and prepares MOVES inputs and processes MOVES outputs.

Road Type: Functional code, applied in data management to road segments to identify their type (rural/urban highways, rural/urban arterials, etc.).

RMS: Roadway Management System.

Source Type: One of thirteen vehicle types used in MOVES modeling.

VHT: Vehicle hours traveled.

VMT: Vehicle miles traveled. In modeling terms, it is the simulated traffic volumes multiplied by link length.

ATTACHMENT A

Project List

ATTACHMENT B

Detailed Emission Results*

**All table values and totals have been estimated from the MOVES detailed output and rounded to 1-2 decimal points. Due to rounding, individual table entries may not add exactly to the total*

Detailed Emission Results for Annual $PM_{2.5}$ Analysis

Lebanon County PM2.5 Annual Emission Summary

2017 FFY15 TIP Conformity (By Road Type)

County	Road Type	Annual VMT	Speed (mph)	Emissoins (Tons/Year)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	492.26	8.37
	Rural Restricted	421,581,927	64.9	621.15	21.66
	Rural UnRestricted	447,048,954	44.2	369.29	14.29
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	406,042,273	38.0	298.35	12.49
	Subtotal	*1,274,673,154*		*1,781.04*	*56.81*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**1,274,673,154**		**1,781.04**	**56.81**
			(Kg/Year)	**1,615,735**	**51,538**

Lebanon County PM2.5 Annual Emission Summary

2017 FFY15 TIP Conformity (By Source Type)

County	Source Type	Annual VMT	Emissoins (Tons/Year)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	6,362,138	5.26	0.31
	Passenger Car	640,961,400	200.08	10.18
	Passenger Truck	337,383,420	488.94	12.12
	Light Commercial Truck	114,108,450	192.42	5.36
	Intercity Bus	2,084,835	19.06	0.85
	Transit Bus	2,328,523	16.23	0.72
	School Bus	1,844,544	10.05	0.47
	Refuse Truck	1,283,286	5.16	0.20
	Single Unit Short-haul Truck	54,813,728	150.39	4.43
	Single Unit Long-haul Truck	7,734,664	20.73	0.65
	Motor Home	3,388,710	14.18	0.33
	Combination Short-haul Truck	42,666,435	192.07	7.55
	Combination Long-haul Truck	59,713,021	466.48	13.65
	Subtotal	*1,274,673,154*	*1,781.04*	*56.81*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**1,274,673,154**	**1,781.04**	**56.81**
		(Kg/Year)	**1,615,735**	**51,538**

Lebanon County PM2.5 Annual Emission Summary

2017 FFY15 TIP Conformity (By Emission Process)

County	Emission Process	Emissoins (Tons/Year)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	1,288.52	37.59
	Start Exhaust	331.91	7.47
	Brakewear	0.00	4.31
	Tirewear	0.00	2.19
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.26	4.36
	Crankcase Start Exhaust	0.01	0.11
	Crankcase Extended Idle Exhaust	0.02	0.10
	Extended Idle Exhaust	160.31	0.69
	Subtotal	*1,781.04*	*56.81*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,781.04**	**56.81**
	(Kg/Year)	**1,615,735**	**51,538**

Lebanon County PM2.5 Annual Emission Summary
2025 FFY15 TIP Conformity (By Road Type)

County	Road Type	Annual VMT	Speed (mph)	Emissoins (Tons/Year)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	356.48	6.47
	Rural Restricted	503,748,597	64.6	364.89	12.56
	Rural UnRestricted	471,591,884	44.1	184.80	9.28
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	442,473,333	37.7	152.11	9.01
	Subtotal	*1,417,813,815*		*1,058.28*	*37.33*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**1,417,813,815**		**1,058.28**	**37.33**
			(Kg/Year)	**960,054**	**33,865**

Lebanon County PM2.5 Annual Emission Summary
2025 FFY15 TIP Conformity (By Source Type)

County	Source Type	Annual VMT	Emissoins (Tons/Year)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	7,040,481	5.63	0.35
	Passenger Car	709,301,400	119.45	10.18
	Passenger Truck	373,357,540	220.88	10.50
	Light Commercial Truck	126,273,450	102.83	3.78
	Intercity Bus	2,548,868	10.06	0.41
	Transit Bus	2,579,283	7.77	0.28
	School Bus	2,028,673	5.65	0.22
	Refuse Truck	1,321,614	2.44	0.07
	Single Unit Short-haul Truck	63,101,458	118.88	2.18
	Single Unit Long-haul Truck	8,820,912	16.61	0.34
	Motor Home	3,918,515	11.55	0.20
	Combination Short-haul Truck	48,432,762	96.56	2.96
	Combination Long-haul Truck	69,088,858	339.97	5.87
	Subtotal	*1,417,813,815*	*1,058.28*	*37.33*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**1,417,813,815**	**1,058.28**	**37.33**
		(Kg/Year)	**960,054**	**33,865**

Lebanon County PM2.5 Annual Emission Summary

2025 FFY15 TIP Conformity (By Emission Process)

County	Emission Process	Emissoins (Tons/Year)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	701.73	22.46
	Start Exhaust	175.61	5.97
	Brakewear	0.00	4.76
	Tirewear	0.00	2.44
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.07	1.19
	Crankcase Start Exhaust	0.01	0.07
	Crankcase Extended Idle Exhaust	0.01	0.03
	Extended Idle Exhaust	180.86	0.40
	Subtotal	*1,058.28*	*37.33*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,058.28**	**37.33**
	(Kg/Year)	**960,054**	**33,865**

Lebanon County PM2.5 Annual Emission Summary

2035 FFY15 TIP Conformity (By Road Type)

County	Road Type	Annual VMT	Speed (mph)	Emissoins (Tons/Year)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	348.17	6.15
	Rural Restricted	629,277,683	63.4	342.96	11.51
	Rural UnRestricted	504,132,262	44.0	150.32	8.42
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	492,661,629	37.2	128.93	8.87
	Subtotal	*1,626,071,574*		*970.38*	*34.94*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**1,626,071,574**		**970.38**	**34.94**
			(Kg/Year)	**880,312**	**31,698**

Lebanon County PM2.5 Annual Emission Summary

2035 FFY15 TIP Conformity (By Source Type)

County	Source Type	Annual VMT	Emissoins (Tons/Year)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	8,020,058	6.26	0.40
	Passenger Car	807,989,900	117.46	11.30
	Passenger Truck	425,304,210	167.73	11.17
	Light Commercial Truck	143,842,250	82.93	3.55
	Intercity Bus	3,269,537	5.33	0.17
	Transit Bus	2,941,299	4.78	0.10
	School Bus	2,294,683	3.52	0.08
	Refuse Truck	1,446,798	2.06	0.05
	Single Unit Short-haul Truck	75,523,298	126.50	1.80
	Single Unit Long-haul Truck	10,516,768	17.19	0.25
	Motor Home	4,628,032	11.08	0.12
	Combination Short-haul Truck	57,704,060	83.98	2.12
	Combination Long-haul Truck	82,590,681	341.56	3.83
	Subtotal	*1,626,071,574*	*970.38*	*34.94*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**1,626,071,574**	**970.38**	**34.94**
		(Kg/Year)	**880,312**	**31,698**

Lebanon County PM2.5 Annual Emission Summary

2035 FFY15 TIP Conformity (By Emission Process)

County	Emission Process	Emissoins (Tons/Year)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	622.19	20.26
	Start Exhaust	133.58	5.74
	Brakewear	0.00	5.49
	Tirewear	0.00	2.82
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.02	0.22
	Crankcase Start Exhaust	0.00	0.05
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	214.58	0.36
	Subtotal	*970.38*	*34.94*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**970.38**	**34.94**
	(Kg/Year)	**880,312**	**31,698**

Lebanon County PM2.5 Annual Emission Summary

2040 FFY15 TIP Conformity (By Road Type)

County	Road Type	Annual VMT	Speed (mph)	Emissoins (Tons/Year)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	374.86	6.28
	Rural Restricted	706,344,207	62.0	378.66	12.90
	Rural UnRestricted	522,112,604	43.9	153.67	8.65
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	521,213,229	36.9	135.02	9.38
	Subtotal	*1,749,670,040*		*1,042.21*	*37.21*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**1,749,670,040**		**1,042.21**	**37.21**
			(Kg/Year)	**945,476**	**33,754**

Lebanon County PM2.5 Annual Emission Summary

2040 FFY15 TIP Conformity (By Source Type)

County	Source Type	Annual VMT	Emissoins (Tons/Year)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	8,599,577	6.68	0.44
	Passenger Car	866,374,500	123.63	12.09
	Passenger Truck	456,036,760	177.19	11.90
	Light Commercial Truck	154,236,310	87.54	3.77
	Intercity Bus	3,736,930	5.24	0.15
	Transit Bus	3,135,107	4.74	0.09
	School Bus	2,448,238	3.40	0.07
	Refuse Truck	1,551,647	2.18	0.05
	Single Unit Short-haul Truck	82,959,221	138.24	1.94
	Single Unit Long-haul Truck	11,536,348	18.68	0.27
	Motor Home	5,061,963	11.77	0.12
	Combination Short-haul Truck	63,351,592	90.50	2.27
	Combination Long-haul Truck	90,641,847	372.42	4.05
	Subtotal	*1,749,670,040*	*1,042.21*	*37.21*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**1,749,670,040**	**1,042.21**	**37.21**
		(Kg/Year)	**945,476**	**33,754**

Lebanon County PM2.5 Annual Emission Summary

2040 FFY15 TIP Conformity (By Emission Process)

County	Emission Process	Emissoins (Tons/Year)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	667.33	21.67
	Start Exhaust	137.90	5.85
	Brakewear	0.00	6.02
	Tirewear	0.00	3.06
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.01	0.17
	Crankcase Start Exhaust	0.00	0.05
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	236.95	0.38
	Subtotal	*1,042.21*	*37.21*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**1,042.21**	**37.21**
	(Kg/Year)	**945,476**	**33,754**

Detailed Emission Results for 24-Hour $PM_{2.5}$ Analysis

Lebanon County PM2.5 Daily Emission Summary

2017 FFY15 Conformity Run (By Road Type)

County	Road Type	Summer Daily VMT	Speed (mph)	Emissoins (Tons/Day)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	1.21	0.01
	Rural Restricted	1,308,673	64.7	1.70	0.06
	Rural UnRestricted	1,382,453	43.9	1.04	0.04
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	1,249,800	37.6	0.84	0.03
	Subtotal	*3,940,926*		*4.79*	*0.14*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**3,940,926**		**4.79**	**0.14**
			(Kg/Year)	**4,344**	**129**

Lebanon County PM2.5 Daily Emission Summary

2017 FFY15 Conformity Run (By Source Type)

County	Source Type	Summer Daily VMT	Emissoins (Tons/Day)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	19,666	0.01	0.00
	Passenger Car	1,981,317	0.53	0.02
	Passenger Truck	1,042,908	1.35	0.02
	Light Commercial Truck	352,728	0.53	0.01
	Intercity Bus	6,973	0.06	0.00
	Transit Bus	6,906	0.04	0.00
	School Bus	5,471	0.02	0.00
	Refuse Truck	3,998	0.01	0.00
	Single Unit Short-haul Truck	169,675	0.39	0.01
	Single Unit Long-haul Truck	23,908	0.05	0.00
	Motor Home	10,484	0.04	0.00
	Combination Short-haul Truck	132,158	0.52	0.02
	Combination Long-haul Truck	184,733	1.22	0.04
	Subtotal	*3,940,926*	*4.79*	*0.14*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**3,940,926**	**4.79**	**0.14**
		(Kg/Year)	**4,344**	**129**

Lebanon County PM2.5 Daily Emission Summary

2017 FFY15 Conformity Run (By Emission Process)

County	Emission Process	Emissoins (Tons/Day)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	3.57	0.10
	Start Exhaust	0.83	0.01
	Brakewear	0.00	0.01
	Tirewear	0.00	0.01
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.00	0.01
	Crankcase Start Exhaust	0.00	0.00
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	0.38	0.00
	Subtotal	*4.79*	*0.14*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**4.79**	**0.14**
	(Kg/Year)	**4,344**	**129**

Lebanon County PM2.5 Daily Emission Summary
2025 FFY15 Conformity Run (By Road Type)

County	Road Type	Summer Daily VMT	Speed (mph)	Emissoins (Tons/Day)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	0.82	0.01
	Rural Restricted	1,563,700	64.1	0.99	0.03
	Rural UnRestricted	1,458,178	43.8	0.52	0.02
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	1,362,082	37.1	0.43	0.02
	Subtotal	*4,383,960*		*2.77*	*0.09*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**4,383,960**		**2.77**	**0.09**
			(Kg/Day)	**2,511**	**78**

Lebanon County PM2.5 Daily Emission Summary
2025 FFY15 Conformity Run (By Source Type)

County	Source Type	Summer Daily VMT	Emissoins (Tons/Day)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	21,765	0.01	0.00
	Passenger Car	2,192,748	0.31	0.02
	Passenger Truck	1,154,204	0.60	0.02
	Light Commercial Truck	390,364	0.28	0.01
	Intercity Bus	8,497	0.03	0.00
	Transit Bus	7,643	0.02	0.00
	School Bus	6,011	0.01	0.00
	Refuse Truck	4,048	0.01	0.00
	Single Unit Short-haul Truck	195,381	0.30	0.01
	Single Unit Long-haul Truck	27,321	0.04	0.00
	Motor Home	12,140	0.03	0.00
	Combination Short-haul Truck	149,958	0.26	0.01
	Combination Long-haul Truck	213,881	0.87	0.02
	Subtotal	*4,383,960*	*2.77*	*0.09*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**4,383,960**	**2.77**	**0.09**
		(Kg/Day)	**2,511**	**78**

Lebanon County PM2.5 Daily Emission Summary

2025 FFY15 Conformity Run (By Emission Process)

County	Emission Process	Emissoins (Tons/Day)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	1.95	0.05
	Start Exhaust	0.39	0.01
	Brakewear	0.00	0.02
	Tirewear	0.00	0.01
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.00	0.00
	Crankcase Start Exhaust	0.00	0.00
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	0.43	0.00
	Subtotal	*2.77*	*0.09*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**2.77**	**0.09**
	(Kg/Day)	**2,511**	**78**

Lebanon County PM2.5 Daily Emission Summary
2035 FFY15 Conformity Run (By Road Type)

County	Road Type	Summer Daily VMT	Speed (mph)	Emissoins (Tons/Day)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	0.78	0.01
	Rural Restricted	1,953,363	61.8	0.93	0.03
	Rural UnRestricted	1,558,760	43.6	0.43	0.02
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	1,516,523	36.5	0.37	0.02
	Subtotal	*5,028,646*		*2.51*	*0.08*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**5,028,646**		**2.51**	**0.08**
			(Kg/Day)	**2,274**	**70**

Lebanon County PM2.5 Daily Emission Summary
2035 FFY15 Conformity Run (By Source Type)

County	Source Type	Summer Daily VMT	Emissoins (Tons/Day)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	24,796	0.02	0.00
	Passenger Car	2,498,072	0.30	0.02
	Passenger Truck	1,314,919	0.45	0.02
	Light Commercial Truck	444,719	0.22	0.01
	Intercity Bus	10,911	0.02	0.00
	Transit Bus	8,668	0.01	0.00
	School Bus	6,763	0.01	0.00
	Refuse Truck	4,460	0.01	0.00
	Single Unit Short-haul Truck	233,925	0.32	0.01
	Single Unit Long-haul Truck	32,568	0.04	0.00
	Motor Home	14,338	0.03	0.00
	Combination Short-haul Truck	178,699	0.23	0.01
	Combination Long-haul Truck	255,809	0.87	0.01
	Subtotal	*5,028,646*	*2.51*	*0.08*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**5,028,646**	**2.51**	**0.08**
		(Kg/Day)	**2,274**	**70**

Lebanon County PM2.5 Daily Emission Summary

2035 FFY15 Conformity Run (By Emission Process)

County	Emission Process	Emissoins (Tons/Day)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	1.73	0.04
	Start Exhaust	0.26	0.01
	Brakewear	0.00	0.02
	Tirewear	0.00	0.01
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.00	0.00
	Crankcase Start Exhaust	0.00	0.00
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	0.52	0.00
	Subtotal	*2.51*	*0.08*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**2.51**	**0.08**
	(Kg/Day)	**2,274**	**70**

Lebanon County PM2.5 Daily Emission Summary

2040 FFY15 Conformity (By Road Type)

County	Road Type	Summer Daily VMT	Speed (mph)	Emissoins (Tons/Day)	
				NOx	$PM_{2.5}$
Lebanon	Off-Network	N/A	N/A	0.85	0.01
	Rural Restricted	2,187,753	58.3	1.03	0.03
	Rural UnRestricted	1,609,760	43.5	0.43	0.02
	Urban Restricted	0	N/A	0.00	0.00
	Urban UnRestricted	1,600,132	36.1	0.38	0.02
	Subtotal	*5,397,645*		*2.70*	*0.08*
Off-Model Project Emission Benefits				0.00	0.00
Region Total		**5,397,645**		**2.70**	**0.08**
			(Kg/Day)	**2,449**	**75**

Lebanon County PM2.5 Daily Emission Summary

2040 FFY15 Conformity (By Source Type)

County	Source Type	Summer Daily VMT	Emissoins (Tons/Day)	
			NOx	$PM_{2.5}$
Lebanon	Motorcycle	26,521	0.02	0.00
	Passenger Car	2,671,866	0.31	0.02
	Passenger Truck	1,406,399	0.48	0.02
	Light Commercial Truck	475,659	0.24	0.01
	Intercity Bus	12,374	0.01	0.00
	Transit Bus	9,214	0.01	0.00
	School Bus	7,195	0.01	0.00
	Refuse Truck	4,804	0.01	0.00
	Single Unit Short-haul Truck	256,354	0.34	0.01
	Single Unit Long-haul Truck	35,684	0.05	0.00
	Motor Home	15,644	0.03	0.00
	Combination Short-haul Truck	195,804	0.24	0.01
	Combination Long-haul Truck	280,127	0.95	0.01
	Subtotal	*5,397,645*	*2.70*	*0.08*
Off-Model Project Emission Benefits			0.00	0.00
Region Total		**5,397,645**	**2.70**	**0.08**
		(Kg/Day)	**2,449**	**75**

Lebanon County PM2.5 Daily Emission Summary

2040 FFY15 Conformity (By Emission Process)

County	Emission Process	Emissoins (Tons/Day)	
		NOx	$PM_{2.5}$
Lebanon	Running Exhaust	1.85	0.04
	Start Exhaust	0.26	0.01
	Brakewear	0.00	0.02
	Tirewear	0.00	0.01
	Evap Permeation	0.00	0.00
	Evap Fuel Vapor Venting	0.00	0.00
	Evap Fuel Leaks	0.00	0.00
	Crankcase Running Exhaust	0.00	0.00
	Crankcase Start Exhaust	0.00	0.00
	Crankcase Extended Idle Exhaust	0.00	0.00
	Extended Idle Exhaust	0.59	0.00
	Subtotal	*2.70*	*0.08*
Off-Model Project Emission Benefits		0.00	0.00
Region Total		**2.70**	**0.08**
	(Kg/Day)	**2,449**	**75**

ATTACHMENT C

Sample MOVES Data Importer (XML) Input File
and
Run Specification (MRS) Input File

(Sample for 2017 July Weekday and Annual Runs)

MOVES County Data Manager Importer File – July Weekday Run (MOVESIMPORTER.XML)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            <FuelSupply>
                <filename>c:\PAMOVES11\MOVESInputs\Fuel\MOVES2010a\42000_2012_FuelSupply.csv</filename>
            </FuelSupply>
            <FuelFormulation>
                <filename>c:\PAMOVES11\MOVESInputs\Fuel\42000_FuelFormulation_MOVES2010a.csv</filename>
            </FuelFormulation>
        </parts>
    </fuel>

        <zonemonthhour>
            <description><![CDATA[]]></description>
            <parts>
                <zoneMonthHour>
                    <filename>c:\PAMOVES11\MOVESInputs\Meteorology\2008\42075_2008_met.csv</filename>
                </zoneMonthHour>
            </parts>
        </zonemonthhour>

        <roadtypedistribution>
            <description><![CDATA[]]></description>
            <parts>
                <roadTypeDistribution>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_07_05_JulWkd\CDM\roadTypeDistribution.csv</filename>
                </roadTypeDistribution>
            </parts>
        </roadtypedistribution>

        <sourcetypepopulation>
            <description><![CDATA[]]></description>
            <parts>
                <sourceTypeYear>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_07_05_JulWkd\CDM\SourceTypePopulation.csv</filename>
                </sourceTypeYear>
            </parts>
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        </sourcetypepopulation>

        <rampfraction>
            <description><![CDATA[]]></description>
            <parts>
                <roadType>
                    <filename>c:\PAMOVES11\MOVESInputs\RampFraction\rampfraction_defaults.csv</filename>
                </roadType>
            </parts>
        </rampfraction>

        <vehicletypevmt>
            <description><![CDATA[]]></description>
            <parts>
                <hpmsVTypeYear>
                        <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_07_05_JulWkd\CDM\hpmsVTypeYear.csv</filename>
                </hpmsVTypeYear>
                <monthvmtfraction>

<filename>c:\PAMOVES11\MOVESInputs\MonthDayHourFractions\2017_MonthFraction\42075_2017_MonthVMTFraction.csv</filename>
                </monthvmtfraction>
                <dayvmtfraction>

<filename>c:\PAMOVES11\MOVESInputs\MonthDayHourFractions\2017_DayFraction\42075_2017_dayvmtfraction.csv</filename>
                </dayvmtfraction>
                <hourvmtfraction>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_07_05_JulWkd\CDM\hourvmtfraction.csv</filename>
                </hourvmtfraction>
            </parts>
        </vehicletypevmt>

    </importer>
</moves>
```

MOVES Run Specification File – July Weekday Run (MOVESRUN.MRS)


```
<runspec>
   <description><![CDATA[MOVES2010 RunSpec Created by CENTRAL4 Scenario: LEBA 2017 JULWKD JulWkd Emission Inventory with user's
data]]></description>
<modelscale value="INV"/>
   <modeldomain value="SINGLE"/>
   <geographicselections>
      <geographicselection type="COUNTY" key="42075" description="PENNSYLVANIA - Lebanon County"/>
   </geographicselections>
   <timespan>
      <year key="2017"/>
<month id="07"/>
<day id="5"/>
      <beginhour id="1"/>
      <endhour id="24"/>
<aggregateBy key="Hour"/>
   </timespan>
   <onroadvehicleselections>

<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="11" sourcetypename="Motorcycle"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="21" sourcetypename="Passenger Car"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="31" sourcetypename="Passenger
Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="32" sourcetypename="Light Commercial
Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="11" sourcetypename="Motorcycle"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="21" sourcetypename="Passenger Car"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="31" sourcetypename="Passenger Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="11" sourcetypename="Motorcycle"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="21" sourcetypename="Passenger Car"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="31" sourcetypename="Passenger Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="32" sourcetypename="Light Commercial Truck"/>


<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="41" sourcetypename="Intercity Bus"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="42" sourcetypename="Transit Bus"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="43" sourcetypename="School Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="41" sourcetypename="Intercity Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="42" sourcetypename="Transit Bus"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="43" sourcetypename="School Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="41" sourcetypename="Intercity Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="42" sourcetypename="Transit Bus"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="43" sourcetypename="School Bus"/>


<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="51" sourcetypename="Refuse Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="52" sourcetypename="Single Unit Short-
haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="53" sourcetypename="Single Unit Long-
haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="54" sourcetypename="Motor Home"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="61" sourcetypename="Combination
Short-haul Truck"/>
<onroadvehicleselection fueltypeid="3" fueltypedesc="Compressed Natural Gas (CNG)" sourcetypeid="62" sourcetypename="Combination
Long-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="51" sourcetypename="Refuse Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="54" sourcetypename="Motor Home"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
<onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="51" sourcetypename="Refuse Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
```

```
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="54" sourcetypename="Motor Home"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="61" sourcetypename="Combination Short-haul Truck"/>
<onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="62" sourcetypename="Combination Long-haul Truck"/>
  </onroadvehicleselections>
  <offroadvehicleselections>
  </offroadvehicleselections>
  <offroadvehiclesccs>
  </offroadvehiclesccs>
  <roadtypes>
    <roadtype roadtypeid="1" roadtypename="Off-Network"/>
    <roadtype roadtypeid="2" roadtypename="Rural Restricted Access"/>
    <roadtype roadtypeid="3" roadtypename="Rural Unrestricted Access"/>
    <roadtype roadtypeid="4" roadtypename="Urban Restricted Access"/>
    <roadtype roadtypeid="5" roadtypename="Urban Unrestricted Access"/>
  </roadtypes>
  <pollutantprocessassociations>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="2" processname="Start Exhaust"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="15" processname="Crankcase Running
Exhaust"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="16" processname="Crankcase Start
Exhaust"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="17" processname="Crankcase Extended Idle
Exhaust"/>
<pollutantprocessassociation pollutantkey="3" pollutantname="Oxides of Nitrogen" processkey="90" processname="Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="1" processname="Running
Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="2" processname="Start
Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="15" processname="Crankcase
Running Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="16" processname="Crankcase
Start Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="17" processname="Crankcase
Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="110" pollutantname="Primary Exhaust PM2.5 - Total" processkey="90" processname="Extended
Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="116" pollutantname="Primary PM2.5 - Brakewear Particulate" processkey="9"
processname="Brakewear"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="1" processname="Running
Exhaust"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="2" processname="Start
Exhaust"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="15"
processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="16"
processname="Crankcase Start Exhaust"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="17"
processname="Crankcase Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="112" pollutantname="Primary PM2.5 - Elemental Carbon" processkey="90"
processname="Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="1" processname="Running
Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="2" processname="Start
Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="15" processname="Crankcase
Running Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="16" processname="Crankcase
Start Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="17" processname="Crankcase
Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="111" pollutantname="Primary PM2.5 - Organic Carbon" processkey="90" processname="Extended
Idle Exhaust"/>
```

```
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="2" processname="Start Exhaust"/>
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="15" processname="Crankcase Running Exhaust"/>
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="16" processname="Crankcase Start Exhaust"/>
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="17" processname="Crankcase Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="115" pollutantname="Primary PM2.5 - Sulfate Particulate" processkey="90" processname="Extended Idle Exhaust"/>
<pollutantprocessassociation pollutantkey="117" pollutantname="Primary PM2.5 - Tirewear Particulate" processkey="10" processname="Tirewear"/>
<pollutantprocessassociation pollutantkey="91" pollutantname="Total Energy Consumption" processkey="1" processname="Running Exhaust"/>
<pollutantprocessassociation pollutantkey="91" pollutantname="Total Energy Consumption" processkey="2" processname="Start Exhaust"/>
<pollutantprocessassociation pollutantkey="91" pollutantname="Total Energy Consumption" processkey="90" processname="Extended Idle Exhaust"/>
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<databaseselection servername="localhost" databasename="early_NLEV" description=""/>
<databaseselection servername="localhost" databasename="caleviii08" description=""/>
  </databaseselections>
  <inputdatabase servername="" databasename="" description=""/>
  <uncertaintyparameters uncertaintymodeenabled="false" numberofrunspersimulation="0" numberofsimulations="0"/>
<geographicoutputdetail description="COUNTY"/>
  <outputemissionsbreakdownselection>
<modelyear selected="false"/>
<fueltype selected="false"/>
<emissionprocess selected="true"/>
      <onroadoffroad selected="true"/>
<roadtype selected="true"/>
<sourceusetype selected="true"/>
      <movesvehicletype selected="false"/>
<onroadscc selected="false"/>
      <offroadscc selected="false"/>
      <estimateuncertainty selected="false" numberOfIterations="2" keepSampledData="false" keepIterations="false"/>
      <sector selected="false"/>
    <engtechid selected="false"/>
      <hpclass selected="false"/>
  </outputemissionsbreakdownselection>
  <outputdatabase servername="localhost" databasename="42075_2017_07_05_JulWkd_mo" description=""/>>
<outputtimestep value="Hour"/>
  <outputvmtdata value="true"/>
  <outputsho value="true"/>
  <outputsh value="true"/>
  <outputshp value="true"/>
  <outputshidling value="true"/>
  <outputstarts value="true"/>
  <outputpopulation value="true"/>
  <scaleinputdatabase servername="localhost" databasename="42075_2017_07_05_JulWkd_mi" description=""/>
  <pmsize value="0"/>
  <outputfactors>
    <timefactors selected="true" units="Hours"/>
    <distancefactors selected="false" units="Miles"/>
    <massfactors selected="false" units="Grams" energyunits="Million BTU"/>
  </outputfactors>
  <savedata>
  </savedata>
  <donotexecute>
  </donotexecute>
  <generatordatabase shouldsave="false" servername="" databasename="" description=""/>
    <donotperformfinalaggregation selected="false"/>
```

<lookuptableflags scenarioid="" truncateoutput="false" truncateactivity="false"/>
<internalcontrolstrategies>
<internalcontrolstrategy
classname="gov.epa.otaq.moves.master.implementation.ghg.internalcontrolstrategies.rateofprogress.RateOfProgressStrategy"><![CDATA[
useParameters No

]]></internalcontrolstrategy>
</internalcontrolstrategies>
</runspec>

MOVES County Data Manager Importer File – Annual Run (MOVESIMPORTER.XML)


```
<moves>
    <importer mode="county" >
        <filters>
    <geographicselections>
        <geographicselection type="COUNTY" key="42075" description="PENNSYLVANIA - Lebanon County"/>
    </geographicselections>
    <timespan>
        <year key="2017"/>
        <month id="00"/>
        <day id="2"/>
        <day id="5"/>
        <beginhour id="1"/>
        <endhour id="24"/>
        <aggregateBy key="Hour"/>
    </timespan>
    <onroadvehicleselections>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="62" sourcetypename="Combination Long-haul
Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="61" sourcetypename="Combination Short-haul
Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="41" sourcetypename="Intercity Bus"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="54" sourcetypename="Motor Home"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="11" sourcetypename="Motorcycle"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="21" sourcetypename="Passenger Car"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="31" sourcetypename="Passenger Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="51" sourcetypename="Refuse Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="43" sourcetypename="School Bus"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="53" sourcetypename="Single Unit Long-haul
Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="52" sourcetypename="Single Unit Short-haul
Truck"/>
        <onroadvehicleselection fueltypeid="2" fueltypedesc="Diesel Fuel" sourcetypeid="42" sourcetypename="Transit Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="62" sourcetypename="Combination Long-haul
Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="61" sourcetypename="Combination Short-haul
Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="41" sourcetypename="Intercity Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="32" sourcetypename="Light Commercial Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="54" sourcetypename="Motor Home"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="11" sourcetypename="Motorcycle"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="21" sourcetypename="Passenger Car"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="31" sourcetypename="Passenger Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="51" sourcetypename="Refuse Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="43" sourcetypename="School Bus"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="53" sourcetypename="Single Unit Long-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="52" sourcetypename="Single Unit Short-haul Truck"/>
        <onroadvehicleselection fueltypeid="1" fueltypedesc="Gasoline" sourcetypeid="42" sourcetypename="Transit Bus"/>
    </onroadvehicleselections>
    <offroadvehicleselections>
    </offroadvehicleselections>
    <offroadvehiclesccs>
    </offroadvehiclesccs>
    <roadtypes>
        <roadtype roadtypeid="1" roadtypename="Off-Network"/>
        <roadtype roadtypeid="2" roadtypename="Rural Restricted Access"/>
        <roadtype roadtypeid="3" roadtypename="Rural Unrestricted Access"/>
        <roadtype roadtypeid="4" roadtypename="Urban Restricted Access"/>
        <roadtype roadtypeid="5" roadtypename="Urban Unrestricted Access"/>
    </roadtypes>
        </filters>
        <databaseselection servername="localhost" databasename="42075_2017_00_25_PM_mi"/>
        <agedistribution>
```

```
            <description><![CDATA[]]></description>
            <parts>
                <sourceTypeAgeDistribution>

<filename>c:\PAMOVES11\MOVESInputs\AgeDistribution\11Reg_RepCty\2017\42011_2017_SourceTypeAgeDistribution.csv</filename>
                </sourceTypeAgeDistribution>
            </parts>
        </agedistribution>

        <avgspeeddistribution>
            <description><![CDATA[]]></description>
            <parts>
                <avgSpeedDistribution>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_00_25_PM\CDM\avgSpeedDistribution.csv</filename>
                </avgSpeedDistribution>
            </parts>
        </avgspeeddistribution>

        <imcoverage>
            <description><![CDATA[]]></description>
            <parts>
                <imcoverage>
                    <filename>c:\PAMOVES11\MOVESInputs\IM\42000_2017_IMCoverage.csv</filename>
                </imcoverage>
            </parts>
        </imcoverage>

      <fuel>
        <description><![CDATA[]]></description>
        <parts>
          <FuelSupply>
            <filename>c:\PAMOVES11\MOVESInputs\Fuel\MOVES2010a\42000_2012_FuelSupply.csv</filename>
          </FuelSupply>
          <FuelFormulation>
            <filename>c:\PAMOVES11\MOVESInputs\Fuel\42000_FuelFormulation_MOVES2010a.csv</filename>
          </FuelFormulation>
        </parts>
      </fuel>

        <zonemonthhour>
            <description><![CDATA[]]></description>
            <parts>
                <zoneMonthHour>
                    <filename>c:\PAMOVES11\MOVESInputs\Meteorology\2008\42075_2008_met.csv</filename>
                </zoneMonthHour>
            </parts>
        </zonemonthhour>

        <roadtypedistribution>
            <description><![CDATA[]]></description>
            <parts>
                <roadTypeDistribution>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_00_25_PM\CDM\roadTypeDistribution.csv</filename>
                </roadTypeDistribution>
            </parts>
        </roadtypedistribution>

        <sourcetypepopulation>
            <description><![CDATA[]]></description>
            <parts>
                <sourceTypeYear>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_00_25_PM\CDM\SourceTypePopulation.csv</filename>
                </sourceTypeYear>
            </parts>
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```
        </sourcetypepopulation>

        <rampfraction>
            <description><![CDATA[]]></description>
            <parts>
                <roadType>
                    <filename>c:\PAMOVES11\MOVESInputs\RampFraction\rampfraction_defaults.csv</filename>
                </roadType>
            </parts>
        </rampfraction>

        <vehicletypevmt>
            <description><![CDATA[]]></description>
            <parts>
                <hpmsVTypeYear>
                        <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_00_25_PM\CDM\hpmsVTypeYear.csv</filename>
                </hpmsVTypeYear>
                <monthvmtfraction>

<filename>c:\PAMOVES11\MOVESInputs\MonthDayHourFractions\2017_MonthFraction\42075_2017_MonthVMTFraction.csv</filename>
                </monthvmtfraction>
                <dayvmtfraction>
                    <filename>c:\PAMOVES11\MOVESInputs\MonthDayHourFractions\dayvmtfraction_avgday.csv</filename>
                </dayvmtfraction>
                <hourvmtfraction>
                    <filename>c:\PAMOVES11\Out\Lebanon\\42075_2017_00_25_PM\CDM\hourvmtfraction.csv</filename>
                </hourvmtfraction>
            </parts>
        </vehicletypevmt>

    </importer>
</moves>
```

MOVES Run Specification File – Annual Run (MOVESRUN.MRS)


```
<runspec>
   <description><![CDATA[MOVES2010 RunSpec Created by CENTRAL4 Scenario: LEBA 2017 ANNAVG PM Emission Inventory with user's
data]]></description>
<modelscale value="INV"/>
   <modeldomain value="SINGLE"/>
   <geographicselections>
      <geographicselection type="COUNTY" key="42075" description="PENNSYLVANIA - Lebanon County"/>
   </geographicselections>
   <timespan>
      <year key="2017"/>

<month id="1"/>
<month id="2"/>
<month id="3"/>
<month id="4"/>
<month id="5"/>
<month id="6"/>
<month id="7"/>
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<month id="9"/>
<month id="10"/>
<month id="11"/>
<month id="12"/>
<day id="2"/>
<day id="5"/>
      <beginhour id="1"/>
      <endhour id="24"/>
<aggregateBy key="Hour"/>
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