

**Commonwealth of Pennsylvania
Department of Environmental Protection**



**Proposed State Implementation Plan Revision
Vehicle Emissions Inspection/Maintenance Program
Program Changes for Philadelphia and Pittsburgh Regions**

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Background

Under the Clean Air Act as amended in 1990, 42 U.S.C. §§ 7401 *et seq.*, states, including the Commonwealth of Pennsylvania, which are required to implement vehicle emission inspection and maintenance (I/M) programs, are further required to incorporate a check of the Onboard Diagnostic (OBD) system as part of such program. On November 5, 1992, the United States Environmental Protection Agency (EPA) published a rule relating to state air quality implementation plans for I/M programs. *See* 57 Fed. Reg. 52950. At the time of the November 5, 1992 regulation, however, federal OBD certification standards had not yet been developed and published. To address the Clean Air Act's OBD-I/M requirement, EPA reserved sections in the regulations with the understanding that these reserved sections would be amended at some future date. Although the federal requirement to incorporate OBD into new vehicles began with the 1994 model year (MY), manufacturers were allowed to request waivers on vehicles for MY 1994-95. Full compliance was thus not required on all light-duty cars and trucks sold in the United States until MY 1996.

The engines in vehicles MY 1996 and newer are largely electronically controlled. Optimal engine performance and control is maintained by a system of sensors and actuators. An onboard computer controls all of these systems. With proper software, the onboard computer is capable of monitoring all of the sensors and actuators to determine whether they are working as intended. It can detect a malfunction or deterioration of the various sensors and actuators, usually well before the driver becomes aware of the problem through a loss in vehicle performance or drivability. The sensors and actuators, along with the diagnostic software in the onboard computer, make up what is called "the OBD system."

Many component failures that impact emissions can be electrical or even chemical in nature. The OBD system is intended to detect problems that may not be noticeable upon visual inspection. When the OBD system determines that a problem exists, a corresponding "diagnostic trouble code" is stored in the computer's memory.

When the vehicle is taken to a service center or repair shop, a service technician can retrieve the stored diagnostic trouble codes from the computer memory of the vehicle using newly developed diagnostic tools. Since the diagnostic trouble codes will specifically identify the problem, the service technician can more quickly and accurately make the proper repair

On August 6, 1996, EPA published amendments to the 1992 I/M regulations establishing OBD-I/M performance standards. The 1996 amendments also established data collection, analysis, and summary reporting requirements for the OBD-I/M testing element; established OBD test equipment requirements and the OBD test result reporting format; and identified those conditions that would result in an OBD -I/M pass, failure or rejection. Lastly, the August 6, 1996 amendments revised 40 CFR Part 85, subpart W to establish OBD-I/M as an official performance warranty short test under section 207(b) of the Clean Air Act. At the time the original OBD-I/M requirements were established, it was not practical to evaluate the real-world, in-use performance of OBD because the vehicles in question were still too new and the number of those vehicles in need of repair was too few to make pilot testing worthwhile. On May 4, 1998, EPA further amended its OBD-I/M requirements to provide that state I/M programs begin OBD testing no later than January 1, 2001.

On April 5, 2001, EPA published final regulations detailing its requirements for OBD testing. *See* 66 Fed. Reg. 18156 – 18179 (hereinafter referred to as the “OBD Final Rule”). In the 2001 OBD Final Rule, EPA amended its OBD-I/M regulations to:

- 1) provide states several options for extending the current deadline for mandatory implementation of OBD-I/M inspections beyond January 1, 2001;
- 2) clarify states’ options regarding the integration of OBD-I/M checks into existing I/M programs;
- 3) revise and simplify the current list of diagnostic trouble codes that constitute the OBD-I/M failure criteria to include any code that leads the dashboard Malfunction Indicator Light (MIL) to illuminate; and
- 4) provide for exemptions from specific readiness code rejection criteria on OBD-equipped vehicles based upon vehicle model year.

On December 14, 2001, pursuant to the OBD final rule, the Commonwealth submitted to EPA a revision to the SIP which constituted a request to extend the deadline for implementing OBD system checks of 1996-and-newer vehicles as a part of the Commonwealth's adopted and SIP-approved I/M program. The Commonwealth requested this extension on the grounds of, among other items, extant hardware and software deficiencies; computer communications problems; extensive training requirements for service technicians; and the desire to conduct a pilot program to address the above problems. On June 6, 2002, EPA published both a direct final rule and a proposed rule to approve the request for the one-year extension. Due to the receipt of an adverse comment, EPA withdrew the direct final rule, leaving only the proposed approval. EPA indicated that all public comments received would be addressed in a subsequent final rule based on the proposed rule.

This revision to Pennsylvania's State Implementation Plan (SIP) is submitted to incorporate OBD testing for MY1996 and newer light duty cars and trucks into the existing I/M program in the Philadelphia and Pittsburgh regions of the Commonwealth. The Philadelphia region comprises Bucks, Chester, Delaware, Montgomery and Philadelphia counties. The Pittsburgh region comprises Allegheny, Beaver, Washington and Westmoreland counties.

In order for Pennsylvania to implement OBD, the Commonwealth must amend its vehicle emission inspection program regulations, codified at 67 Pa. Code Chapter 177. These amendments are included herein. The amendments are promulgated pursuant to Section 4706 of the Vehicle Code, 75 Pa. C.S. § 4706 (which exempts these regulations from the proposed rulemaking provisions of the Commonwealth Documents Law, the Act of July 31, 1968, P.L. 769, *as amended*, and the Regulatory Review Act, Act of June 25, 1982 (P.L. 622, No. 181), *as amended*, 71 P.S. § 745.1 *et seq.*), and Section 4710 of the Vehicle Code, 75 Pa. C.S. §4710 (which provides for initial submission of final regulations relating to the I/M program to the Office of Attorney General for review as to form and legality and thereafter to the Independent Regulatory Review Commission (IRRC) and the designated Committees of the Pennsylvania Senate and House of

Representatives , in accordance with the Regulatory Review Act, Act of June 25, 1982 (P.L. 622, No. 181), *as amended*, 71 P.S. § 745.1 *et seq.*) IRRC met on November 6, 2003 and approved the amendments. The Commonwealth anticipates publication of the rules as final in the *Pennsylvania Bulletin* by the end of November.

The amendments to Chapter 177 also correct typographical errors, which appeared in the original regulations, and add provisions to provide the ability, under specific circumstances, to institute biennial tailpipe testing, and ultimately to phase out tailpipe testing, in the Philadelphia and Pittsburgh regions.

For clarity, any reference in this revision to the Commonwealth's 1996 I/M SIP refers to revisions to the Pennsylvania State Implementation Plan that adopted an I/M program. The initial revision was submitted on March 22, 1996, and formal amendments submitted by the Secretary of the Pennsylvania Department of Environmental Protection on June 27, 1996; July 29, 1996; November 1, 1996; October 22, 1997; November 13, 1997; February 24, 1998; August 21, 1998; November 25, 1998; and March 3, 1999. These revisions are codified in 52 C.F.R. §52.2020(c)(139).

Implementation and program details with regard to OBD-I/M checks were included in a SIP revision proposed for public comment on October 18, 2003. The Commonwealth's public comment period on this revision will close on November 21, 2003. The Commonwealth anticipates submittal of the October 2003 revision to EPA as a final revision no later than November 30, 2003.

Applicability – §51.350

This revision applies to the Philadelphia and Pittsburgh regions of the Commonwealth. The Philadelphia region consists of the counties of Bucks, Chester, Delaware, Montgomery, and Philadelphia. The Pittsburgh region consists of the counties of Allegheny, Beaver, Washington and Westmoreland. I/M program applicability for these counties was established in the 1996 I/M SIP.

The Commonwealth's legal authority to establish and implement I/M programs is found in the Vehicle Code at 75 Pa. C.S. §4706 *et seq.* This authority, identified in the 1996 I/M SIP and codified at 40 CFR § 52.2020 (c)(139)(B), continues in full effect.

Regulations implementing the revisions to the I/M program in the Pittsburgh and Philadelphia regions are located at 67 Pa. Code, Chapter 177 (Enhanced Emission Inspection Program) and are included herein at Appendix A. **The Commonwealth anticipates these rules to be final by the end of November 2003.** Other elements of the OBD-I/M check program were proposed as a SIP revision on October 18, 2003. The Commonwealth anticipates submittal to EPA for approval in November 2003 following the conclusion of the public comment period. This revision includes only changes to the I/M program for the Philadelphia and Pittsburgh regions. Appendix B contains the required 60-day notice published in the *Pennsylvania Bulletin* for the Philadelphia and Pittsburgh regions on November 1, 2003.

Enhanced I/M Performance Standard - §51.351

The Philadelphia region must meet the high-enhanced I/M performance standard. The Pittsburgh region must meet the low enhanced performance standard. These requirements are contained in 51 C.F.R. §51.351. The Commonwealth demonstrated meeting these standards in the 1996 I/M SIP. For both of these standards, federal regulations (51 C.F.R. §51.351(c)) now require the inspection of all 1996 and later light-

duty vehicles and light-duty trucks equipped with certified OBD systems, and repair of malfunctions and system deterioration identified by the OBD system.

The Commonwealth **is amending** 67 Pa. Code, Section 177.51(f) (see Appendix A) to allow for the OBD inspection of these MY 1996 and newer subject vehicles. These amendments also retain gas cap (GC) testing for MY 1996 and newer vehicles. The date for implementation of the OBD testing is January 2004 for the Pittsburgh region and April 2004 for the Philadelphia region. Until that time, the Commonwealth will continue I/M testing in accordance with the 1996 I/M SIP and as specified in amended §177.51(f)(1) and §177.51(f)(3). This section is also amended to provide that when a vehicle MY reaches its 25th year, vehicles of that MY will be required to undergo only the gas cap test and a visual inspection.

The Commonwealth is using MOBILE6 for performance standard modeling. Appendix C contains county-by-county results for 2005 and 2007. The modeling demonstrates that the program meets the high-enhanced performance standard for the Philadelphia region, and the low-enhanced performance standard for the Pittsburgh region.

Network Type and Program Evaluation - §51.353

This revision does not alter the existing network type or program evaluation elements from the currently approved 1996 I/M SIP.

Adequate Tools and Resources - §51.354

Adequate tools and resources are addressed in the SIP revision proposed in October 2003.

Test Frequency and Convenience - §51.355

Until such time as outlined in amended §177.51(c), the test frequency as described in the existing approved I/M SIP. With the amendments to §177.51(c), the Commonwealth has adopted provisions to provide the ability to do the following:

- 1) reduce the tailpipe test frequency to biennial testing when the number of subject pre-MY 1996 vehicles is less than 40 percent of the total I/M subject vehicles in that I/M county or region and,
- 2) no longer perform tailpipe testing on subject pre-MY 1996 vehicles when the population of those vehicles is less than 20 percent of the total I/M subject vehicles in that I/M county or region.

The conditions for biennial tailpipe testing and phase-out are detailed in amended §177.51(c), paragraphs (1), (2), and (3).

If the Commonwealth determines that an I/M county or region meets the conditions established in amended §177.51(c), the Department will submit a revision to the SIP with MOBILE6 modeling to demonstrate that the subject county or region meets the applicable I/M performance standard. Biennial tailpipe testing and tailpipe testing phase-out will only occur if emissions in that I/M county or region are at or below levels which are in compliance with the SIP, Clean Air Act transportation conformity requirements and the applicable I/M performance standard.

In the Philadelphia region, there are approximately 1,573 stations certified to perform I/M tests. In the Pittsburgh region, there are approximately 1,316 stations certified to perform I/M tests. The Commonwealth's I/M regulation requires that, for at least two years, any station performing an I/M test be able to perform any of the required tests for the region in which it is located. This requirement extends to OBD testing. After the requisite two-year period, stations may be able to become emissions inspection stations for subject OBD-equipped vehicles only. Other elements of convenience

detailed in the 1996 I/M SIP and updates in the October 2003 proposed revision remain unchanged.

Vehicle Coverage - §51.356

There are approximately 2,283,000 subject vehicles in the Philadelphia region and 1,342,000 subject vehicles in the Pittsburgh region.

The Commonwealth added an exemption for “specially constructed vehicles” at 67 Pa. Code § 177.101. A “specially constructed vehicle” is defined in the Vehicle Code as “[a] vehicle not originally constructed under a distinctive name, make, model or type by a generally recognized manufacturer of vehicles.” at 75 Pa. C.S. § 102. There are 137 specially constructed vehicles registered in the Philadelphia region and 149 specially constructed vehicles registered in the Philadelphia region.

There are no changes to the legal authority or rule necessary to implement and enforce the vehicle coverage requirement.

Test Procedures and Standards - §51.357

There are no changes to the ASM test procedure or the TSI test procedure in the Philadelphia and Pittsburgh regions. A description of the OBD test procedure, including a gas cap and visual inspection, are included in the SIP revision proposed in October 2003.

Test Equipment - §51.358

The written technical specifications for OBD equipment are included with the SIP revision proposed in October 2003. These specifications describe the testing process, the necessary test equipment, the required equipment features, and contain written acceptance testing criteria and procedures.

Quality Control - §51.359

There are no changes from the 1996 I/M SIP.

Waivers and Compliance via Diagnostic Inspection - §51.360

There are no changes from the 1996 I/M SIP except for the addition of the statement in §177.281(3)(iv) that the cost of equipment “rendered inaccessible” is not subject to waiver provisions.

Motorist Compliance Enforcement - §51.361

There are no changes from the 1996 I/M SIP.

Motorist Compliance Enforcement Program Oversight - §51.362

There are no changes from the 1996 I/M SIP.

Quality Assurance - §51.363

There are no changes from the 1996 I/M SIP.

Enforcement Against Contractors, Stations and Inspectors - §51.364

Changes to the penalty structure are detailed in the SIP revision proposed in October 2003.

Data Collection - §51.365

There are no changes from 1996 I/M SIP except in situations where data is not available due to the nature of the OBD system (i.e. emissions scores and calibration gas concentrations). Results of the on-board diagnostic check will be expressed as a pass or fail along with the diagnostic trouble codes indicated during testing. .

Data Analysis and Reporting - §51.366

There are no changes from the 1996 I/M SIP except for the provisions regarding collection of OBD-related data. The OBD data to be collected is described in the SIP revision proposed in October 2003.

Inspector Training and Licensing or Certification - §51.367

All modifications to inspector training and certification are described in the SIP revision proposed in October 2003.

Public Information and Consumer Protection - §51.368

There are no changes from the 1996 I/M SIP other than the addition of public information elements incorporating OBD. These changes are described in the October 2003 proposed SIP revision.

Improving Repair Effectiveness - §51.369

There are no changes from the 1996 I/M SIP.

Compliance with Recall Notices - §51.370

There are no changes from the 1996 I/M SIP.

On-road Testing - §51.371

There are no changes from the 1996 I/M SIP.

List of Appendices

Appendix A - Redacted 67 Pa. Code Ch.177

Appendix B - Copy of Certification Published by the Secretary of PA Department of Transportation.

Appendix C - Results of MOBILE6 Performance Standard Modeling for the Philadelphia and Pittsburgh Regions

C-1 – 2005 and 2007 Philadelphia and Pittsburgh Region Summaries

C-2 – MOBILE6 Input Parameters

C-3 – 2005 and 2007 MOBILE6 Input Files

C-4 – 2005 and 2007 Philadelphia and Pittsburgh Region Emissions Factor Analyses

C-5 – MOBILE6: An Explanation of Methodology