

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL
CONTROL
DIVISION OF AIR AND WASTE MANAGEMENT
PUBLIC NOTICE**

**Delaware State Implementation Plan for Attainment of the 8-Hour Ozone National Ambient Air Quality
Standard, Revision for Establishment of 2008 and 2009 Mobile Source Emission Budgets**

Secretary's Order No. 2007-A-0013

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") under 29 **Del.C.** §§8001 *et seq.*, the following findings, reasons and conclusions are entered as an Order of the Secretary in the above-referenced matter.

The Department is delegated certain responsibilities by the United States Environmental Protection Agency ("EPA") under its authority vested in the federal Clean Air Act, as amended, 42 *U.S.C.* §§7401 *et seq.* ("CAA"). EPA delegated to the Department to submit Delaware's State Implementation Plan ("SIP"), which the Department prepares, and periodically revises in order to determine Delaware's compliance with the CAA and its regulations. EPA reviews and approves the final Delaware SIP and its revisions.

EPA requires that a public hearing be held before any approval of a SIP revision. On February 22, 2007, the Department held a duly noticed public hearing on the proposed SIP revision, and Phil Wheeler of the Department's Division of Air and Waste Management, Air Quality Management Section developed the record for the proposed revision of the SIP. The proposed SIP revision assigns on-road mobile emissions budgets for each of Delaware's counties as part of the EPA designated Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE moderate non-attainment area for the 8 hour ozone National Ambient Air Quality Standard ("NAAQS") as set forth in Section 176 of the CAA and EPA's regulations at 40 C.F.R. Sections 51 and 93. The Department used the EPA mobile emissions computer models, "Mobile 6.2" and "Peninsula Demand Model" to calculate future vehicle miles traveled in 2008 and 2009. The models also calculate the type of highways and roads traveled based upon the eleven different federal highway classifications. The Department calculated the projection emissions of volatile organic compounds ("VOCs") and nitrogen oxide ("NOx") based upon EPA vehicle type. The Department relied upon a travel demand model used by the Delaware Department of Transportation that included numerous data inputs, including vehicular travel patterns, vehicle ownership, and the locations of the population and employers. The result was projected VOCs and NOx emissions from the mobile sources for each county for 2008 and 2009.

There were no public comments and the Department's presiding hearing officer, Robert P. Haynes, recommended approval of the proposed revised SIP, as set forth in the February 1, 2007, *Delaware Register of Regulations*. I agree that the proposed revision should be approved as the Department's revision of the SIP.

In conclusion, the following findings and conclusions are entered:

1. The Department, acting through this Order of the Secretary hereby approves the SIP revision, as published as a proposed revision in the February 1, 2007 *Delaware Register of Regulations*.
2. The Department shall have this Order published in the *Delaware Register of Regulations* and in newspapers in the same manner as the notice of the proposed revision.

John A. Hughes, Secretary

**Delaware State Implementation Plan for Attainment of the 8-Hour Ozone National Ambient Air Quality
Standard, Revision for Establishment of 2008 and 2009 Mobile Source Emission Budgets**

This document assigns the on-road mobile source emissions budgets for each county in Delaware as part of the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE moderate non-attainment area for the 8 hour ozone National Ambient Air Quality Standard (NAAQ). S Section 176 of the Clean Air Act (42 USC 7506) and Title 40 Parts 51 and 93 of the Code of Federal Regulations are the basis for the authority to establish mobile emission budgets in the Delaware State Implementation Plan (SIP) to attain the ozone standard. The on-road mobile source emissions budgets will be made a part of the State Implementation Plan to attain the 8 hour ozone standard by the year 2009 and to reach further reasonable progress towards attaining the standard by 2008. Therefore, the tables

below will assign budgets for each year and for each county. The mobile source emissions are projected for these years using the USEPA mobile emission model, "Mobile 6.2" for calculating emission factors and the "Peninsula Travel Demand Model" for calculating future vehicle miles traveled (VMT).

Mobile 6.2 calculates emission factors for each USEPA vehicle type traveling on designated federal highway classifications road types in Delaware. Depending on the county, Delaware has up to 11 different federal highway classifications for its roads. There are two pollutants that are calculated using the mobile computer model. Volatile organic compounds (VOC) and nitrogen oxide (NOx) emission factors are generated from the Mobile 6.2 computer model. These pollutants are modeled because they are the precursors to form ground level ozone. A sample emission factor output for New Castle County for nitrogen oxides is listed below, for the projection year of 2009.

New Castle County
 Projected 2009 Mobile Emission Factors Nitrogen Oxides (NOx) Grams/Mile
USEPA Vehicle Type*

| Federal Highway Class. | LDGV | LDGT 1-2 | LDGT 3-4 | HDGV | LDDV | LDDT | HDDV | MC |
|-----------------------------------|------|-------------|-------------|------|------|------|------|------|
| Other Principal Arterial-Rural | 0.51 | 0.37 | 0.42 | 0.38 | 0.19 | 0.23 | 0.22 | 3.35 |
| Minor Arterial-Rural | 0.54 | 0.39 | 0.44 | 0.42 | 0.20 | 0.25 | 0.25 | 2.75 |
| Major Collector-Rural | 0.55 | 0.39 | 0.45 | 0.44 | 0.21 | 0.26 | 0.27 | 2.79 |
| Minor Collector-Rural | 0.57 | 0.41 | 0.47 | 0.48 | 0.22 | 0.28 | 0.30 | 2.90 |
| Local-Rural | 0.83 | 0.60 | 0.70 | 1.08 | 0.37 | 0.51 | 0.66 | 4.21 |
| Interstate-Urban | 0.52 | 0.38 | 0.43 | 0.39 | 0.19 | 0.23 | 0.23 | 3.19 |
| Other Freeway & Expressways-Urban | 0.51 | 0.38 | 0.42 | 0.39 | 0.19 | 0.23 | 0.23 | 3.41 |
| Other Principal Arterial-Urban | 0.55 | 0.39 | 0.45 | 0.44 | 0.21 | 0.26 | 0.27 | 2.79 |
| Minor | 0.57 | 0.41 | 0.47 | 0.48 | 0.22 | 0.28 | 0.31 | 2.90 |
| Collector-Urban | 0.57 | 0.41 | 0.47 | 0.49 | 0.22 | 0.28 | 0.31 | 2.91 |
| Local | 0.82 | 0.59 | 0.69 | 1.08 | 0.37 | 0.51 | 0.66 | 4.21 |

*Description of vehicle types is at the end of this document

A travel demand model for the State is maintained by the Delaware Department of Transportation. The model applies a variety of data regarding roadway network conditions, vehicular travel patterns, automobile ownership, and the location of population and employment sites. The model follows the "traditional four-step process" of trip generation, distribution, mode split, and assignment that is commonly used throughout the transportation planning industry. A similar table as above is generated for VMT according to USEPA vehicle type and federal highway classifications. The two matrices are incorporated to calculate tons per-day emissions for each pollutant.

There are numerous input criteria that go into the mobile model that affect the calculations. The major inputs are the vehicle emission control programs and clean fuel standards that are currently used or will be used for controlling and reducing vehicle emissions. They include: National Low Emission Vehicle Program and Tier 2 Motor Vehicle Controls (light duty vehicles), reformulated gas program, low sulfur gasoline program, ultra-low sulfur diesel fuel program, heavy duty engine control program beginning in 2007 reducing particulate matter and in 2010 reducing nitrogen oxides to their lowest levels. The State also has since 1983 inspected vehicles for tailpipe emissions. Currently as part of the vehicle emission inspection a vehicle on-board diagnostic system is checked for any diagnostic trouble codes which if present requires the vehicle to be repaired.

The following tables assign the on-road mobile emission budgets for milestone years of 2008 and 2009 for each county in Delaware.

2008 On-road Vehicle Mobile Emission Budgets for Delaware
(Emission in tons per day, VMT in miles per day)

| Pollutant | Kent | New Castle | Sussex | DE Total |
|------------------|-------------|-------------------|---------------|-----------------|
| VOC | 4.14 | 10.61 | 7.09 | 21.84 |
| NOX | 9.68 | 21.35 | 12.86 | 43.89 |
| VMT | 5,520,573 | 16,917,040 | 8,450,950 | 30,888,563 |

2009 On-road Vehicle Mobile Emission Budgets for Delaware
(Emission in tons per day, VMT in miles per day)

| Pollutant | Kent | New Castle | Sussex | DE Total |
|------------------|-------------|-------------------|---------------|-----------------|
| VOC | 3.95 | 9.89 | 7.05 | 20.89 |
| NOX | 9.04 | 19.23 | 11.93 | 40.2 |
| VMT | 5,703,033 | 17,122,179 | 8,541,828 | 31,367,040 |

Supporting documents, including Mobile 6.2 input, output and data files as well as spreadsheet calculation files, can be obtained by request in writing to Philip Wheeler, Air Quality Management Section, 156 South State Street, Dover, Delaware 19904 or e-mail Philip.Wheeler@state.de.us.

Description of Vehicle Types

| | |
|----------|---|
| LDGV | Light-Duty Gasoline Vehicles (Passenger Cars) |
| LDGT 1-2 | Light-Duty Gasoline Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW) Light-Duty Gasoline Trucks 2 (0-6,000 lbs. GVWR, 3,751-5,750 lbs. LVW) |
| LDGT 3-4 | Light-Duty Gasoline Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW) Light-Duty Gasoline Trucks 4 (6,001-8,500 lbs. GVWR, 5,751 lbs. and greater ALVW) |
| HDGV | Heavy-Duty Gasoline Vehicles (8,501-80,000 lbs. GVWR) |
| LDDV | Light-Duty Diesel Vehicles (Passenger Cars) |
| LDDT | Light-Duty Diesel Trucks (0-8,500 lbs. GVWR) |
| HDDV | Heavy-Duty Diesel Vehicles (8,501-80,000 lbs. GVWR) |
| MC | Motorcycles |

GVWR – Gross Vehicle Weight Rating

LVW – Loaded Vehicle Weight

ALVW – Adjusted Loaded Vehicle Weight

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