

# Allegheny County Health Department

## DIRECTOR

Bruce W. Dixon, M.D.



## AIR QUALITY PROGRAM

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June 10, 2011

Ms. Joyce Epps, Director  
Department of Environmental Protection  
Bureau of Air Quality  
Rachel Carson Building  
400 Market Street, P.O. Box 8468  
Harrisburg, PA 17105-8468

Dear Ms. Epps:

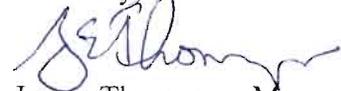
Enclosed are a paper copy and an exact duplicate of this paper copy on a computer disk in searchable pdf file format of a revision to Allegheny County's portion of the Pennsylvania State Implementation Plan for the Carbon Monoxide National Ambient Air Quality Standards in the form of the 2011 Carbon Monoxide Limited Maintenance Plan. This SIP revision is being tracked as our internal Revision 69.

This SIP Revision was the subject of a public comment period from September 22, 2010, through October 22, 2010, the date of the public hearing. It was approved by the Board of Health on January 12, 2011, and became effective January 22, 2011.

We request that the Pennsylvania Department of Environmental Protection approve this revision and forward the paper copy and disk to the U.S. EPA Region III with a recommendation for approval.

If you have any questions, please call me at the number above or email me at [jthompson@achd.net](mailto:jthompson@achd.net).

Sincerely,



James Thompson, Manager  
Air Quality Program

cc: Arleen Shulman  
Stephen Hepler

Enclosures

# Allegheny County Health Department

## DIRECTOR

Bruce W. Dixon, M.D.



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June 10, 2011

Ms. Diana Esher, Director  
Air Protection Division  
Region III (3AP00)  
U.S. Environmental Protection Agency  
1650 Arch Street  
Philadelphia, PA 19103-2029

Dear Ms. Esher:

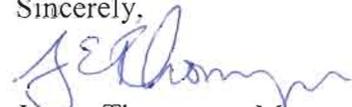
This is to inform you that the Allegheny County Health Department has forwarded to the Pennsylvania Department of Environmental Protection a revision to Allegheny County's portion of the Pennsylvania State Implementation Plan for the Carbon Monoxide National Ambient Air Quality Standards in the form of the 2011 Carbon Monoxide Limited Maintenance Plan. This SIP revision is being tracked as our internal Revision 69.

This SIP Revision was the subject of a public comment period from September 22, 2010, through October 22, 2010, the date of the public hearing. It was approved by the Board of Health on January 12, 2011, and became effective January 22, 2011.

As directed by EPA, we are not including the documents with this letter, since we submit them to the Pennsylvania DEP, with a request that they approve the revision and forward the documents to EPA with a recommendation of approval.

If you have any questions, please call me at the number above or email me at [jthompson@achd.net](mailto:jthompson@achd.net).

Sincerely,



James Thompson, Manager  
Air Quality Program

cc: File

**Revision to ALLEGHENY COUNTY'S portion of the  
PENNSYLVANIA STATE IMPLEMENTATION PLAN**

**For the**

**Maintenance of the Carbon Monoxide  
National Ambient Air Quality Standards**

**Revision Tracking No. 69**

**Allegheny County Health Department  
Air Quality Program**

**2011 Carbon Monoxide Limited Maintenance Plan**

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  - Transmittals of hearing notice to EPA & PA DEP
  - News Release
  - Proof of publication of notice of hearing
  - Certification of hearing
  - Summary of Comments and responses
  - Certification of approval and adoption

- 1. Revision of Allegheny County's Portion of the Pennsylvania State Implementation Plan**

**Revision to the State Implementation Plan  
for Carbon Monoxide**

**2011 Carbon Monoxide Limited Maintenance Plan**

**Allegheny County Health Department  
Air Quality Program**

**June 2011**

## EXECUTIVE SUMMARY

Significant progress continues to be made in reducing carbon monoxide (CO) levels across Allegheny County, including the Central Business District (CBD). The CBD is defined as the area enclosed by the Allegheny River, the Monongahela River, and I-579. Cleaner cars, equipment and fuels have reduced CO levels despite increases in vehicle miles traveled.

The two primary National Ambient Air Quality Standards (NAAQS) for CO are 9 parts per million (ppm) averaged over an 8-hour period, not to be exceeded more than once per year at each site, and 35 ppm averaged over a 1-hour period. The last time the 8-hour standard was not met in Allegheny County was in 1987 when a reading of 13.5 ppm was recorded. Exceeding the 1-hour average standard is not likely to occur in Allegheny County given reduction in emissions from vehicular traffic. Air quality levels in Allegheny County have not exceeded the 1-hour standard since 1980, and have been below 15 ppm since 1988.

Allegheny County Health Department (ACHD) submitted a State Implementation Plan (SIP) revision for CO under the limited maintenance plan option<sup>2</sup>. In that analysis, each redesignation criterion in Section 107(d)(3)(E) of the Clean Air Act (CAA or the Act) is listed, along with a short description of the guidance provided by Environmental Protection Agency (EPA)<sup>1,2</sup> in relation to that criterion, and the justification that supports the request for redesignation to attainment. Significantly, since the area is “not classified,” and has a design value below 7.65 ppm, or 85 percent of the CO NAAQS, the County used EPA’s “Limited Maintenance Plan Option” in addressing Section 107(d)(3)(E)(iv). Additionally, because the area is “not classified,” the SIP submittal requirements of the CAA, Section 187, do not apply. The CBD was designated CO attainment status with an effective date of January 13, 2003.

ACHD is submitting a SIP revision to the EPA to revise the Carbon Monoxide Limited Maintenance Plan in accordance with Section 107(d) of the CAA to ensure maintenance of the NAAQS in the CBD of Allegheny County for a second ten-year period through year 2022. This ten-year plan maintains existing controls and contingency provisions, and succeeds the previous plan approved by the EPA in 2003. CO levels are expected to remain well below the NAAQS for the ten-year period ending 2022.

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<sup>1</sup> EPA Memo “Procedures for Processing Requests to Redesignate Areas to Attainment,” John Calcagni, September 4, 1992.

<sup>2</sup> EPA Memo “Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas,” Joseph W. Paisie, October 6, 1995.

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## **I. Introduction**

The Central Business District (CBD) of Allegheny County was designated as CO nonattainment area “not classified” at the time of enactment of the CAA and remained as nonattainment areas by operation of law.<sup>3</sup> Based upon criteria established in the Act, the EPA delineated each nonattainment area and classified it using air monitoring data from 1988 and 1989.<sup>4</sup> As a result of this delineation process, in Allegheny County, the “high traffic density areas within the CBD and certain other high traffic density areas” (of the Pittsburgh area) were designated nonattainment - not classifiable. The CBD is defined as the area enclosed by the Allegheny River, the Monongahela River, and I-579; while “other high traffic density areas” describes what is considered the Oakland neighborhood of Pittsburgh.

In keeping with federal, state and local requirements, Allegheny County Health Department (ACHD) addresses the air quality issues within the CBD. Failure to meet the requirements of the Clean Air Act (CAA or the Act) can result in economic sanctions and/or civil lawsuits.

The 2001 CO Limited Maintenance Plan for the CBD of Allegheny County showed how the region would continue to attain the standard through 2013. The continuous downward trend in CO monitor readings in the CBD has demonstrated these improvements can be attributed to permanent, enforceable reductions of CO emissions despite growth in vehicle miles traveled. These reductions are largely achieved through more stringent federal controls on vehicles and fuels, and state and local measures in the CO Limited Maintenance Plan.

The CAA requires that a second SIP revision be submitted within eight years of redesignation to demonstrate that the area will maintain the standard for another ten years. This update must comply with the Act’s requirements in section 175(A) for maintenance plans, by including:

- Air quality data that demonstrate the area continues to be in attainment
- On-road mobile source emissions forecasts
- Continued air monitoring to verify the attainment status of the region
- Contingency emission reduction measures that decrease CO emissions, as necessary after a trigger event

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<sup>3</sup> 42 U.S.C.A. § 7407(d)(1)(C)

<sup>4</sup> 56 Fed. Reg. 56694

## **II. Limited Maintenance Plan Option**

The “Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas” EPA guidance document from Joseph Paisie, Oct. 6, 1995 lists the core requirements for this plan as follows:

### **Attainment Inventory**

The State (County) should develop an attainment emissions inventory to identify a level of emissions in the area which is sufficient to attain the CO NAAQS. This inventory should be consistent with EPA’s most recent guidance on emissions inventories for nonattainment areas available at the time and should represent emissions during the time period associated with the monitoring data showing attainment. The inventory should be based on actual “typical winter day” emissions of CO.

### **Maintenance Demonstration**

The maintenance demonstration requirement is considered to be satisfied if the monitoring data show that the area is meeting the air quality criteria for limited maintenance areas (7.65 ppm or 85 percent of the CO NAAQS). There is no requirement to project emissions over the maintenance period. The EPA believes if the area begins the maintenance period at or below 85 percent of the exceedance levels, the air quality, along with the continued applicability of Prevention of Significant Deterioration (PSD) requirements, and any control measures already in the SIP and Federal measures, should provide adequate assurance of maintenance over the initial ten-year maintenance period. When EPA approves a limited maintenance plan, EPA is concluding that an emissions budget may be treated as essentially not constraining for the length of the maintenance period, because it is unreasonable to expect that such an area will experience much growth in that period that a violation of the CO NAAQS would result.

### **Monitoring Network and Verification of Continued Attainment**

To verify the attainment status of the area over the maintenance period, the maintenance plan should contain provisions for continued operation of an appropriate, EPA-approved air quality monitoring network, in accordance with 40 CFR part 58. This is particularly important for areas using a limited maintenance plan, because there is no cap on emissions.

### **Contingency Plan**

Section 175(A) of the CAA requires that a maintenance plan include contingency provisions, as necessary, to promptly correct any violation of the NAAQS that occurs after redesignation of the area. These contingency measures do not have to be fully adopted at the time of redesignation. However, the contingency plan is considered to be an enforceable part of the SIP and should ensure that the contingency measures are adopted expeditiously once they are triggered by a specified event. The contingency plan should identify the measures to be promptly adopted and provide a schedule and procedure for adoption and implementation of the measures. The state also should identify specific indicators, or triggers, which will be used to determine when the contingency measures need to be implemented. While a violation of the NAAQS is an acceptable trigger, states may wish to choose a pre-violation action level as a trigger, such as an exceedance of the NAAQS. By taking early action, a state may be able to prevent any actual

violation of the NAAQS, therefore eliminating any need on the part of the EPA to redesignate an area back to nonattainment.

#### Conformity Determinations under the Limited Maintenance Plan

The transportation conformity rule and the general conformity rule apply to nonattainment areas and maintenance areas operating under the maintenance plans. Under either rule, one means of demonstrating conformity of federal actions is to indicate that expected emissions from planned actions are consistent with the emissions budget for the area. Emission budgets in limited maintenance plan areas may be treated as essentially not constraining for the length of the initial maintenance period, because it is unreasonable to expect that such an area will experience so much growth in that period that a violation of the CO NAAQS would result. In other words, EPA would be concluding that emissions need not be capped for the maintenance period. Therefore, in areas with approved limited maintenance plans, federal actions requiring conformity determinations under the transportation conformity rule could be considered to satisfy the “budget test” required in the conformity rule.

### **III. Attainment Emissions Inventory and Mobile Source Control Measures**

The dominant source of CO emissions is from on-road motor vehicles. Other contributing sources include nonroad mobile emissions, which include lawn and garden equipment and construction equipment, as well as area and point sources such as wood burning and cement production. Although CO emissions are also the result of point, area, and nonroad sources, the CO inventory only includes emissions from on-road (highway) sources, since motor vehicles are still the primary source in the CBD. Finally, note that the data is representative of the “typical winter day,” and was modeled with MOVES2010<sup>5</sup>. Table 1 illustrates the CO emissions for a typical winter day in 2013 and Table 2 illustrates the CO emissions for a typical winter day in 2022.

**Table 1:** 2013 Typical Winter Day Carbon Monoxide Emissions for Allegheny County

<b>MOVES Road Type</b>	<b>Emission Components</b>	<b>VMT</b>	<b>Average Speed (mph)</b>	<b>CO Emissions (kg/day)</b>	<b>CO Emissions (tons/day)</b>
Rural Restricted Access (Freeway)	Running Exhaust	0	0.0	0	0.00
Rural Unrestricted Access (Non-Freeway)		376,491	48.6	1,461	1.61
Urban Restricted Access (Freeway)		8,518,382	56.8	43,218	47.64
Urban Unrestricted Access (Non-Freeway)		16,832,658	28.0	70,779	78.02
Off-Roadway	Start Exhaust / Extended Idle	-----	-----	242,454	267.26
<b>TOTAL</b>		<b>25,727,530</b>	<b>33.9</b>	<b>357,912</b>	<b>394.53</b>

<sup>5</sup> Allegheny County Mobile Source Highway Emissions Inventory for Carbon Monoxide (CO) NAAQS: Explanation of Methodology, Michael Baker, JR., Inc., July 07, 2010.

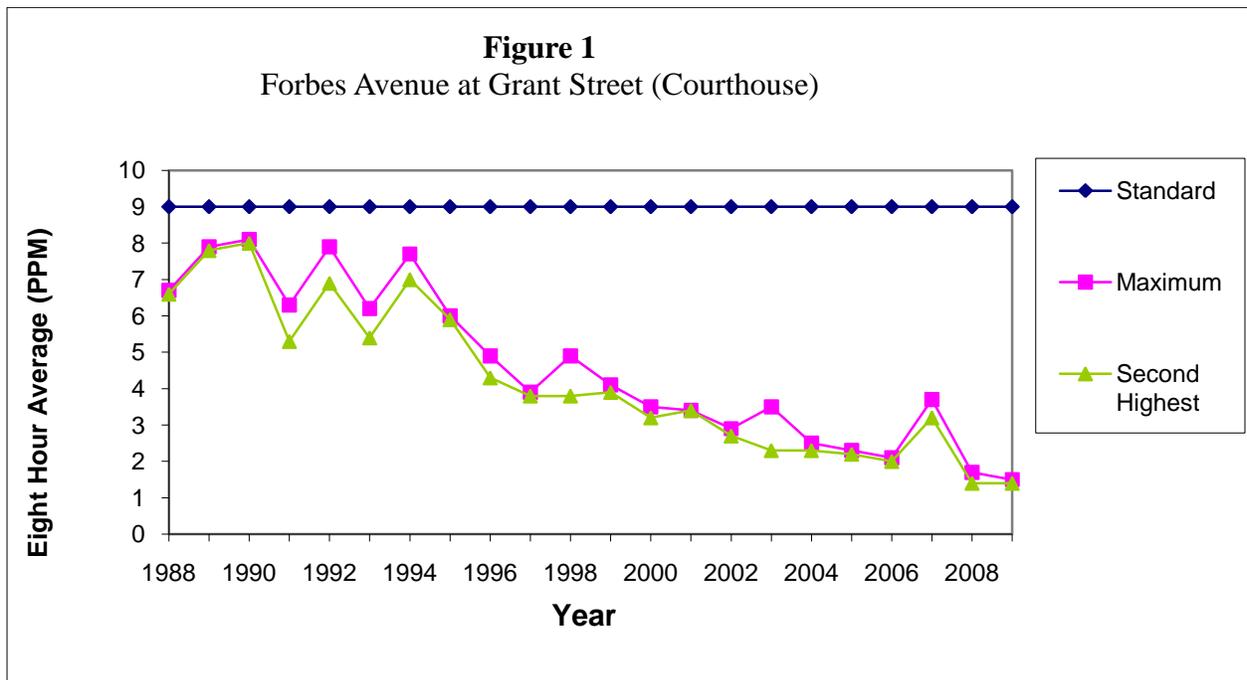
**Table 2: 2022 Typical Winter Day Carbon Monoxide Emissions for Allegheny County**

<b>MOVES Road Type</b>	<b>Emission Components</b>	<b>VMT</b>	<b>Average Speed (mph)</b>	<b>CO Emissions (kg/day)</b>	<b>CO Emissions (tons/day)</b>
Rural Restricted Access (Freeway)	Running Exhaust	0	0.0	0	0.00
Rural Unrestricted Access (Non-Freeway)		370,158	48.7	1,043	1.15
Urban Restricted Access (Freeway)		10,442,966	50.1	41,204	45.42
Urban Unrestricted Access (Non-Freeway)		17,564,607	27.4	51,474	56.74
Off-Roadway	Start Exhaust / Extended Idle	-----	-----	211,338	232.96
<b>TOTAL</b>		<b>28,377,731</b>	<b>33.1</b>	<b>305,059</b>	<b>336.27</b>

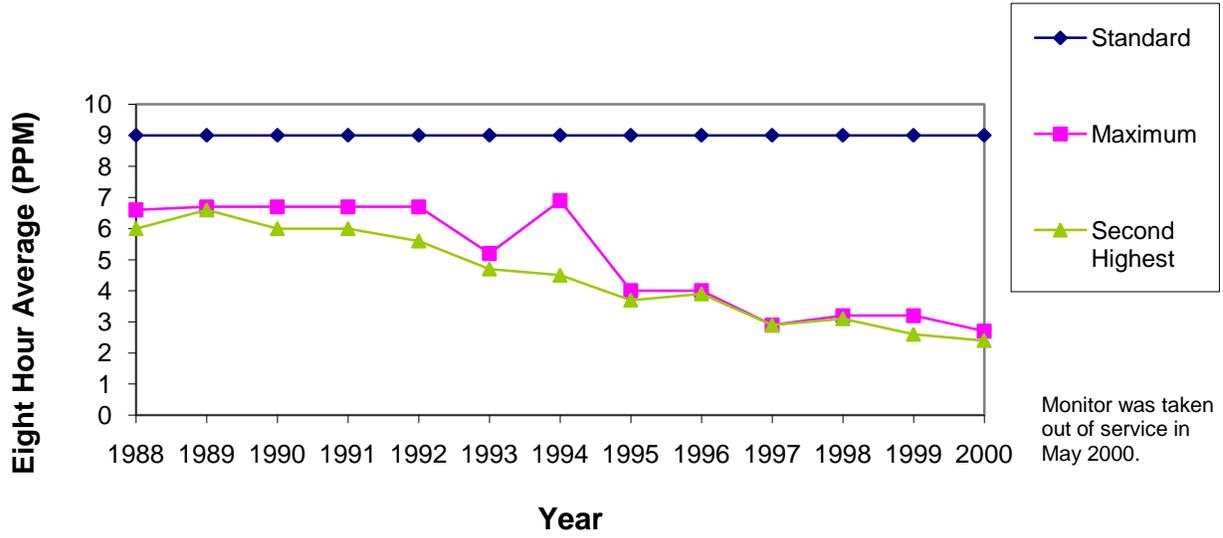
As CO emissions have decreased over the last decade so have the monitored levels of CO. The Maintenance Demonstration has graphical evidence of the decreasing CO levels since 1988.

#### IV. Maintenance Demonstration

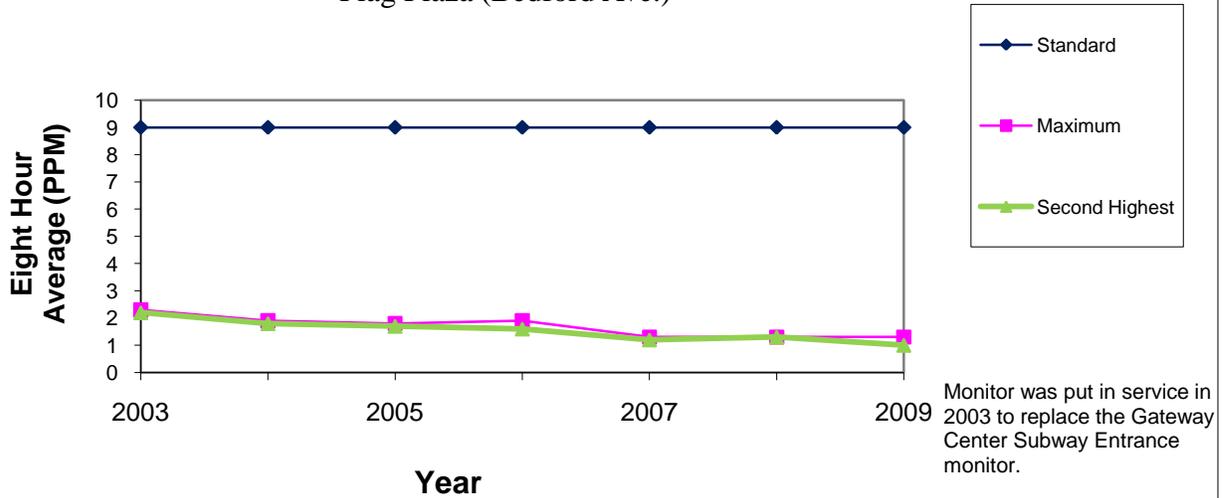
The Allegheny County Health Department (ACHD) monitors ambient CO concentrations at Flag Plaza. ACHD used to monitor the ambient CO concentration at the Gateway Center Subway Entrance (Point), but the monitor was removed in May 2000 due to construction in that area. The 1-hour NAAQS for CO is 35 ppm. The NAAQS has not been violated in the CBD since 1980, and has been below 15 ppm since 1988. The 8-hour NAAQS for CO is currently set at 9 ppm, not to be exceeded more than once per year at each site. Observation of the second highest 8-hour concentration is an indicator of the region's proximity to violating the standard. The data presented in Figures 1-3 include the maximum and second highest non-overlapping 8-hour averages for the monitor stations from 1988 through 2009 in the CBD. The highest 8-hour average CO concentration measured was 8.6 ppm at the Oakland monitor in 1988. The highest 8-hour average CO concentration measured since 2000 was 3.7 ppm at the Forbes Avenue at Grant Street (Courthouse) in 2007. The 8-hour standard was last violated in 1987 and no 8-hour average CO concentration above the 85 percent of the NAAQS or 7.65 ppm has been recorded at any monitoring station since 1994.



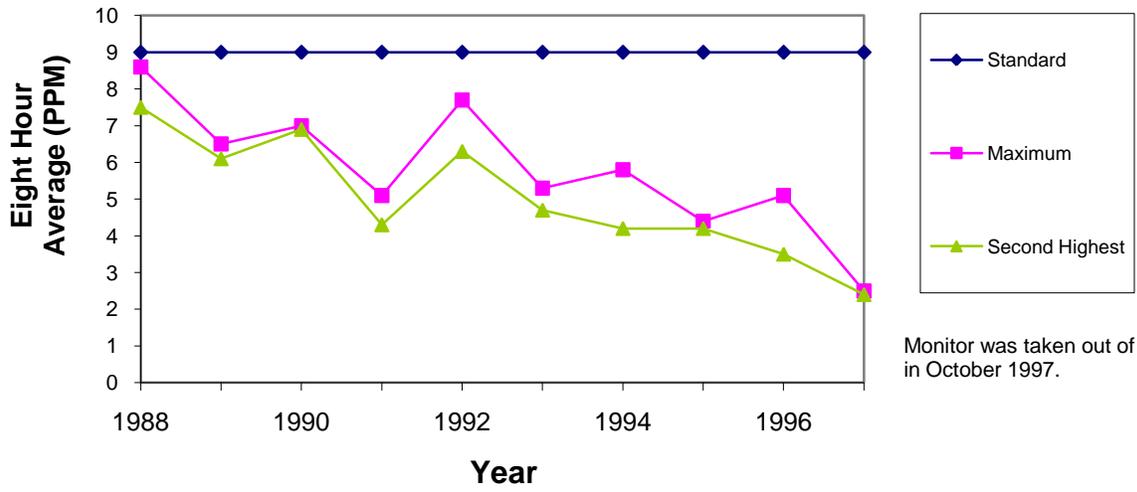
**Figure 2.a**  
Gateway Center Subway Entrance (Point)



**Figure 2.b**  
Flag Plaza (Bedford Ave.)



**Figure 3**  
Oakland (416 Semple St.)



**V. Monitoring Network and Verification of Continued Attainment**

ACHD operates and maintains a CO monitoring network which meets the requirements of 40 CFR Parts 53 and 58.

<u>Name</u>	<u>AIRS Monitor ID</u>	<u>Site ID</u>
Forbes Avenue at Grant Street (Courthouse)	420030038421011	0038
Flag Plaza (Bedford Ave.)	420030031421011	0031

Air quality measurements used in this analysis were performed in accordance with the appropriate regulations and guidance documents including adherence to EPA quality assurance requirements. Monitoring procedures were determined in accordance with 40 CFR Part 58. The CO monitoring instruments send the information to the Allegheny County Health Department's computer system at the Air Quality Program building at 301 39th Street.

The CO monitor at the Oakland 4 site was terminated in October 1997. The CO monitor at the Gateway Center Subway Entrance (Point) was taken out of service by the ACHD in May 2000 to accommodate local construction work. With permission of EPA, ACHD has since decided to permanently remove the monitor from this location and relocate at Flag Plaza near the Civic Arena. In this location it will function as a population based CO monitor. However, in keeping with SIP requirements, ACHD will continue to operate the CO monitor at Forbes Avenue and Grant Street. The monitor will be operated in accordance with 40 CFR Part 58 to verify attainment status of the area and to indicate the need to establish contingency measures as described in the contingency plan included as a part of this submittal.

Ambient CO concentrations continue to be low, currently at a third of the 8-hour CO NAAQS. With the emphasis on monitoring CO levels to indicate trigger events, the network provides data representative of concentrations of CO in the ambient air and tracks maximum expected concentrations.

## **VI. Contingency Plan**

The contingency plan provides a procedure to prevent future violations and promptly correct any violation of the CO NAAQS that occurs after the renewal of the CO Limited Maintenance Plan for another ten years. The contingency plan is considered to be a federally enforceable part of the SIP. This contingency plan ensures that appropriate measures are implemented expeditiously once they are triggered by a specific event. An event triggering the contingency plan is specified at the CO NAAQS or 9.0 ppm to ensure that additional control measures are implemented before a violation of the standard occurs or is imminent. This contingency plan identifies measures that can be promptly adopted and implemented by following the procedures specified below.

### **Triggering Indicator**

The following process is used to define the trigger indicator and to evaluate the need for contingency measures to avoid any CO NAAQS violations. Allegheny County Health Department will rely on quality assured air monitoring data in the CBD to track future compliance and determine the need to establish then implement contingency measures. A verified ambient CO level over the CO NAAQS or 9.0 ppm for an 8-hour period must be recorded at least twice at one monitor station during the CO season, November through February, to be considered a triggering indicator. Using all the data available, ACHD staff will make a determination and recommendation to implement contingency measures to assure that the CO NAAQS will not be violated.

### **Contingency Measures**

In the event that a violation of the CO standard occurs at the Forbes Avenue and Grant Street (Courthouse) monitor, a “vehicle idling restriction” will be implemented. This restriction will limit the amount of time that a gasoline engine will be permitted to idle to five (5) minutes, with appropriate exceptions (such as the need for heating and powering of refrigeration systems on trucks, operation of emergency vehicles and vehicles that are motionless due to traffic conditions beyond the operator’s control). The restriction on idling will be limited to the winter season, November through February.

Such a measure will be implemented on the following schedule once notification is received from EPA that a contingency measure must be implemented, or three months after a recorded violation:

- a) Applicable “vehicle idling restriction” regulation to be adopted within 12 months.
- b) Applicable regulation to be implemented within 8 months after adoption.

### Alternative Contingency Measure

The Allegheny County Health Department reserves the right to petition the EPA, at any time, for approval to establish an alternative contingency measure, or combination of measures, to that of the “vehicle idling restriction,” subject to demonstrating to the satisfaction of the EPA that the alternative measure(s) being proposed would provide an air quality and public health benefit equal to or greater than that resulting from the implementation of the idling restriction described above.

This contingency plan is consistent with that approved for the first ten-year CO Limited Maintenance Plan.

## **VII. Conformity Determination under the Limited Maintenance Plan**

Under a limited maintenance plan, continued timely implementation of transportation control measures, consultation and maintenance of CO emissions below the NAAQS is required. With an approved limited maintenance plan, it is presumed that ACHD has demonstrated that it would be unreasonable to expect a violation of the CO NAAQS from growth in vehicle emissions for that period.

Evaluation of transportation conformity for transportation projects in Allegheny County is performed by the Southwestern Pennsylvania Commission and other agencies. Such projects in the county are eligible to take advantage of the reduced requirements under the limited maintenance plan option for nonclassifiable CO nonattainment areas.

# **Appendix**

## **Allegheny County Mobile Source Highway Emissions Inventory for Carbon Monoxide (CO) NAAQS**

### **Explanation of Methodology**

#### **Prepared for:**

Mobile Sources Section, Bureau of Air Quality  
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Pittsburgh, PA 15201-1891

#### **Prepared by:**

Michael Baker, Jr., Inc.  
1304 Concourse Drive  
Linthicum, MD 21090

**July 2010**

**Allegheny County Mobile Source Highway CO Emissions Inventory**  
**Explanation of Methodology**  
 July 2010

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## INTRODUCTION

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The United States Environmental Protection Agency (EPA) originally designated a portion of Allegheny County as a carbon monoxide (CO) nonattainment area. The area is defined as the Pittsburgh central business district (CBD) triangle bounded by the Allegheny River, the Monongahela River and I-579. In addition, the Oakland neighborhood of Pittsburgh was included under the category of “other high traffic density areas”.

Effective January 13, 2003, EPA approved the Allegheny County and Pennsylvania Department of Environmental Protection (DEP) request and maintenance plan to redesignate the nonattainment area to attainment of the CO National Ambient Air Quality Standards (NAAQS). The maintenance plan provides a county-level emissions inventory for the 1990 and 1999 analysis years.

Per section 175A(b) of the Clean Air Act, eight years after the redesignation, a revised maintenance plan must be submitted to EPA that demonstrates attainment for the 10 years following the initial 10-year period. This inventory supports that requirement and provides a CO emissions inventory for Allegheny County for the 2013 and 2022 analysis years.

## TOOLS AND METHODOLOGY

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The CO emissions inventory for Allegheny County has been prepared using county-specific weather, vehicle fleet, fuel and traffic data. On March 2, 2010, EPA officially approved the MOVES2010 (referred herein as MOVES) emission model for use in the development of state implementation plans (SIPs) and transportation conformity analyses. MOVES, which stands for **M**otor **V**ehicle **E**missions **S**imulator, is the latest generation of highway vehicle emissions inventory models. It provides emission factors based on local-specific inputs. Per EPA’s *Policy Guidance on the Use of MOVES2010 for State Implementation Plan Development, Transportation Conformity, and Other Purposes, EPA-420-B-09-046, December 2009*, EPA recommends that MOVES be used for SIP development as expeditiously as possible. As a result, the MOVES emissions model has been used to produce the Allegheny CO mobile source emissions inventory.

The Allegheny CO inventory utilizes the latest available planning assumptions and follows the same analysis approach as used for other SIP inventories across the state, with the exception of the integration of the MOVES emission model. This includes using a custom post processing software (PPSUITE) to assist in processing Pennsylvania Department of Transportation (PennDOT) roadway traffic data and applying the results produced by MOVES. PPSUITE has been used throughout Pennsylvania and other states and has been updated to provide full integration capabilities with MOVES. In addition, the CENTRAL software system is used as the process controller providing interactive menus and features to execute the MOVES model in batch mode. MOVES is executed using run specification (MRS) files, which facilitates running the model for multiple analysis years. **Exhibit 1** summarizes the analysis tools used for developing the inventory.

### Exhibit 1: Summary of Inventory Analysis Tools

Tool	Purpose
MOVES2010	Produces emission factors for CO; apply emission factors to VMT; produce emission quantities
PPSUITE	Processes the highway data; calculates hourly congested speeds for each state roadway segment; prepares MOVES traffic-related input files; processes MOVES output files and prepares summary report
CENTRAL	Provides framework to manage work tasks and provide QA/QC features. Builds MOVES MRS files based on user inputs and selections and executes emission calculation process.

**Exhibit 2** illustrates the analysis framework used for the inventory. PPSUITE is used to process PennDOT traffic count data forecasted to future analysis years. The software calculates hourly congested speeds for each roadway segment and prepares the key traffic-related inputs to MOVES. Other MOVES input data is prepared manually. This includes inspection maintenance parameters, fuel characteristics, vehicle age distributions, and meteorology data.

The MOVES model is executed in two steps. The first step imports the county-specific data into the MOVES MySQL databases. MySQL is a relational database system used by MOVES. The second step executes MOVES to estimate and apply emission factors. MOVES was run in the “inventory” mode as described in EPA’s *Technical Guidance on the Use of MOVES2010 for Emission Inventory Preparation in State Implementation Plans and Transportation Conformity*, EPA-420-B-10-023, April 2010 (<http://www.epa.gov/otaq/models/moves/index.htm>). The inventory mode requires input vehicle miles of travel (VMT) and vehicle population (e.g. number of vehicles in county), which the model uses to calculate total emission quantities for the county.

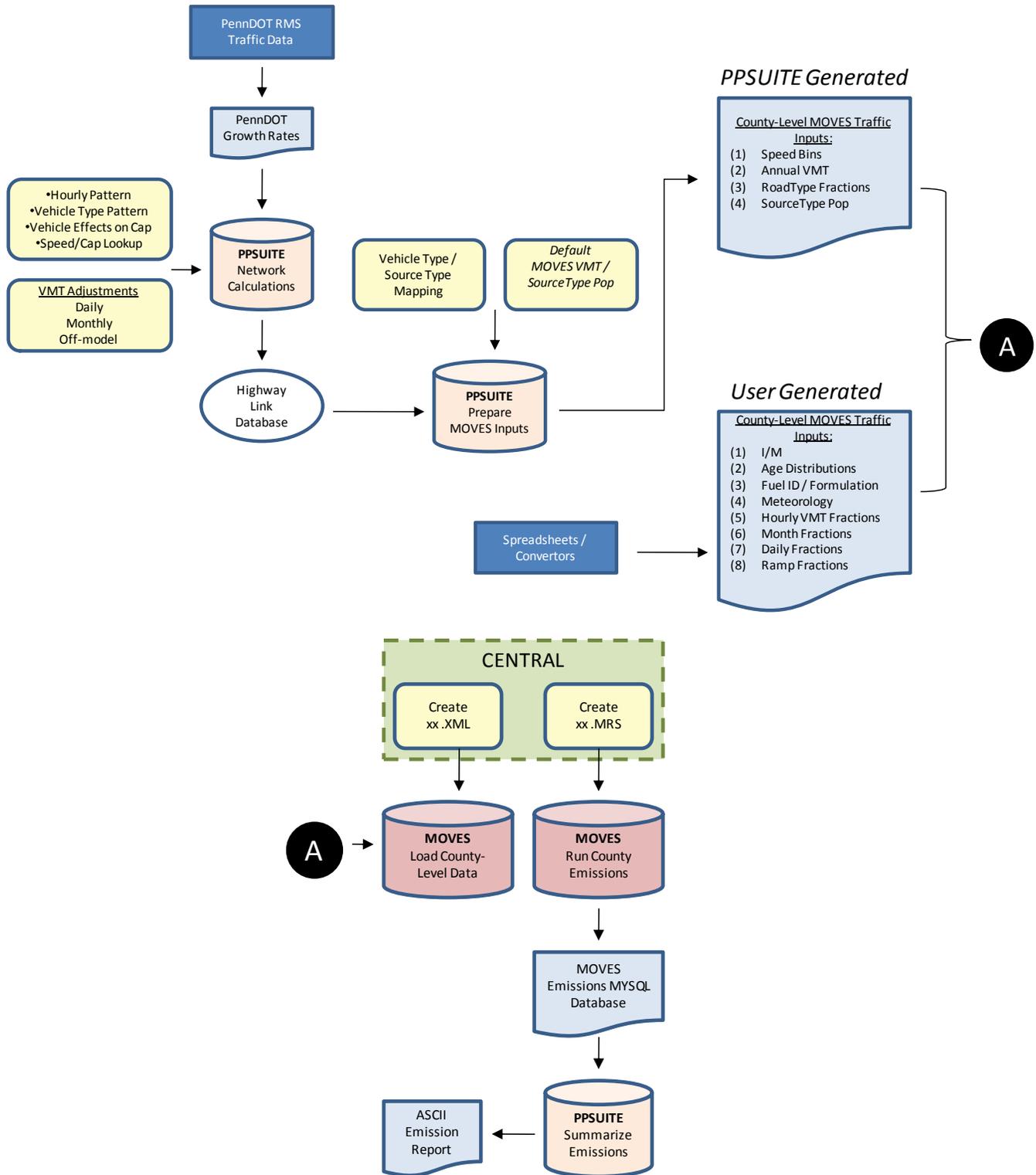
MOVES produces emissions for defined road types internal to the model. These include:

- Off-Network
- Rural Restricted Access (e.g. freeway)
- Rural Un-Restricted Access (e.g. non-freeway)
- Urban Restricted Access
- Urban Un-Restricted Access

The off-network category includes emissions not associated with the travel of the vehicle. This includes engine start emissions, resting evaporative emissions and soak emissions when a vehicle is parked. The remaining road type categories represent the emissions associated with vehicle operation on different road classes based on the input speeds. These emissions include running exhaust and crankcase running exhaust emissions.

The PPSUITE software extracts the emission quantities from the MySQL databases and prepares emission report files that can be used for tabulations.

## Exhibit 2: Emission Calculation Process



## DATA ASSUMPTIONS

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This section summarizes the key data sources and parameters used to produce the Allegheny County CO emissions inventory for the 2013 and 2022 analysis years. The methodologies used to produce the emission results conform to the recommendations provided in the EPA MOVES policy and technical guidance documents referenced in the previous section. A mix of local data and national default (internal to MOVES) data has been used for this submission. Local data has been used for the primary data items that have a significant impact on emissions. These include:

- VMT and speeds
- Vehicle type mixes
- Vehicle age distributions
- Temperatures/humidity
- Inspection/maintenance parameters
- Fuel program characteristics

### *Traffic Data*

The PennDOT Roadway Management System (RMS) data serves as the primary highway data source for the county and functional class VMT estimates. The data source is used to provide a “snapshot” of the regional roadway system and volumes in 2008. The data includes the average annual daily traffic (AADT) volumes for all state roadways in Pennsylvania. The portion of travel on freeway ramps is assumed to be 8% of the total freeway VMT, which is the internal MOVES national default value. To account for additional local roadway VMT and to ensure consistency with reported HPMS totals, the 2008 VMT has been reconciled with the Allegheny County 2008 HPMS VMT totals reported to the Federal Highway Administration (FHWA).

PPSUITE calculates congested speeds by hour of the day for each roadway segment and provides the information as input to the MOVES software. To disaggregate the daily RMS volumes to hourly volumes, auto and truck hourly pattern data from PennDOT’s *2008 Pennsylvania Traffic Data* report are used to determine the temporal variations of future year traffic volumes.

The Allegheny CO inventory is calculated for a typical January weekday. The daily and monthly seasonal factors, used to adjust the AADT traffic volumes, are developed from data contained in the document, *2008 Pennsylvania Traffic Data*, as prepared by PennDOT’s Bureau of Planning and Research. The seasonal and daily factors provided in this document are based on statistical analyses of 2008 traffic counts taken at permanent and in-pavement automatic traffic recorder locations throughout the state. The factors are used to adjust AADT volumes to an average January weekday, and the PPSUITE software calculates unique congested speeds for each roadway segment.

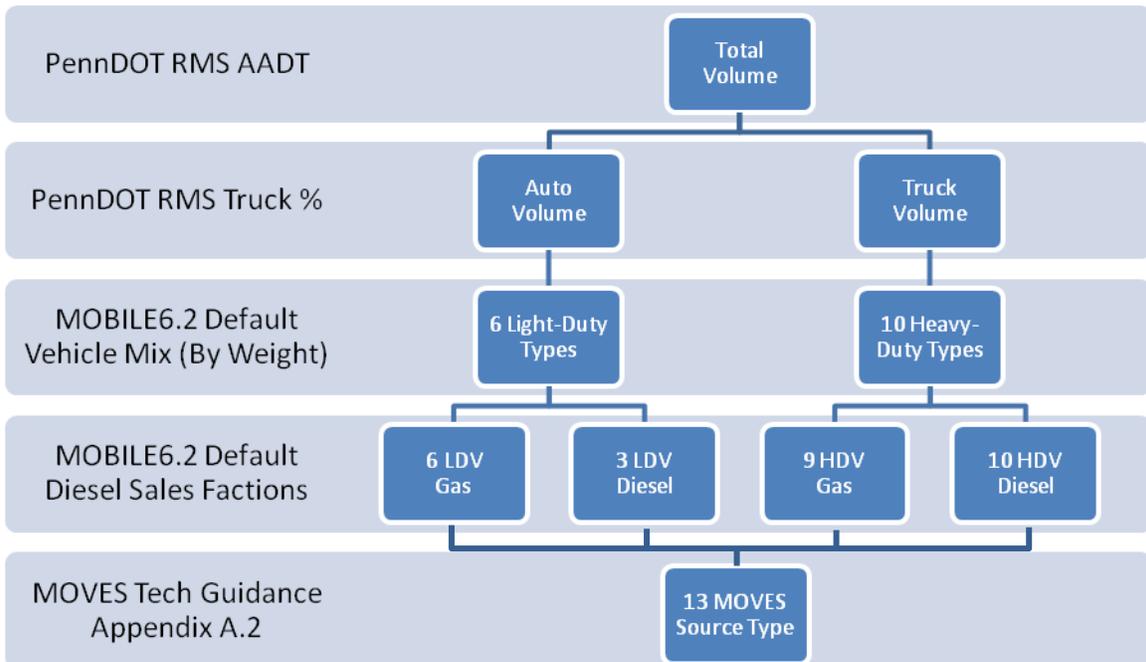
Vehicle mix patterns are percentages used to split the total traffic volume into each of the vehicle types required by the MOVES emission model. This input is important since the MOVES emission rates vary significantly by vehicle type. The vehicle mix percentages were calculated for each functional class grouping in Allegheny County utilizing a combination of sources as illustrated in **Exhibit 3**.

MOVES calculates emission factors for 13 separate vehicle categories, referred to as source types:

- Motorcycle
- Passenger Car
- Passenger Truck
- Light Commercial Truck
- Intercity Bus
- Transit Bus
- School Bus
- Refuse Truck
- Single Unit Short Haul Truck
- Single Unit Long Haul Truck
- Motor Home
- Combination Unit Short Haul Truck
- Combination Long Haul Truck

The EPA MOVES technical guidance was followed to split traffic volumes into the 13 MOVES source types based on available data sources. Appendix A.2 of the MOVES technical guidance provides a methodology to map the 28 MOBILE6.2 vehicle types to the 13 MOVES source type definitions.

**Exhibit 3: Estimating VMT by Vehicle Type**



## Traffic Growth Assumptions

The base year 2008 RMS traffic volumes and VMT were factored to the 2013 and 2022 forecast analysis years. For this inventory, the growth rates were based on the VMT growth rate projection methodology developed by PennDOT as documented in the report “*Statistical Evaluation of Projected Traffic Growth, Traffic Growth Forecasting System: Final Report, March 14, 2005*”. As part of that study, a statewide traffic growth forecasting system was developed that incorporates traffic data from PennDOT’s Traffic Information System and available socioeconomic forecasts. The study methodology has been shared among PennDOT, DEP, and other interagency consultation group members, including the Pennsylvania Air Quality Work Group (which includes EPA, FHWA, and representatives from larger PA Metropolitan Planning Organizations (MPOs)).

The data inputs to the traffic growth forecasting system are periodically updated to produce revised forecast growth factors for each county in the state. The frequency of this update is at least every 5 years. The most recent available forecasts, used in the development of this inventory, include historic HPMS VMT through 2008 and use of the *2008 State Profile*, developed by Woods & Poole Economics. The *2008 State Profile* includes historical demographic data and forecasts by year from 1969 through 2030 for every county and Metropolitan Statistical Area (MSA) in Pennsylvania. The county VMT forecast growth rates are developed for four types of functional roadway classifications in each county: urban interstate, urban non-interstate, rural interstate and rural non-interstate.

**Exhibit 4** summarizes the VMT growth for each analysis year used for the Allegheny CO inventory.

**Exhibit 4: VMT Growth Rates**

Year	January Weekday VMT	Annualized Growth Rate from 2008
1990 (from original maintenance plan)	21,968,249	-----
1999 (from original maintenance plan)	22,928,996	-----
2008 RMS/HPMS	24,176,359	-----
<b>2013</b>	<b>25,727,530</b>	<b>1.25%</b>
<b>2022</b>	<b>28,377,731</b>	<b>1.15%</b>

## Vehicle Population

The MOVES emission model requires input vehicle population (the number of vehicles in the region) to calculate the vehicle start and evaporative emissions. In MOBILE6.2, start and evaporative emissions were related to VMT. The EPA MOVES technical guidance provides several options for developing this data. One option includes the use of state vehicle registration data; however, some further research is needed to determine the accuracy of this data for heavy-duty vehicle types and for application within MOVES. Many large trucks that travel in Pennsylvania may not be registered in the state or county since many of these trucks are based out-of-state or travel farther than 500 miles per trip. In addition, many registered vehicles may not operate on particular days of the year (in this case a January weekday). For

example, registered motor homes, classic cars, and specialized trucks may only operate on certain days or seasons.

For this Allegheny CO inventory, vehicle population numbers were estimated using an alternative approach provided in the MOVES technical guidance. A default national MOVES run was conducted to determine the typical daily miles per vehicle for each MOVES vehicle type (e.g. a typical passenger car travels on average about 35 miles per day). These values were used to convert Allegheny County VMT by vehicle type to an estimate of vehicle population as follows:

- $\text{Vehicle Population}_{\text{By Vehicle Type}} = (\text{VMT}_{\text{By Vehicle Type}} / \text{Avg Daily Miles Per Vehicle}_{\text{By Vehicle Type}})$

**Exhibit 5** summarizes the resulting estimate of vehicle population for each analysis year. A comparison was made to the 2008 Allegheny County vehicle registration data obtained from PennDOT’s Department of Motor Vehicles (DMV) to ensure calculated values are reasonable.

**Exhibit 5: County Vehicle Population Assumptions**

Year	Vehicle Population
2008 Registrations <i>(for Allegheny County from DMV registration data)</i>	851,394
2008 <i>(Calculated from VMT)</i>	810,050
2013 <i>(Calculated from VMT)</i>	856,150
2022 <i>(Calculated from VMT)</i>	916,116

### ***Fleet Age Data***

Vehicle age distribution files are developed for MOVES model runs based on registered vehicles that reflect July 1 summer conditions. These distributions reflect the percentage of vehicles in the fleet up to 30 years old.

For this inventory, 2008 vehicle age distributions (in MOBILE6.2 format) have been compiled for Allegheny County based on data obtained from the PennDOT DMV vehicles registration database. Due to insufficient registration data available for heavy-duty vehicles, as discussed above, only data for light-duty vehicles are used as local inputs. The heavy-duty vehicles use the internal MOBILE6.2 defaults.

Using EXCEL spreadsheet convertors developed by EPA (<http://www.epa.gov/otaq/models/moves/tools.htm>), the MOBILE6.2 formatted age distributions were converted to files compatible with MOVES. The vehicle age distributions by vehicle type are summarized in **Exhibit 6**.

**Exhibit 6: County Vehicle Age Percentages**

Age Yrs	Light Car	Light Truck	Light Commercial Truck	Intercity Bus	Transit Bus	School Bus	Refuse Truck	Single Unit Short Haul Truck	Single Unit Long Haul Truck	Motor home	Combo Short Haul Truck	Combo Long Haul Truck	Motorcycle
0	5.9%	3.1%	3.3%	6.4%	5.4%	6.2%	4.8%	5.8%	8.1%	6.1%	5.4%	7.0%	4.0%
1	7.6%	4.3%	4.8%	6.4%	5.4%	6.2%	4.8%	5.8%	8.1%	6.1%	5.5%	7.0%	8.3%
2	7.1%	4.8%	5.1%	6.4%	5.4%	6.2%	4.8%	5.8%	8.1%	6.1%	5.8%	7.5%	9.7%
3	8.2%	5.7%	5.9%	6.4%	5.4%	6.2%	4.8%	5.8%	8.0%	6.1%	5.7%	7.4%	8.6%
4	8.2%	6.3%	6.3%	5.8%	4.9%	5.6%	4.4%	5.3%	7.4%	5.5%	5.0%	6.5%	6.6%
5	8.3%	6.9%	6.8%	4.9%	4.1%	4.7%	3.7%	4.4%	6.2%	4.6%	3.8%	4.9%	8.8%
6	8.1%	6.4%	6.3%	4.5%	3.8%	4.3%	3.4%	4.1%	5.7%	4.3%	3.5%	4.6%	6.1%
7	6.9%	6.3%	6.1%	4.9%	4.1%	4.8%	3.7%	4.5%	6.2%	4.7%	3.7%	4.8%	5.5%
8	7.1%	7.4%	7.1%	5.6%	4.7%	5.4%	4.2%	5.1%	7.1%	5.4%	5.5%	7.1%	5.3%
9	5.9%	5.8%	5.7%	5.7%	4.8%	5.5%	4.3%	5.1%	7.2%	5.4%	6.6%	8.5%	4.2%
10	4.9%	5.4%	5.2%	4.4%	5.6%	4.4%	3.3%	4.1%	5.7%	3.2%	5.0%	6.5%	3.2%
11	4.3%	5.1%	4.9%	3.6%	5.2%	4.1%	2.7%	3.1%	4.4%	5.0%	4.1%	5.3%	2.5%
12	3.4%	3.6%	3.5%	3.0%	4.9%	3.6%	5.8%	3.4%	2.2%	3.1%	3.5%	5.1%	2.4%
13	3.2%	4.1%	4.0%	3.9%	4.0%	4.6%	6.7%	3.9%	2.2%	3.7%	4.5%	5.1%	2.0%
14	2.5%	4.6%	4.4%	3.1%	3.6%	2.3%	4.2%	3.8%	3.5%	3.6%	3.6%	3.3%	1.6%
15	1.9%	3.3%	3.2%	2.6%	3.0%	2.8%	3.6%	2.8%	2.6%	2.5%	3.0%	2.5%	1.5%
16	1.4%	2.7%	2.6%	1.9%	2.7%	2.3%	1.6%	2.2%	0.6%	2.3%	2.2%	1.5%	1.1%
17	1.1%	2.5%	2.5%	2.2%	2.7%	2.9%	4.3%	2.1%	0.4%	1.7%	2.6%	1.1%	0.9%
18	0.9%	2.0%	2.0%	2.5%	4.0%	3.3%	3.7%	2.5%	2.0%	2.2%	2.9%	1.1%	1.0%
19	0.7%	2.1%	2.0%	2.5%	3.1%	1.9%	2.9%	3.2%	2.1%	2.9%	2.9%	1.1%	0.9%
20	0.5%	2.0%	1.9%	2.4%	2.5%	2.3%	4.0%	2.8%	1.4%	2.6%	2.7%	0.9%	0.8%
21	0.4%	1.2%	1.2%	2.5%	2.3%	2.4%	3.2%	2.3%	0.3%	2.6%	2.9%	0.3%	1.0%
22	0.3%	0.9%	1.0%	2.1%	2.0%	2.1%	4.0%	2.8%	0.1%	1.9%	2.4%	0.3%	1.8%
23	0.2%	0.7%	0.8%	1.9%	1.7%	1.8%	2.1%	2.0%	0.2%	2.1%	2.2%	0.3%	1.5%
24	0.2%	0.6%	0.7%	1.5%	1.3%	1.4%	2.3%	1.1%	0.2%	2.1%	1.7%	0.2%	1.3%
25	0.2%	0.5%	0.5%	0.6%	1.3%	0.5%	0.7%	1.8%	0.0%	1.4%	0.7%	0.0%	1.1%
26	0.1%	0.4%	0.5%	0.5%	0.7%	0.4%	0.7%	0.9%	0.1%	0.8%	0.6%	0.0%	1.0%
27	0.1%	0.3%	0.4%	0.4%	0.3%	0.5%	0.7%	0.9%	0.0%	0.5%	0.5%	0.1%	0.9%
28	0.1%	0.2%	0.3%	0.6%	0.8%	0.5%	0.2%	0.9%	0.0%	0.1%	0.7%	0.0%	0.8%
29	0.1%	0.2%	0.3%	0.3%	0.2%	0.4%	0.2%	0.7%	0.0%	0.5%	0.4%	0.0%	0.7%
30	0.0%	0.7%	0.7%	0.4%	0.1%	0.5%	0.2%	1.0%	0.2%	1.0%	0.5%	0.0%	5.0%

***I/M Parameters***

The inspection maintenance (I/M) program inputs to MOVES are based on the current program that covers Allegheny County. The Commonwealth’s I/M program was upgraded and expanded throughout the state with a phase-in period starting in December 2003 and fully implemented by June 2004. The program test requirements vary by region and include on-board diagnostics (OBD) technology that uses the vehicle’s computer for model years 1996 and newer to download potential engine problems that could affect emissions. The program, named PAOBDII, is implemented in the Philadelphia, Pittsburgh, and

South Central / Lehigh Valley Regions. **Exhibit 7** summarizes the key I/M inputs to the MOVES emission model for Allegheny County.

**Exhibit 7: I/M Parameters**

Test Standards	SourceType	Year	Inspect Freq	Fuel Type	Pol Process	Begin Model Year	End Model Year	Compliance Factor
2500 RPM/Idle	Passenger Car Passenger Truck Light Commercial Truck	1990	Annual	Gasoline Vehicles	HC Running Exh HC Start Exh CO Running Exh CO Start Exh	1981	1988	93.12 87.53 81.95
Unloaded Idle	Passenger Car Passenger Truck Light Commercial Truck	1997-2050	Annual	Gasoline Vehicles	HC Running Exh HC Start Exh CO Running Exh CO Start Exh	1975	1980	93.12 87.53 81.95
2500 RPM/Idle	Passenger Car Passenger Truck Light Commercial Truck	1997-2050	Annual	Gasoline Vehicles	HC Running Exh HC Start Exh CO Running Exh CO Start Exh	1981	1995	93.12 87.53 81.95
Exhaust OBD	Passenger Car Passenger Truck Light Commercial Truck	2004-2050	Annual	Gasoline Vehicles	HC Running Exh HC Start Exh CO Running Exh CO Start Exh NOx Running Exh NOx Start Exh	1996	2003-2049 (Cal Yr - 1)	93.12 87.53 81.95
Evp Cap	Passenger Car Passenger Truck Light Commercial Truck	1997-2003	Annual	Gasoline Vehicles	HC Evap Fuel Vent HC Evap Fuel Leak	1975	1996-2002 (Cal Yr - 1)	93.12 87.53 81.95
Evp Cap	Passenger Car Passenger Truck Light Commercial Truck	2004-2050	Annual	Gasoline Vehicles	HC Evap Fuel Vent HC Evap Fuel Leak	1975	1995	93.12 87.53 81.95
Evp Cap & OBD	Passenger Car Passenger Truck Light Commercial Truck	2004-2050	Annual	Gasoline Vehicles	HC Evap Fuel Vent HC Evap Fuel Leak	1996	2003-2049 (Cal Yr - 1)	93.12 87.53 81.95

MOVES uses the compliance factor input to account for I/M program compliance rates, waiver rates, and adjustments needed to account for the fraction of vehicles within each source type covered by the I/M program. Table A.3 from EPA's MOVES technical guidance was used to develop the compliance rates.

## Fuel Parameters

The default MOVES fuel formulations were discussed with DEP and a revised fuel formulation was developed for Allegheny County. **Exhibit 8** provides a summary of key fuel characteristics for Allegheny County for all months. During the summer low-RVP season, ethanol gasoline is not assumed to be sold in the county. For the remaining months, fuel with a 6.78% ethanol is sold throughout the county. For this inventory, only the January (month =1) parameters are used for the analyses.

**Exhibit 8: Fuel Parameters**

Month	MOVE Fuel Subtype	Market Share	RVP	Sulfur Level	Ethanol Volume	MTBE / ETBE / TAME Volume
1,2,12	Gasohol (E8)	100%	14.500	25.707	6.78	0
3,4,10,11	Gasohol (E8)	100%	11.929	24.366	6.78	0
5,6,7,8,9	Conventional Gasoline	100%	7.800	22.579	0	0

## Weather Data

Historical weather information has been purchased by PennDOT from WeatherBank, Inc. (<http://www.weatherbank.com/>). WeatherBank compiles detailed temperature data from airports and other sources. Allegheny County hourly temperature (in degrees Fahrenheit) and relative humidity (in percent – 0 to 100 scale) inputs from WeatherBank were used for input to the MOVES model. The data for January represents the 10-year average of hourly temperatures and humidity. The data was originally prepared for input to MOBILE6.2 as daily average minimum and maximum temperatures and absolute humidity. The data was converted to the hourly MOVES formats using EPA’s EXCEL temperature convertor obtained from EPA’s website (<http://www.epa.gov/otaq/models/moves/tools.htm>). **Exhibit 9** summarizes the data used for the MOVES January runs.

**Exhibit 9: January Temperature and Humidity Parameters**

Hour	1	2	3	4	5	6	7	8	9	10	11	12
Temperature	29.24	28.82	28.50	28.26	28.08	27.88	27.70	27.85	28.74	30.16	31.61	32.85
Humidity	75.08	76.36	77.39	78.14	78.72	79.39	79.97	79.49	76.64	72.32	68.19	64.86
Hour	13	14	15	16	17	18	19	20	21	22	23	24
Temperature	33.94	34.53	34.74	34.80	34.65	34.24	33.53	32.61	31.69	30.90	30.33	29.77
Humidity	62.07	60.62	60.12	59.98	60.33	61.34	63.11	65.48	67.94	70.18	71.80	73.46

## ***Vehicle Technology***

The federal vehicle emissions control and fuel programs are incorporated into the MOVES software. The programs include:

- The Federal Motor Vehicle Control Program (FMVCP) including the National Low Emission Vehicle Program (NLEV) and federal Tier II / Low Sulfur Fuel Program;
- Emissions standards for medium and heavy duty vehicles in 2002, 2004, 2007, and 2011;
- Stage II and Onboard Refueling Vapor Recovery (ORVR).

*Note: Pennsylvania considers emissions from refueling operations an area source category. While MOVES can be used to calculate emissions factors for that source category, refueling emissions are not included in highway vehicle emissions estimations.*

Several state-specific vehicle technology programs are also reflected in the MOVES modeling for Allegheny County.

Within the Ozone Transportation Commission (OTC) area, which includes Pennsylvania, the NLEV program began in 1999. The default emissions database that is included with MOVES includes the effects of the nationwide NLEV standards beginning with the 2001 model year.

The Pennsylvania Clean Vehicles (PCV) Program, (*PaCode*, Title 25, Chapter 126) adopted in 1998, incorporated the California Low Emission Vehicle Program (CA LEV II) by reference although it allowed automakers to comply with the NLEV program as an alternative to this Pennsylvania program until MY 2006. Beginning with MY 2008, “new” passenger cars and light-duty trucks with a gross vehicle weight rating (GVWR) of 8,500 pounds or less that are sold or leased and titled in Pennsylvania must be certified by the California Air Resources Board (CARB) or be certified for sale in all 50 states. The impacts of this program are modeled for all analysis years beyond 2008. MOVES does not include the impacts of the PCV in the default emissions database.

To address the OTC NLEV early phase-in and the effects of the PCV program within MOVES, two separate emission databases reflecting each of the programs have been provided by EPA and documented in the report *Instructions for Using LEV and NLEV Inputs to MOVES, EPA-420-B-10-003, January 2010*. The early NLEV database includes 1999 and 2000 model year rates. This file was used directly as input to the MOVES software. For the PCV program, the MOVES CALEV file that includes updated rates from 1994-2050 was modified to only use the rates for model years 2008 beyond as consistent with the PCV program start date.

## EMISSION TABLES

**Exhibit 10** and **Exhibit 11** provide the MOVES CO emissions results for Allegheny County. The MOVES model estimates emissions for the 5 roadway types used by the model. The off-roadway category includes the start emissions that cannot be directly attributable to a roadway link.

**Exhibit 10: 2013 Allegheny County CO Emissions**  
(January Weekday)

MOVES Road Type	Emission Components	VMT	Average Speed (mph)	CO Emissions (kg/day)	CO Emissions (tons/day)
Rural Restricted Access (Freeway)	Running Exhaust	0	0.0	0	0.00
Rural Unrestricted Access (Non-Freeway)		376,491	48.6	1,461	1.61
Urban Restricted Access (Freeway)		8,518,382	56.8	43,218	47.64
Urban Unrestricted Access (Non-Freeway)		16,832,658	28.0	70,779	78.02
Off-Roadway	Start Exhaust / Extended Idle	-----	-----	242,454	267.26
<b>TOTAL</b>		<b>25,727,530</b>	<b>33.9</b>	<b>357,912</b>	<b>394.53</b>

**Exhibit 11: 2022 Allegheny County CO Emissions**  
(January Weekday)

MOVES Road Type	Emission Components	VMT	Average Speed (mph)	CO Emissions (kg/day)	CO Emissions (tons/day)
Rural Restricted Access (Freeway)	Running Exhaust	0	0.0	0	0.00
Rural Unrestricted Access (Non-Freeway)		370,158	48.7	1,043	1.15
Urban Restricted Access (Freeway)		10,442,966	50.1	41,204	45.42
Urban Unrestricted Access (Non-Freeway)		17,564,607	27.4	51,474	56.74
Off-Roadway	Start Exhaust / Extended Idle	-----	-----	211,338	232.96
<b>TOTAL</b>		<b>28,377,731</b>	<b>33.1</b>	<b>305,059</b>	<b>336.27</b>

# MOVES INPUT/OUTPUT SPECIFICATION FILES

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## **MOVES Importer XML Script File – 2013**

(2022 file same except for year)

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  <day id="2" />
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## MOVES Run MRS Script File – 2013 (2022 file same except for year)

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    <movesvehicletype selected="false"/>
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**MOVES Output Summary of Tables Used For Run**  
(2013 and 2022 files are same except for year)

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1	ALLE_2022_CO_JAN_mi	County	6/23/2010	2
1	ALLE_2022_CO_JAN_mi	DayVMTFraction	6/23/2010	3
1	ALLE_2022_CO_JAN_mi	FuelFormulation	6/23/2010	4
1	ALLE_2022_CO_JAN_mi	FuelSupply	6/23/2010	5
1	ALLE_2022_CO_JAN_mi	HourVMTFraction	6/23/2010	6
1	ALLE_2022_CO_JAN_mi	HPMSVtypeYear	6/23/2010	7
1	ALLE_2022_CO_JAN_mi	IMCoverage	6/23/2010	8
1	ALLE_2022_CO_JAN_mi	MonthVMTFraction	6/23/2010	9
1	ALLE_2022_CO_JAN_mi	RoadType	6/23/2010	10
1	ALLE_2022_CO_JAN_mi	RoadTypeDistribution	6/23/2010	11
1	ALLE_2022_CO_JAN_mi	SourceTypeAgeDistribution	6/23/2010	12
1	ALLE_2022_CO_JAN_mi	SourceTypeYear	6/23/2010	13
1	ALLE_2022_CO_JAN_mi	State	6/23/2010	14
1	ALLE_2022_CO_JAN_mi	Year	6/23/2010	15
1	ALLE_2022_CO_JAN_mi	Zone	6/23/2010	16
1	ALLE_2022_CO_JAN_mi	ZoneMonthHour	6/23/2010	17
1	ALLE_2022_CO_JAN_mi	ZoneRoadType	6/23/2010	18
1	calevii08	EmissionRateByAge	6/22/2010	19
1	early_NLEV	EmissionRateByAge	1/7/2010	20
1	movesdb20100515	AgeCategory	4/21/2009	21
1	movesdb20100515	AgeGroup	4/21/2009	22
1	movesdb20100515	AvgSpeedBin	4/21/2009	23
1	movesdb20100515	BaseFuel	8/12/2009	24
1	movesdb20100515	ComplexModelParameterName	10/28/2009	25
1	movesdb20100515	ComplexModelParameters	8/12/2009	26
1	movesdb20100515	CountyYear	4/21/2009	27
1	movesdb20100515	CrankcaseEmissionRatio	5/18/2010	28
1	movesdb20100515	DataSource	5/18/2010	29
1	movesdb20100515	DayOfAnyWeek	4/21/2009	30
1	movesdb20100515	DriveSchedule	12/16/2009	31
1	movesdb20100515	DriveScheduleAssoc	12/16/2009	32
1	movesdb20100515	DriveScheduleSecond	12/16/2009	33
1	movesdb20100515	EmissionProcess	12/15/2009	34
1	movesdb20100515	EmissionRate	11/25/2009	35
1	movesdb20100515	EmissionRateByAge	5/18/2010	36
1	movesdb20100515	EngineSize	4/21/2009	37
1	movesdb20100515	EngineTech	4/21/2009	38
1	movesdb20100515	ETOHBin	5/18/2010	39
1	movesdb20100515	FuelEngFraction	12/15/2009	40
1	movesdb20100515	FuelEngTechAssoc	12/8/2009	41
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1	movesdb20100515	FuelSupply	11/25/2009	48
1	movesdb20100515	FuelSupplyYear	4/21/2009	49
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1	movesdb20100515	FullACAdjustment	10/28/2009	51

1	movesdb20100515	generalFuelRatioExpression	5/18/2010	52
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1	movesdb20100515	HourOfAnyDay	4/21/2009	54
1	movesdb20100515	HPMSVtype	4/21/2009	55
1	movesdb20100515	HPMSVtypeYear	10/28/2009	56
1	movesdb20100515	IMFactor	10/30/2009	57
1	movesdb20100515	IMInspectFreq	9/28/2009	58
1	movesdb20100515	IMModelYearGroup	4/21/2009	59
1	movesdb20100515	IMTestStandards	12/8/2009	60
1	movesdb20100515	Link	10/28/2009	61
1	movesdb20100515	M6SulfurCoeff	8/12/2009	62
1	movesdb20100515	MeanFuelParameters	10/28/2009	63
1	movesdb20100515	ModelYear	4/21/2009	64
1	movesdb20100515	ModelYearGroup	8/12/2009	65
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1	movesdb20100515	MonthGroupOfAnyYear	4/21/2009	67
1	movesdb20100515	MonthofAnyYear	4/21/2009	68
1	movesdb20100515	OperatingMode	4/21/2009	69
1	movesdb20100515	OpModePolProcAssoc	5/18/2010	70
1	movesdb20100515	OxyThreshName	8/12/2009	71
1	movesdb20100515	PollutantDisplayGroup	10/28/2009	72
1	movesdb20100515	Pollutant	10/28/2009	73
1	movesdb20100515	PollutantProcessAssoc	5/18/2010	74
1	movesdb20100515	PollutantProcessModelYear	5/18/2010	75
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1	movesdb20100515	RegulatoryClass	4/21/2009	77
1	movesdb20100515	RegClassFraction	11/5/2009	78
1	movesdb20100515	RetrofitInputAssociations	4/21/2009	79
1	movesdb20100515	RoadOpmodeDistribution	4/21/2009	80
1	movesdb20100515	RoadType	4/21/2009	81
1	movesdb20100515	SampleVehicleDay	10/30/2009	82
1	movesdb20100515	SampleVehicleTrip	10/30/2009	83
1	movesdb20100515	SampleVehiclePopulation	11/5/2009	84
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1	movesdb20100515	SCCProcess	4/21/2009	86
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1	movesdb20100515	SCCRoadTypeDistribution	4/21/2009	88
1	movesdb20100515	SCCVType	4/21/2009	89
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1	movesdb20100515	SourceTypeAgeDistribution	10/28/2009	93
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1	movesdb20100515	SourceTypeModelYear	4/21/2009	95
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1	movesdb20100515	SulfurModelName	8/12/2009	103
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1	movesdb20100515	TankTemperatureRise	5/18/2010	105
1	movesdb20100515	TankVaporGenCoeffs	4/21/2009	106
1	movesdb20100515	TemperatureAdjustment	11/25/2009	107

1	movesdb20100515	StartTempAdjustment	12/2/2009	108
1	movesdb20100515	WeightClass	4/21/2009	109
1	movesdb20100515	Year	11/25/2009	110

## RESOURCES

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*Consolidated Emissions Reporting*, Federal Register, June 10, 2002

*2008 Pennsylvania Traffic Data*, PennDOT Bureau of Planning and Research, 2008.

*User's Guide to MOBILE6.1 and MOBILE6.2*, Mobile Source Emission Factor Model, EPA420-R-02-028, dated August 2003.

*Technical Guidance on the Use of MOBILE6 for Emission Inventory Preparation*, US EPA Office of Transportation and Air Quality, August 2004.

*Policy Guidance on the Use of MOBILE6 for Emission Inventory Preparation*, US EPA Office of Air and Radiation, January 18, 2002.

*Technical Guidance on the Use of MOBILE6.2 for Emission Inventory Preparation*, US EPA Office of Air and Radiation, and Office of Transportation and Air Quality, August 2004.

*Statistical Evaluation of Projected Traffic Growth, Traffic Growth Forecasting System: Final Report*, Michael Baker Jr., Inc., March 14, 2005.

*Motor Vehicle Emission Simulator (MOVES) 2010 User Guide*, EPA-420-B-09-041, December 2009.

*Policy Guidance on the Use of MOVES2010 for State Implementation Plan Development, Transportation Conformity, and Other Purposes*, EPA-420-B-09-046, December 2009

*Technical Guidance on the Use of MOVES2010 for Emission Inventory Preparation in State Implementation Plans and Transportation Conformity*, EPA-420-B-10-023, April 2010

*Instructions for Using LEV and NLEV Inputs to MOVES*, EPA-420-B-10-003, January 2010

## 2. Technical Support Document

### Summary of Change

Allegheny County Health Department (ACHD) submitted a State Implementation Plan (SIP) revision for CO under the limited maintenance plan option. In that analysis, each redesignation criterion in Section 107(d)(3)(E) of the Clean Air Act (CAA or the Act) is listed, along with a short description of the guidance provided by EPA in relation to that criterion, and the justification that supports the request for redesignation to attainment. Significantly, since the area is “not classified,” and has a design value below 7.65 ppm, the County used EPA’s “Limited Maintenance Plan Option” in addressing Section 107(d)(3)(E)(iv). Additionally, because the area is “not classified,” the SIP submittal requirements of the CAA, Section 187, do not apply. The CBD was designated CO attainment status with an effective date of January 13, 2003.

ACHD is submitting a SIP revision to the EPA to revise the Carbon Monoxide Limited Maintenance Plan in accordance with Section 107(d) of the CAA to ensure maintenance of the NAAQS in the CBD of Allegheny County for a second ten-year period through year 2022. This ten-year plan maintains existing controls and contingency provisions, and succeeds the previous plan approved by the EPA in 2003. CO levels are expected to remain well below the NAAQS for the ten-year period ending 2022.

The revision to the Carbon Monoxide Limited Maintenance Plan constitutes a change to the Allegheny County portion of the Pennsylvania State Implementation Plan.

### **3. Documentation of Public Hearing and Certifications**

Notice of Public Hearing

Transmittals of hearing notice to EPA & PA DEP

Proof of publication of notice of hearing

Certification of hearing

Summary of Comments and responses

Certification of approval and adoption

NOTICE OF PUBLIC HEARING  
FOR PROPOSED REVISION TO  
ALLEGHENY COUNTY'S PORTION OF THE  
PENNSYLVANIA STATE IMPLEMENTATION PLAN  
FOR CARBON MONOXIDE

The Allegheny County Board of Health will hold a public hearing on **Friday, October 22, 2010**, at **10:00 AM**, Building #7 First Floor Conference Room, Clack Health Center, 301 39th Street, Pittsburgh, PA 15201 to take testimony on the following proposed modifications to Allegheny County's portion of the Pennsylvania State Implementation Plan:

Revision of the Carbon Monoxide Limited Maintenance Plan.

**The proposed changes to the Carbon Monoxide Limited Maintenance Plan will be incorporated as a revision to Allegheny County's portion of the Pennsylvania State Implementation Plan.**

Copies of the proposed revision may be examined beginning Wednesday, September 22, 2010, at the Allegheny County Law Library, Room 921 City-County Building, Grant Street, Pittsburgh, PA 15219, from 8:30 AM to 5:00 PM; at the Allegheny County Health Department Library, Building 7, Clack Health Center, from 8:30 AM until 3:30 PM Monday thru Friday; on the Allegheny County Health Department web site: [www.achd.net](http://www.achd.net); or by calling 412-578-8120 to request a mailed printed copy.

Oral testimony must be pre-scheduled by calling 412-578-8008 no less than 24 hours in advance of the public hearing. Speakers will be limited to five minutes and should bring a written copy of their comments.

The Board will accept written testimony beginning **Wednesday, September 22, 2010**, and concluding **Friday, October 22, 2010**, by mail to:

Board of Health  
3333 Forbes Avenue  
Pittsburgh, PA 15213  
By email to [BOH@achd.net](mailto:BOH@achd.net)  
By Fax to 412-578-8325

# Allegheny County Health Department

## DIRECTOR

Bruce W. Dixon, M.D.



## AIR QUALITY PROGRAM

301 39<sup>th</sup> Street – Bldg. #7  
Pittsburgh, PA 15201-1891

Phone: (412) 578-8115  
Fax: (412) 578-8144

## BOARD OF HEALTH

Paul M. King, Esq., Q.E.P.  
Chair

Lee Harrison, M.D.  
Vice Chair

Al M. Ahmed, P.E.  
Rev. Ricky V. Burgess  
Donald S. Burke, M.D.  
Hon. Joan Cleary, R.N.  
James M. Flynn, Jr.  
Lidia C. Turzai, M.D.  
William Youngblood

September 10, 2010

Ms. Joyce Epps, Director  
Department of Environmental Protection  
Bureau of Air Quality  
Rachel Carson Building  
400 Market Street, P.O. Box 8468  
Harrisburg, PA 17105-8468

Dear Ms. Epps:

Enclosed is a Notice of Public Hearing scheduled to occur on October 22, 2010, regarding proposed revisions to Allegheny County's portion of the Pennsylvania State Implementation Plan (SIP), for Carbon Monoxide, pertaining to the Carbon Monoxide Limited Maintenance Plan.

The SIP revision is being tracked as our Revision Tracking Number 69.

Copies of this notice have also been sent to your Region V Pittsburgh Office for review.

Your comments are welcome.

Sincerely,

James Thompson  
Manager

cc: Arleen Shulman

Enclosures

- Proposed SIP Revision 69
- Public Hearing Notice

# Allegheny County Health Department

## DIRECTOR

Bruce W. Dixon, M.D.



Ms. Diana Esher, Director  
Air Protection Division  
Region III (3AP00)  
U.S. Environmental Protection Agency  
1680 Arch Street  
Philadelphia, PA 19103-2029

## AIR QUALITY PROGRAM

301 39<sup>th</sup> Street – Bldg. #7  
Pittsburgh, PA 15201-1891

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September 10, 2010

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Donald S. Burke, M.D.  
Hon. Joan Cleary, R.N.  
James M. Flynn, Jr.  
Lidia C. Turzai, M.D.  
William Youngblood

Dear Ms. Esher:

Enclosed is a Notice of Public Hearing scheduled to occur on October 22, 2010, regarding proposed revisions to Allegheny County's portion of the Pennsylvania State Implementation Plan (SIP), for Carbon Monoxide, pertaining to the Carbon Monoxide Limited Maintenance Plan.

The SIP revision is being tracked as our Revision Tracking Number 69.

Your comments are welcome.

Sincerely,

James Thompson  
Manager

## Enclosures

- Proposed SIP Revision 69
- Public Hearing Notice

# Allegheny County Health Department

## DIRECTOR

Bruce W. Dixon, M.D.



Mr. Mark Wayner  
Regional Air Quality Manager  
Department of Environmental Protection  
Southwest Regional Office – Region V  
400 Waterfront Drive  
Pittsburgh, PA 15222-4745

## AIR QUALITY PROGRAM

301 39<sup>th</sup> Street – Bldg. #7  
Pittsburgh, PA 15201-1891

Phone: (412) 578-8115  
Fax: (412) 578-8144

September 10, 2010

## BOARD OF HEALTH

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Donald S. Burke, M.D.  
Hon. Joan Cleary, R.N.  
James M. Flynn, Jr.  
Lidia C. Turzai, M.D.  
William Youngblood

Dear Mr. Wayner:

Enclosed is a Notice of Public Hearing scheduled to occur on October 22, 2010, regarding proposed revisions to Allegheny County's portion of the Pennsylvania State Implementation Plan (SIP), for Carbon Monoxide, pertaining to the Carbon Monoxide Limited Maintenance Plan.

The SIP revision is being tracked as our Revision Tracking Number 69.

Copies of this submittal have been sent to Ms. Joyce Epps in Harrisburg for review.

Your comments are welcome.

Sincerely,

James Thompson  
Manager

cc: Steve Hepler

Enclosures

- Proposed SIP Revision 69
- Public Hearing Notice

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25-093008

No. \_\_\_\_\_ Term, \_\_\_\_\_

### Proof of Publication of Notice in Pittsburgh Post-Gazette

Under Act No 587, Approved May 16, 1929, PL 1784, as last amended by Act No 409 of September 29, 1951

Commonwealth of Pennsylvania, County of Allegheny, ss C. Mohamed, being duly sworn, deposes and says that the Pittsburgh Post-Gazette, a newspaper of general circulation published in the City of Pittsburgh, County and Commonwealth aforesaid, was established in 1993 by the merging of the Pittsburgh Post-Gazette and Sun-Telegraph and The Pittsburgh Press and the Pittsburgh Post-Gazette and Sun-Telegraph was established in 1960 and the Pittsburgh Post-Gazette was established in 1927 by the merging of the Pittsburgh Gazette established in 1786 and the Pittsburgh Post, established in 1842, since which date the said Pittsburgh Post-Gazette has been regularly issued in said County and that a copy of said printed notice or publication is attached hereto exactly as the same was printed and published in the regular editions and issues of the said Pittsburgh Post-Gazette a newspaper of general circulation on the following dates, viz:

**18 of September, 2010**

Affiant further deposes that he/she is an agent for the PG Publishing Company, a corporation and publisher of the Pittsburgh Post-Gazette, that, as such agent, affiant is duly authorized to verify the foregoing statement under oath, that affiant is not interested in the subject matter of the afore said notice or publication, and that all allegations in the foregoing statement as to time, place and character of publication are true.

#### COPY OF NOTICE OR PUBLICATION

**NOTICE OF PUBLIC HEARING FOR PROPOSED REVISION TO ALLEGHENY COUNTY'S PORTION OF THE PENNSYLVANIA STATE IMPLEMENTATION PLAN FOR CARBON MONOXIDE**

The Allegheny County Board of Health will hold a public hearing on Friday, October 22, 2010, at 10:00 AM, Building #7 First Floor Conference Room, Clack Health Center, 301 39th Street, Pittsburgh, PA 15201 to take testimony on the following proposed modifications to Allegheny County's portion of the Pennsylvania State Implementation Plan:

Revision of the Carbon Monoxide Limited Maintenance Plan.

The proposed changes to the Carbon Monoxide Limited Maintenance Plan will be incorporated as a revision to Allegheny County's portion of the Pennsylvania State Implementation Plan.

Copies of the proposed revision may be examined beginning Wednesday, September 22, 2010, at the Allegheny County Law Library, Room 921 City-County Building, Grant Street, Pittsburgh, PA 15219, from 8:30 AM to 5:00 PM; at the Allegheny County Health Department Library, Building 7, Clack Health Center, from 8:30 AM until 3:30 PM Monday thru Friday, on the Allegheny County Health Department web site: [www.achd.net](http://www.achd.net), or by calling 412-578-8008 to request a mailed printed copy.

Oral testimony must be pre-scheduled by calling 412-578-8008 no less than 24 hours in advance of the public hearing. Speakers will be limited to five minutes and should bring a written copy of their comments.

The Board will accept written testimony beginning Wednesday, September 22, 2010, and concluding Friday, October 22, 2010, by mail to:

Board of Health  
3333 Forbes Avenue  
Pittsburgh, PA 15213  
By email to [BOH@achd.net](mailto:BOH@achd.net)

C Mohamed  
PG Publishing Company  
Sworn to and subscribed before me this day of:  
September 20, 2010

Melanie L. Goodwin

**STATEMENT OF ADVERTISING COSTS**  
ALCTY HEALTH-LEGAL-FORBES AVE  
JANET NORKUS  
3333 FORBES AVE  
PITTSBURGH PA 15213

To PG Publishing Company

Total ..... \$92.40

#### Publisher's Receipt for Advertising Costs

PG PUBLISHING COMPANY, publisher of the Pittsburgh Post-Gazette, a newspaper of general circulation, hereby acknowledges the receipt of the aforesaid advertising and publication costs and certifies that the same have been fully paid.

PG Publishing Company, a Corporation, Publisher of Pittsburgh Post-Gazette, a Newspaper of General Circulation

By \_\_\_\_\_

I hereby certify that the original Proof of Publication and receipt for the Advertising costs in the subject matter of said notice.

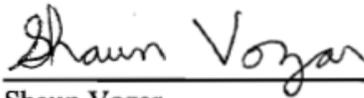
\_\_\_\_\_  
Attorney For

Revision 69

SIP Revision for the 2011 Carbon Monoxide Limited Maintenance Plan

Certification of Hearing

Shaun Vozar deposes and says that he is an Air Pollution Control Engineer II of the Air Quality Program of the Allegheny County Health Department and hereby certifies that a Public Hearing was held on October 22, 2010 on the proposed amendment to the County's portion of the Pennsylvania State Implementation Plan that revises the Carbon Monoxide Limited Maintenance Plan; that the opportunity for written comments was given during the period September 22, 2010 through October 22, 2010 in accordance with the requirements of 40 CFR 51.102; that notice of such hearing was given by publication in a newspaper of general circulation on September 18, 2010; and to the best of his knowledge, belief and understanding, such proceedings were in full compliance with all applicable State and Federal laws, regulations, and other requirements.



\_\_\_\_\_  
Shaun Vozar,  
Air Pollution Control Engineer II  
Air Quality Program  
Allegheny County Health Department

10/25/2010

\_\_\_\_\_  
Date

**Comment and Response Document for the Proposed SIP Revision 69  
SIP Amendment for the Carbon Monoxide Limited Maintenance Plan  
October 22, 2010 Public Hearing**

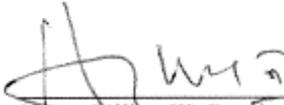
**1. Comment:** ACHD should include the supporting documentation for the MOVES modeling with the CO Limited Maintenance Plan.

**Commenter:** Maria Pino

**Response:** ACHD will add the modeling documentation as an Appendix for the MOVES model provided by Michael Baker, Jr., Incorporated.

**CERTIFICATION of APPROVAL and ADOPTION**

To the best of my knowledge, information, and belief, I the undersigned hereby certify that the revision to the Pennsylvania State Implementation Plan with regard to the 2011 Carbon Monoxide Limited Maintenance Plan, adopted by the Allegheny County Board of Health on January 12, 2011, and effective January 22, 2011, as a revision to the County's Portion of the Pennsylvania State Implementation Plan for the Attainment and Maintenance of the National Ambient Air Quality Standards, was duly and properly enacted as prescribed by the Local Health Administration Law and the Second Class County Code, and as such, are fully and legally enforceable by the Allegheny County Health Department and the County of Allegheny as provided for by the within authority.

  
Henry Miller, III, Esquire  
Solicitor  
Allegheny County Health Department

COMMONWEALTH OF PENNSYLVANIA)  
COUNTY OF ALLEGHENY ) S.S. \_\_\_\_\_

On the 1<sup>st</sup> day of June, 2011,  
Henry Miller, III personally appeared before me, the undersigned authority, satisfactorily proven to me to be the person whose name appears above, and did in my presence execute the above certification for the purposes contained therein.

WHEREFORE, I have hereunto set my hand and official seal the 1<sup>st</sup> day of June, 2011.

  
NOTARY PUBLIC

