R12-12

THE
ATTACHED PROPOSAL
IS BEING FILED PURSUANT TO
SECTION 20 OF THE
VEHICLE EMISSIONS INSPECTION LAW OF 2005
[625 ILCS 5/13C-20]

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	**R12-12**
EMISSION INSPECTION AND	)	**(Rulemaking – Air)**
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

TABLE OF CONTENTS

Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program, United States Environmental Protection Agency, Air and Radiation, June 2001.

Reinventing the Illinois I/M Program, 2005 Clean Air Conference, James Matheny, Illinois Environmental Protection Agency, Page 18, September 2005.

VOC Reduction (TPD) in the Chicago NAA from Existing and Proposed I/M Programs, 2012-2020, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

VOC Reduction (TPD) in the Metro-East + Jersey NAA from Existing and Proposed I/M Programs, 2012-2020, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

12. Certificate of Service

13. Disk in Microsoft WORD containing Proposed Amendments to Part 240 and First Notice form

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	**R12-** 12
EMISSION INSPECTION AND	)	**(Rulemaking – Air)**
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

NOTICE OF FILING

TO: John Therriault, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601

Matthew Dunn, Chief
Division of Environmental Enforcement
Office of the Attorney General
James R. Thompson Center
69 West Washington, Suite 1800
Chicago, Illinois 60602

Virginia Yang, Deputy Legal Counsel
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

PLEASE TAKE NOTICE that I have today filed with the Office of the Pollution Control Board the REGULATORY PROPOSAL entitled "REVISION OF ENHANCED VEHICLE EMISSION INSPECTION AND MAINTENANCE (I/M) REGULATIONS: AMENDMENTS TO 35 ILL. ADM. CODE PART 240," MOTION FOR WAIVER OF COPY REQUIREMENTS, and APPEARANCE of the Illinois Environmental Protection Agency, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
Kent E. Mohr Jr.
Assistant Counsel
Division of Legal Counsel

DATED: September 30, 2011

1021 N. Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544
(217) 782-9143 (TDD)

THIS FILING IS SUBMITTED ON RECYCLED PAPER

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE EMISSION INSPECTION AND MAINTENANCE (I/M) REGULATIONS: AMENDMENTS TO 35 ILL. ADM. CODE PART 240	)	**R12- 12** **(Rulemaking – Air)**

APPEARANCE

The undersigned hereby enters his Appearance on behalf of the Illinois Environmental Protection Agency.

ORIGINAL

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
Kent E. Mohr Jr.
Assistant Counsel
Division of Legal Counsel

DATED: September 30, 2011

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544
(217) 782-9143 (TDD)

THIS FILING IS SUBMITTED ON RECYCLED PAPER

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	R12-12
EMISSION INSPECTION AND	)	(Rulemaking – Air)
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

MOTION FOR WAIVER OF COPY REQUIREMENTS

NOW COMES the Proponent, the Illinois Environmental Protection Agency ("Illinois EPA"), by its attorney, and pursuant to 35 Ill. Adm. Code 101.500, 102.110, 102.200, and 102.402, respectfully moves that the Illinois Pollution Control Board ("Board") waive the requirement that the Illinois EPA submit the original and nine copies of the regulatory proposal including all documents relied upon, and waive the requirement that the Illinois EPA provide copies of certain documents relied upon. In support of its Motion, the Illinois EPA states as follows:

1. Section 102.200 of the Board's procedural rules requires that the original and nine copies of each regulatory proposal be filed with the Clerk. 35 Ill. Adm. Code 102.200. Section 27(a) of the Environmental Protection Act also requires that the Illinois EPA provide information supporting a regulatory proposal. 415 ILCS 5/27(a).

2. The Illinois EPA directly relied upon several documents when drafting the regulatory proposal. The documents relied upon are as follows:

a. Clean Air Act (42 U.S.C. 7401 *et. seq.*)

b. Ill. Pub. Act. No. 97-0106 (July 14, 2011) (effective Feb. 1, 2012)

c. 40 C.F.R. § 85.2222 (2010)

d. *Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program*, United States Environmental Protection Agency, Air and Radiation, June 2001.

e. *Reinventing the Illinois I/M Program, 2005 Clean Air Conference*, James Matheny, Illinois Environmental Protection Agency, Page 18, September 2005.

f. *VOC Reduction (TPD) in the Chicago NAA from Existing and Proposed I/M Programs, 2012-2020*, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

g. *VOC Reduction (TPD) in the Metro-East + Jersey NAA from Existing and Proposed I/M Programs, 2012-2020*, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

3. Several of the documents described above – the Clean Air Act, Illinois Public Act 97-0106, and the Code of Federal Regulations document, are readily accessible to or are within the possession of the Board. Given the ease of accessibility of these documents, listed as items (a), (b), and (c) above, the Illinois EPA moves that the Board waive the requirement that the Illinois EPA provide copies of such documents.

4. Given the length of the remainder of the proposal and the resources required to provide nine copies, the Illinois EPA requests that the Board waive the normal copy requirements and allow Illinois EPA to file the original and four complete copies of such documents.

WHEREFORE, for the reasons set forth above, the Illinois EPA moves that the Board waive the requirement that the Illinois EPA provide copies of the documents listed as items (a), (b), and (c) and waive the requirement that the Illinois EPA provide an original and nine copies of the remaining documents in its proposal, allowing the Illinois EPA to provide the original and four copies.

Respectfully Submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: 

Kent E. Mohr Jr.
Assistant Counsel
Division of Legal Counsel

DATED: September 30, 2011

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544
(217) 782-9143 (TDD)

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	**R12-** 12
EMISSION INSPECTION AND	)	**(Rulemaking – Air)**
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
PROPOSAL OF REGULATIONS

The Illinois Environmental Protection Agency hereby moves that the Illinois Pollution Control Board adopt the attached regulations.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: Lisa Bonnett
Lisa Bonnett
Interim Director

DATED: September 22, 2011

1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-3397

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	R12- 12
EMISSION INSPECTION AND	)	(Rulemaking – Air)
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

SYNOPSIS OF TESTIMONY

It is currently anticipated that the Illinois Environmental Protection Agency will provide two witnesses in support of the regulatory proposal: Michael S. Hills, Technical Services, Division of Mobile Source Programs; and Stephen W. Thorpe, Manager, Compliance Assurance, Division of Mobile Source Programs. Mr. Hills and Mr. Thorpe will provide testimony on all aspects of the regulatory proposal.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
REVISION OF ENHANCED VEHICLE	)	**R12-12**
EMISSION INSPECTION AND	)	**(Rulemaking – Air)**
MAINTENANCE (I/M)	)	
REGULATIONS: AMENDMENTS TO	)	
35 ILL. ADM. CODE PART 240	)	

STATEMENT OF REASONS

The Illinois Environmental Protection Agency ("Illinois EPA") hereby submits this Statement of Reasons to the Illinois Pollution Control Board ("Board") pursuant to Sections 10, 27 (excluding subsection (b)), and 28 of the Illinois Environmental Protection Act ("Act") [415 ILCS 5/10, 27, and 28 (2010)], Sections 102.200 and 102.202 of Title 35 of the Illinois Administrative Code [35 Ill. Adm. Code 102.200, 102.202 (2010)], and Section 13C-20(a) of the Vehicle Emissions Inspection Law ("VEIL") of 2005 [625 ILCS 5/13C-20(a) (2010)] in support of the attached proposed amendments. Included in this proposal is a sunset of the steady-state idle and evaporative system integrity test standards used in the Illinois enhanced vehicle inspection and maintenance program ("Illinois program") for the Chicago and Metro-East St. Louis nonattainment areas. This amendment proposes a sunset of those test standards due an amendment to the VEIL of 2005 (Illinois Public Act ("P.A.") 97-0106) that repeals the steady-state idle and evaporative system integrity tests as available emissions inspection tests as of February 1, 2012. Also, in accordance with P.A. 97-0106, this rulemaking proposes the use of new visual inspection test standards, beginning February 1, 2012, that are applicable to vehicles that cannot receive the on-board diagnostic ("OBD") test due to the vehicle's design or with known OBD communication or software problems. Also, this amendment proposes a definition of "visual inspection test" and other minor amendments to be consistent with the new visual

inspection test allowed by P.A. 97-0106. This proposal amends the most recent version of Part 240 as found on the Board's website.

I. STATUTORY AUTHORITY FOR RULEMAKING

Section 10(A) of the Act provides the Board's general authority for rulemaking addressing air pollution. Section 10(A) states in pertinent part: "The Board, pursuant to procedures prescribed in Title VII of this Act, may adopt regulations to promote the purposes of this Title." 415 ILCS 5/10(A) (2010). Further, Section 27(a) of the Act confers general substantive rulemaking authority upon the Board and the contents of this regulatory proposal are clearly within these general rulemaking powers of the Board. This proposal is being filed as a regulatory proposal of general applicability pursuant to Sections 27 (excluding subsection (b)) and 28 of the Act. 415 ILCS 5/27, 28 (2010). It is not being proposed as an identical-in-substance, fast-track, or federally required rulemaking. In evaluating this proposal, the Board is required to take into account "the existing physical conditions, the character of the area involved, including the character of surrounding land uses, zoning classifications, the nature of the existing air quality, or receiving body of water, as the case may be, and the technical feasibility and economic reasonableness of measuring or reducing the particular type of pollution." 415 ILCS 5/27(a). In addition, this proposal is being filed under the authority of Section 13C-20(a) of the VEIL of 2005. 625 ILCS 5/13C-20(a) (2010). Section 13C-20(a) of the VEIL of 2005 states, in relevant part, that the Board is required to adopt standards necessary for the enhanced inspection and maintenance program within 120 days after the Illinois EPA proposes those standards to the Board, and that:

> "...subsection (b) of Section 27 of the Environmental Protection Act and the rulemaking provisions of the Illinois Administrative Procedure Act do not apply to rules adopted by the Board under this subsection."

625 ILCS 5/13C-20(a).

The Illinois EPA believes that the proposed rules contained herein constitute those rules referenced by the above statutory requirement, and that the Board will insure adoption of such rules within the required timeframe.

II. BACKGROUND STATEMENT OF FACTS

Section 182 of the Clean Air Act ("CAA") requires the implementation of vehicle inspection and maintenance ("I/M") programs in areas not meeting the National Ambient Air Quality Standards ("NAAQS") for ozone. 42 U.S.C. § 7511a (2010). By way of background, the 1977 CAA Amendments required vehicle I/M programs in areas with long standing air quality problems. 57 Fed. Reg. 52950, 52951 (Nov. 5, 1992). The 1990 CAA Amendments expanded the role of I/M programs as an attainment strategy. *Id.* These amendments mandated the use of "basic" or "enhanced" I/M programs and required the United States Environmental Protection Agency ("USEPA") to develop different performance standards for these two programs. *Id.*

Basic I/M programs are required in "marginal" ozone nonattainment areas with existing I/M programs and in "moderate" ozone nonattainment areas. 42 U.S.C. § 7511a. Enhanced I/M programs are required in "serious," "severe," and "extreme" ozone nonattainment areas with urbanized populations of 200,000 or more. *Id.* In Illinois, there are two areas classified nonattainment for ozone: the Chicago metropolitan area which was classified as "severe" under the revoked 1-hour ozone standard and now classified as "moderate" under the 1997 8-hour standard; and the Metro-East St. Louis area which was redesignated to attainment of the 1-hour standard and is now classified as "moderate" nonattainment for ozone under the 1997 8-hour standard. 40 C.F.R. § 81.314 (2010). While enhanced I/M was required in the Chicago area and

not required in the Metro-East St. Louis area, Illinois chose to implement enhanced I/M in the Metro-East St. Louis area as part of its strategy to meet attainment of the ozone standard. Today, Illinois continues to implement enhanced I/M in both the Chicago and Metro-East St. Louis areas as part of its strategy to meet attainment of the ozone standard.

USEPA I/M regulations require the adoption by states of standards that result in a reduction of vehicle emissions through testing procedures meeting, or exceeding, the amount of emissions that would be reduced if its "model" I/M program design was implemented. 57 Fed. Reg. at 52951. USEPA requires certain design elements to be a part of any enhanced I/M program, but allows states to vary certain elements and program inputs as long as the plan achieves the same or greater reductions in emissions than those required by USEPA's applicable performance standard. *Id.* at 52953. The enhanced performance standard requires the following program elements: (1) network type; (2) required start date; (3) annual test frequency; (4) model year coverage; (5) vehicle type coverage; (6) exhaust emission test type; (7) emission standards; (8) emission control device inspections; (9) evaporative system function checks; (10) stringency or failure rate; (11) waiver rate; (12) compliance rate; and (13) evaluation date. 40 C.F.R. § 51.351 (2010). As part of USEPA's enhanced performance standard, OBD I/M testing is required for all subject vehicles of model year 1996 and newer. *Id.* at § 51.351(c). Federal regulations allow states to utilize the OBD I/M test and test standards in lieu of the idle exhaust and evaporative tests. 40 C.F.R. § 51.357(a)(12) (2010); 66 Fed. Reg. 18156, 18160 (April 5, 2001). Further, federal regulations allow states to vary vehicle model year coverage from USEPA's model program assumptions regarding vehicle model year coverage provided necessary emission reductions are achieved. 40 C.F.R. § 51.356 (2010).

In response to federal requirements, the VEIL was originally adopted by the Illinois

General Assembly in 1984 and provided authority for an I/M program. 625 ILCS 5/13A (1984). In 1994, the Illinois General Assembly adopted the VEIL of 1995 which provided authority for the Illinois EPA to implement enhanced I/M. 625 ILCS 5/13B (1995). The elements of the VEIL of 1995 were based on USEPA's model I/M program, with some approved variation. In 2005, the Illinois General Assembly adopted the VEIL of 2005, which, among other things, made the OBD test the primary I/M test and exempted vehicles of model year 1995 and older from I/M testing. 625 ILCS 5/13C (2006). The VEIL of 2005 maintained the steady-state idle exhaust and evaporative system integrity tests as available fallback tests for certain vehicles. *Id.* To implement VEIL, the Board adopted emission test standards in 35 Illinois Administrative Code Part 240 and the Illinois EPA adopted emission test procedures in 35 Illinois Administrative Code Part 276. The Board and Illinois EPA have amended these rules over the years in response to changes in federal I/M requirements and to make improvements to the Illinois program.

Recently, the Illinois General Assembly amended the VEIL of 2005 through P.A. 97-0106, effective February 1, 2012. Ill. Pub. Act. No. 97-0106 (July 14, 2011) (effective Feb. 1, 2012) (available at Illinois General Assembly, *State of Illinois, Public Acts, 97th General Assembly*‹http://www.ilga.gov/legislation/publicacts/fulltext.asp?Name=097-0106&GA=97›). P.A. 97-0106 repeals the steady-state idle and evaporative system integrity emissions tests. Ill. Pub. Act. No. 97-0106 at § 13C-25(d), (e), (f). These emissions tests were substituted for the OBD test for heavy-duty vehicles not required to be equipped with OBD systems meeting federal OBD II specifications and certain vehicles that could not receive the OBD test due to their design or with known OBD communication or software problems. 625 ILCS 5/13C-25(d) (2010). P.A. 97-0106 exempts pre-2007 heavy-duty vehicles with a gross vehicle weight rating (GVWR)

between 8,501 and 14,000 pounds and any heavy-duty vehicles with a GVWR greater than 14,000 pounds from the requirement to be tested. Ill. Pub. Act. No. 97-0106 at § 13C-15(b)(8)(M), (b)(8)(N). These heavy-duty vehicles are not all required to be equipped with OBD systems meeting federal OBD II specifications. Therefore, under the VEIL of 2005, these vehicles were tested using the steady-state idle and evaporative system integrity tests. Since the Illinois General Assembly eliminated the steady-state idle and evaporative system integrity tests as of February 1, 2012, it was necessary to exempt these vehicles from the requirement to obtain an emissions test. P.A. 97-0106 adds a visual inspection test as a new substitute for the OBD test for vehicles that cannot receive the OBD test due to their design or with known OBD communication or software problems. Ill. Pub. Act. No. 97-0106 at § 13C-25(h).

This rulemaking implements P.A. 97-0106 by proposing to sunset the steady-state idle and evaporative system integrity test standards, adding new visual inspection test standards, and making other changes necessary to implement the new visual inspection test standards.

III. PURPOSE AND EFFECT OF THE PROPOSAL

This regulatory proposal has been prepared to implement amendments to the VEIL of 2005 made by the Illinois General Assembly in P.A. 97-0106. As discussed *supra*, these statutory amendments include a repeal of the steady-state idle and evaporative system integrity emissions tests, exemption of pre-2007 heavy-duty vehicles with a GVWR between 8,501 and 14,000 pounds and any heavy-duty vehicles with a GVWR greater than 14,000 pounds, and the addition of a new visual inspection test. These statutory amendments are effective February 1, 2012.

As discussed *supra*, in accordance with P.A. 97-0106 and as allowed by federal regulations, this rulemaking proposes to sunset the steady-state idle and evaporative system

integrity test standards used in the Illinois program as of February 1, 2012. As a result, the Illinois program will continue to be an OBD program – testing subject vehicles using the OBD test, with the exception of a miniscule subset of vehicles that cannot receive the OBD test. Such vehicles will receive the new visual inspection test. In accordance with P.A. 97-0106, this rulemaking proposes the use of new visual inspection test standards, beginning February 1, 2012, that are applicable to vehicles that cannot receive the OBD test due to the vehicle's design or with known OBD communication or software problems. This new visual inspection test provides motorists with the same flexibility they were allowed to receive with the steady-state idle and evaporative system integrity tests where, due to no fault of the motorist, their vehicles were unable to receive the OBD test. In repealing the steady-state idle and evaporative system integrity tests, the Illinois General Assembly recognized that it must provide this continued flexibility to motorists or their vehicles would fail an emissions test and they would not be able to renew their vehicle registration. The visual inspection test standards provide that vehicles subject to the visual inspection test will fail this test if the malfunction indicator lamp ("MIL") does not illuminate in the key-on/engine off position or continuously illuminates in the key-on/engine off position. These standards are consistent with P.A. 97-0106. Also, the visual inspection test and standards were based off of, and are consistent with, federal law. The federal OBD test included assessment of the MIL in the key-on/engine off and key-on/engine on positions, visual examination of the MIL, and similar failure standards. *See* 40 C.F.R. § 85.2222 (2010) and *Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program*, United States Environmental Protection Agency, Air and Radiation, June 2001. As a result, the visual inspection test and standards are the most logical substitute for the OBD test and standards.

Concurrently with this proposal, the Illinois EPA is proposing amendments to its I/M procedural rules located at 35 Illinois Administrative Code Part 276 to implement P.A. 97-0106 and to operate in concert with these proposed amendments. Such amendments will include a sunset of the steady-state idle and evaporative system integrity test procedures and related requirements, and new visual inspection test procedures. Consequently, this rulemaking proposes that compliance with the visual inspection test standards must be determined based on a visual examination of the MIL using the visual inspection test procedures adopted by the Illinois EPA in Part 276.

IV. GEOGRAPHIC REGIONS AND SOURCES AFFECTED

The geographic regions that are subject to this proposal include those "affected counties" as defined in Section 13C-5 of the VEIL of 2005. 625 ILCS 5/13C-5 (2010). Specifically included are the following counties in the Chicago and Metro-East St. Louis areas: Cook, DuPage and Lake, and portions of Kane, Kendall, McHenry, Will, Madison, Monroe and St. Clair. The sources affected by this proposal include motor vehicles subject to the provisions of the VEIL of 2005 and the owners of such vehicles. The Illinois EPA has not included a list of affected sources with this proposal due to the burden of compiling such a substantial list of sources. However, for the 2012/2013 test cycle, the Illinois EPA estimates that there will be 3.6 million initial tests conducted in the State. The affected sources will not be negatively impacted by this proposal because it reduces the population of affected vehicles and, through the new visual inspection test, provides the same flexibility that the steady-state idle and evaporative system integrity tests provided for vehicles that cannot receive the OBD test due to the vehicle's design or with known OBD communication or software problems.

V. TECHNICAL FEASIBILITY AND ECONOMIC REASONABLENESS

Section 27 of the Act requires the Board to consider the technical feasibility and economic reasonableness of all rulemaking proposals. The Illinois EPA's proposal is necessary and required in order to implement the Illinois General Assembly's amendments to the VEIL of 2005 through P.A. 97-0106. As stated *supra*, P.A. 97-0106 repeals the steady-state idle and evaporative system integrity emissions tests and exempts pre-2007 heavy-duty vehicles with a GVWR between 8,501 and 14,000 pounds and any heavy-duty vehicles with a GVWR greater than 14,000 pounds. As a result, in this rulemaking, the Illinois EPA is proposing to sunset these test standards.

The Illinois EPA's proposal is technically feasible. As of February 1, 2012, the steady-state idle and evaporative system integrity emissions tests are not allowed by statute nor are they necessary because they were implemented for use on the subset of heavy-duty vehicles that P.A. 97-0106 exempts from the emissions testing requirement. *See Technical Support Document.* Also, as discussed *supra*, these tests are not required by federal law or regulations where the OBD test is utilized. Further, modeling projections provide that there will be no loss in emission reduction benefits with the elimination of these emissions tests and corresponding test standards. *Id.* The new visual inspection test, created and allowed by P.A. 97-0106, will provide motorists with the same flexibility they were able to receive through the steady-state idle and evaporative system integrity tests where, due to no fault of the motorist, the vehicle is unable to receive the OBD test because of its design or because of OBD communication or software problems. *Id.* The visual inspection test and standards are necessary in order to implement P.A. 97-0106 and provide motorists with this continued flexibility. *Id.* Furthermore, they are feasible because they are based on the existing OBD test required by federal regulations. *Id.* The Illinois EPA's

analysis, explained in detail in its *Technical Support Document*, further demonstrates the technical feasibility of this proposal.

The Illinois EPA's proposal is economically reasonable because elimination of the steady-state idle and evaporative system integrity emissions tests and exemption of certain heavy-duty vehicles will result in a significant cost savings to the Illinois program and a potential cost savings to motorists that own these vehicles. *Id.* These tests are not economically reasonable to retain given the small percentage of vehicles that receive these tests. *Id.* The new visual inspection test and standards will not result in increased costs to the Illinois program or motorists. *Id.* The Illinois EPA's analysis, explained in detail in its *Technical Support Document*, further demonstrates the economic reasonableness of this proposal.

VI. COMMUNICATION WITH INTERESTED PARTIES

As required by the CAA, the Board conducted rulemaking proceedings relating to adoption of I/M test standards throughout the 1990s and 2000s. Those rulemakings were approved and adopted by the Board. In addition, at various times during the 1990s and 2000s, the Illinois EPA adopted procedural rules necessary for implementing the enhanced I/M program, and is in the process of amending such rules to be consistent with this rulemaking and P.A. 97-0106. Further, as this entire proposal is effectuating amendments to the VEIL of 2005, significant public outreach was conducted through the legislative process. Finally, the Illinois EPA has shared this regulatory proposal with USEPA.

VII. ILLINOIS EPA'S PROPOSAL

The following is a section-by-section summary of the Illinois EPA's proposal.

SUBPART A: Definitions and General Provisions

Section 240.102: Definitions

This Section sets forth the definitions used in this Part. The Illinois EPA proposes to add a definition of "visual inspection test." This definition is necessary for the proposed Subpart I.

Section 240.104: Inspection

This Section sets forth references to various emission standards that subject vehicles must comply with when tested. The Illinois EPA proposes to add a reference to the visual inspection test standards. This reference is necessary for the proposed Subpart I.

Section 240.105: Penalties

This Section sets forth the penalties for noncompliance with various standards contained in this Part. The Illinois EPA proposes to add a reference to the visual inspection test standards. This reference is necessary for the proposed Subpart I.

Section 240.106: Determination of Violation

This Section sets forth methods for determining violations of various standards contained in this Part. The Illinois EPA proposes to add a reference to the visual inspection test standards. This reference is necessary for the proposed Subpart I.

SUBPART D: Steady-State Idle Mode Test Emission Standards

Section 240.151: Applicability

This Section sets forth the applicability of the steady-state idle test standards. The Illinois EPA proposes to clarify the applicability of this Section because the steady-state idle test will not be allowed by statute after January 31, 2012; therefore, the applicability of this Subpart must specify that these test standards are applicable only through January 31, 2012.

SUBPART F: Evaporative Test Standards

Section 240.171: Applicability

This Section sets forth the applicability of the evaporative system integrity test standards.

The Illinois EPA proposes to clarify the applicability of this Section because the evaporative system integrity test will not be allowed by statute after January 31, 2012; therefore, the applicability of this Subpart must specify that these test standards are applicable only through January 31, 2012.

SUBPART I: Visual Inspection Test Standards

Section 240.201 Applicability

This Section sets forth the applicability of the visual inspection test standards. By statute, this Section is applicable beginning February 1, 2012, and applies to those vehicles tested pursuant to Section 13C-25(h) of the VEIL of 2005, as amended.

Section 240.202 Visual Inspection Test Standards

This Section sets forth the visual inspection test standards for subject vehicles. The Illinois EPA proposes that vehicles will fail the visual inspection test if the MIL does not illuminate in the key-on/engine off position or continuously illuminates in the key-on/engine on position.

Section 240.203 Compliance Determination

This Section sets forth the method for determining compliance with the visual inspection test standards. The Illinois EPA proposes that compliance with the visual inspection test standards contained in proposed Section 240.202 is determined by using the visual inspection test procedures adopted by the Illinois EPA in 35 Illinois Administrative Code Part 276.

VIII. CONCLUSION

For the reasons stated above, the Illinois EPA hereby submits this regulatory proposal and respectfully requests the Board to adopt these amendments for the State of Illinois.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
Kent E. Mohr Jr.
Assistant Counsel
Division of Legal Counsel

DATED: September 30, 2011

1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

1) Heading of the Part: Mobile Sources

2) Code Citation: 35 Ill. Adm. Code 240

3)

Section Numbers:	Proposed Action:
240.102	Amendment
240.104	Amendment
240.105	Amendment
240.106	Amendment
240.151	Amendment
240.171	Amendment
240.201	New
240.202	New
240.203	New

4) Statutory Authority: Section 13C-20 of the Vehicle Emissions Inspection Law of 2005 [625 ILCS 5/13C-20] and Sections 10, 27, and 28 of the Environmental Protection Act [415 ILCS 5/10, 27, and 28].

5) A Complete Description of the Subjects and Issues Involved: This proposal for public comment would amend Part 240 to reflect an amendment (P.A. 97-0106) to the Vehicle Emissions Inspection Law of 2005 (VEIL of 2005) (625 ILCS 5/13C). P.A. 97-0106 amends the VEIL of 2005 by repealing the steady-state idle exhaust and evaporative system integrity emissions inspection tests. These inspection tests were substituted for the on-board diagnostic (OBD) test for heavy-duty vehicles not required to be equipped with OBD systems meeting federal OBD II specifications and certain vehicles that could not receive the OBD test due to their design or with known OBD communication or software problems. P.A. 97-0106 exempts pre-2007 heavy-duty vehicles with a gross vehicle weight rating (GVWR) between 8,501 and 14,000 pounds and any heavy-duty vehicles with a GVWR greater than 14,000 pounds from the requirement to be tested. These heavy-duty vehicles are not all required to be equipped with OBD systems meeting federal OBD II specifications. Also, P.A. 97-0106 adds a visual inspection test as a new substitute for the OBD test for vehicles that cannot receive the OBD test due to their design or with known OBD communication or software problems. P.A. 97-0106 makes other relatively minor changes and is effective February 1, 2012.

The proposed amendments to Part 240 specify that the steady-state idle exhaust and evaporative system integrity inspection test standards are effective only through January 31, 2012. Also, the proposed amendments add visual inspection test standards that are

effective beginning February 1, 2012, and add a definition of "visual inspection test." Finally, the proposed amendments make other minor changes consistent with the addition of the new visual inspection test standards. The Illinois Pollution Control Board (Board) is required by the VEIL of 2005 to adopt this proposal within 120 days after filing by the Illinois Environmental Protection Agency (Illinois EPA) [625 ILCS 5/13C-20].

6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: The Illinois EPA relied on various sources to compose this rulemaking. Copies of these sources are available for review with the Board and are listed below:

1. Clean Air Act (42 U.S.C. 7401 *et. seq.*)

2. Ill. Pub. Act. No. 97-0106 (July 14, 2011) (effective Feb. 1, 2012)

3. 40 C.F.R. § 85.2222 (2010)

4. *Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program*, United States Environmental Protection Agency, Air and Radiation, June 2001.

5. *Reinventing the Illinois I/M Program, 2005 Clean Air Conference*, James Matheny, Illinois Environmental Protection Agency, Page 18, September 2005.

6. *VOC Reduction (TPD) in the Chicago NAA from Existing and Proposed I/M Programs, 2012-2020*, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

7. *VOC Reduction (TPD) in the Metro-East + Jersey NAA from Existing and Proposed I/M Programs, 2012-2020*, Sam Long, Illinois Environmental Protection Agency, January 11, 2011.

7) Will this proposed amendment replace an emergency rule currently in effect? No

8) Does this rulemaking contain an automatic repeal date? No

9) Does this proposed amendment contain incorporations by reference? No

10) Are there any other proposed amendments pending on this Part? No

11) Statement of Statewide Policy Objectives: This proposed rulemaking does not create or

enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act. [30 ILCS 805/3(b)].

12) Time, Place, and Manner in which interested persons may comment on this proposed rulemaking: The Board will accept written public comments on this proposal. Comments should reference Docket R12-___ and be addressed to:

John Therriault
Clerk's Office
Illinois Pollution Control Board
James R. Thompson Center, Suite 11-500
100 W. Randolph St.
Chicago, IL 60601

13) Initial Regulatory Flexibility Analysis:

A. Types of small businesses, small municipalities and not for profit corporations affected: The proposal would affect a small business, small municipality, or not-for-profit corporation to the extent that it owns a vehicle subject to emissions inspection.

B. Reporting, bookkeeping or other procedures required for compliance: The proposal does not require reporting or bookkeeping. The proposal requires compliance with new visual inspection test standards and use of new inspection procedures established in 35 Ill. Adm. Code Part 276 related to these new standards.

C. Types of Professional skills necessary for compliance: No professional skills beyond those currently required by the rule are expected to be necessary.

14) Regulatory Agenda on which this rulemaking was summarized: July 2011.

The full text of the Proposed Amendment(s) begins on the next page:

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE B: AIR POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER k: EMISSION STANDARDS AND LIMITATIONS FOR MOBILE SOURCES

PART 240
MOBILE SOURCES

SUBPART A: DEFINITIONS AND GENERAL PROVISIONS

SUBPART B: EMISSIONS

SUBPART C: SMOKE OPACITY STANDARDS AND TEST PROCEDURES FOR DIESEL-POWERED HEAVY DUTY VEHICLES

SUBPART D: STEADY-STATE IDLE MODE TEST EMISSION STANDARDS

Section
240.151 Applicability
240.152 Steady-State Idle Mode Vehicle Exhaust Emission Standards
240.153 Compliance Determination

SUBPART E: TRANSIENT LOADED MODE TEST EMISSION STANDARDS

Section
240.161 Applicability (Repealed)
240.162 Vehicle Exhaust Emission Start-Up Standards (Repealed)
240.163 Vehicle Exhaust Emission Final Standards (Repealed)
240.164 Vehicle Exhaust Emission Fast-Pass Standards (Repealed)
240.165 Compliance Determination (Repealed)

SUBPART F: EVAPORATIVE TEST STANDARDS

Section
240.171 Applicability
240.172 Evaporative System Integrity Test Standards
240.173 Evaporative System Purge Test Standards (Repealed)

SUBPART G: ON-ROAD REMOTE SENSING TEST EMISSION STANDARDS

Section
240.181 Applicability
240.182 On-Road Remote Sensing Emission Standards
240.183 Compliance Determination

SUBPART H: ON-BOARD DIAGNOSTIC TEST STANDARDS

Section
240.191 Applicability
240.192 On-Board Diagnostic Test Standards
240.193 Compliance Determination

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

SUBPART I: VISUAL INSPECTION TEST STANDARDS

AUTHORITY: Implementing Sections 9 and 10 and authorized by Sections 27 and 28 of the Environmental Protection Act [415 ILCS 5/9, 10, 27, and 28] and Section 13C-20 of the Vehicle Emissions Inspection Law of 2005 [625 ILCS 5/13C-20].

SOURCE: Adopted as Chapter 2: Air Pollution, Part VII: Mobile Sources, filed and effective April 14, 1972; codified at 7 Ill. Reg. 13628; amended in R85-25, at 10 Ill. Reg. 11277, effective June 16, 1986; amended in R90-20 at 16 Ill. Reg. 6184, effective April 7, 1992; amended in R94-20 at 18 Ill. Reg. 18013, effective December 12, 1994; amended in R94-19 at 18 Ill. Reg. 18228, effective December 20, 1994; amended in R98-24 at 22 Ill. Reg. 13723, effective July 13, 1998; expedited correction at 22 Ill. Reg. 21120, effective July 13, 1998; amended in R01-12 at 24 Ill. Reg. 19188, effective December 18, 2000; amended in R01-8 at 25 Ill. Reg. 3680, effective February 26, 2001; amended in R02-8 at 25 Ill. Reg. 16379, effective December 18, 2001; amended in R11-19 at 35 Ill. Reg. 5552, effective March 18, 2011; amended in _____at 36 Ill. Reg. _____, effective _____.

BOARD NOTE: This Part implements the Environmental Protection Act as of July 1, 1994.

NOTE: Capitalization denotes statutory language.

SUBPART A: DEFINTIONS AND GENERAL PROVISIONS

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

Section 240.102 Definitions

All terms that appear in this Part have the definitions specified in this Section, the Vehicle Emissions Inspection Law of 2005 [625 ILCS 5/13C], and 35 Ill. Adm. Code 201 and 211. When conflicting definitions occur between this Section and 35 Ill. Adm. Code 201 or 211, the definitions of this Section apply in this Part.

"Agency" means the Illinois Environmental Protection Agency.

"Diesel engine" means all types of internal-combustion engines in which air is compressed to a temperature sufficiently high to ignite fuel injected directly into the cylinder area.

"Diesel locomotive" means a diesel engine vehicle designed to move cars on a railway.

"Evaporative system integrity test" means a test of a vehicle's evaporative system. The test shall either consist of a leak check of a vehicle's fuel cap with a fuel cap pressure decay tester (fuel cap pressure decay test), a fuel cap leak flow tester (fuel cap leak flow test), or a visual functional check, as applicable.

"Fuel cap" means a device used to seal a vehicle's fuel inlet.

"Fuel cap leak flow test" means a test which may be performed in accordance with this Part on a vehicle's fuel cap using a fuel cap leak flow tester to determine whether the vehicle complies with the evaporative system emission standards of this Part.

"Fuel cap leak flow tester" means a device used to determine the leak flow integrity of a vehicle's fuel cap by comparing the measured leak flow of the fuel cap with an established fuel cap leak flow standard.

"Fuel cap pressure decay test" means the test performed in accordance with this Part on a vehicle's fuel cap using a fuel cap pressure decay tester to determine whether the vehicle complies with the evaporative system emission standards of this Part.

"Fuel cap pressure decay tester" means a device used to determine the pressure decay integrity of a vehicle's fuel cap by monitoring the pressure behind the fuel cap for a ten second period and comparing the measured pressure decay of the fuel cap to an established fuel cap pressure decay standard.

"Fuel cap visual functional test" means the test performed in accordance with this Part on a vehicle's fuel cap using visual analysis to determine whether the vehicle complies with the evaporative system emission standards of this Part.

"Gross vehicle weight rating (GVWR)" means the value specified by the manufacturer as the maximum design loaded weight of a single vehicle.

"Heavy duty vehicle" means any motor vehicle rated at more than 8500 pounds GVWR or that has a vehicle curb weight of more than 6000 pounds or that has a basic vehicle frontal area in excess of 45 square feet.

"High idle" means a vehicle operating condition with engine disconnected from an external load (placed in either neutral or park) and operating at speed of 2500 $\pm$ 300 RPM.

"Idle mode" means that portion of a vehicle emission test procedure conducted with the engine disconnected from an external load and operating at minimum throttle.

"Initial idle mode" means the first of up to two idle mode sampling periods during a steady-state idle mode test, during which exhaust emission measurements are made with the vehicle in "as-received" condition.

"Light duty truck 1" means a motor vehicle rated at 6000 pounds maximum GVWR or less and which has a vehicle frontal area of 45 square feet or less, and which is designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or is designed primarily for transportation of persons and has a capacity of more than 12 persons, or is available with special features enabling off-street or off-highway operation and use.

"Light duty truck 2" means a motor vehicle rated between 6001 and 8500 pounds maximum GVWR and which has a vehicle frontal area of 45 square feet or less,

and which is designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or is designed primarily for transportation of persons and has a capacity of more than 12 persons, or is available with special features enabling off-street or off-highway operation and use.

"Light duty vehicle" means a passenger car or passenger car derivative capable of seating 12 passengers or fewer.

"Measured values" means five-second running averages of exhaust emission concentrations sampled at a minimum rate of twice per second.

"Model year" means the year of manufacture of a motor vehicle based upon the annual production period as designated by the manufacturer and indicated on the title and registration of the vehicle. If the manufacturer does not designate a production period for the vehicle, then "model year" means the calendar year of manufacture.

"Motor vehicle" as used in this Part, shall have the same meaning as in Section 1-146 of the Illinois Vehicle Code [625 ILCS 5/1-146].

"Opacity" means the percentage of light transmitted from a source that is prevented from reaching a light detector.

"Preconditioning mode" means a period of steady-state high-idle operation conducted to ensure that the engine and emissions control system components are operating at normal operating temperatures, thus minimizing false failures caused by improper or insufficient warm-up.

"Second-chance idle mode" means the second of two idle mode sampling periods during a steady-state idle mode test, preceded by a preconditioning mode and utilized as a second chance to pass idle exhaust emission standards immediately following an initial idle mode failure.

"Snap-acceleration test" means a test to measure exhaust smoke opacity from heavy-duty diesel powered vehicles in accordance with the SAE J1667 procedure, incorporated by reference at Section 240.107 of this Subpart.

"Steady-state idle test" means a vehicle emission test procedure consisting of an initial idle mode measurement of exhaust emissions followed, if necessary, by a loaded or high idle preconditioning mode and a second-chance idle mode.

"Vehicle curb weight" means the actual vehicle weight plus standard equipment and a full fuel tank.

"Visual inspection test" means a visual examination of a vehicle's MIL consisting of verifying the status of the MIL in the key-on/engine off position followed by verifying the status of the MIL in the key-on/engine on position to determine the status of the MIL and existence of an emission related malfunction with the vehicle.

(Source: Amended at 36 Ill. Reg._____, effective _____)

Section 240.104 Inspection

a) All motor vehicles subject to inspection pursuant to Section 13C-15 of the Vehicle Emissions Inspection Law of 2005 [625 ILCS 5/13C-15] shall comply with applicable vehicle emission standards contained in Sections 240.152, 240.172, 240.182, ~~and~~ 240.192, and 240.202 of this Part.

b) All diesel-powered vehicles subject to inspection pursuant to Section 13-109.1 of the Illinois Vehicle Code [625 ILCS 5/13-109.1] must comply with applicable smoke opacity standards set forth in Section 240.141(a) of this Part.

(Source: Amended at 36 Ill. Reg._____, effective _____)

Section 240.105 Penalties

a) Any violations of Sections 240.103, 240.121, 240.122, or 240.123 of this Part shall be subject to the penalties as set forth in Section 42 of the Act [415 ILCS 5/42].

b) Any violations of Sections 240.104(b), 240.152, 240.172, 240.182, ~~or~~ 240.192, or 240.202 of this Part, as applicable, shall be subject to the

penalties as set forth in Sections 13C-55 and 13C-60 of the Vehicle Emissions Inspection Law [625 ILCS 5/13C-55 and 13C-60].

c) Any violation of Section 240.141(a) of this Part will be subject to penalties as set forth in Section 13-109.1 of the Illinois Vehicle Code [625 ILCS 5/13-109.1].

(Source: Amended at 36 Ill. Reg._____, effective _____)

Section 240.106 Determination of Violation

a) Any violations of Sections 240.103, 240.121, 240.122, or 240.123 of this Part shall be determined by visual observation or by a test procedure employing an opacity measurement system as qualified by 35 Ill. Adm. Code 201, Subpart J.

b) Any violations of Sections 240.152, 240.172, 240.182, ~~or~~ 240.192, or 240.202 of this Part, as applicable, shall be determined in accordance with test procedures adopted by the Agency in 35 Ill. Adm. Code 276.

c) Any violation of Section 240.141(a) of this Part will be determined in accordance with test procedures set forth in Section 240.141(b) of this Part.

(Source: Amended at 36 Ill. Reg._____, effective _____)

SUBPART D: STEADY-STATE IDLE MODE TEST EMISSION STANDARDS

Section 240.151 Applicability

This Subpart is effective through January 31, 2012. The standards of this Subpart apply to those vehicles identified in subsection 13C-25(d) of the Vehicle Emissions Inspection Law of 2005.

(Source: Amended at 36 Ill. Reg._____, effective _____)

SUBPART F: EVAPORATIVE TEST STANDARDS

Section 240.171 Applicability

This Subpart is effective through January 31, 2012. The standards of this Subpart apply to those vehicles identified in subsection 13C-25(d) of the Vehicle Emissions Inspection Law of 2005.

(Source: Amended at 36 Ill. Reg._____, effective _____)

SUBPART I: VISUAL INSPECTION TEST STANDARDS

Section 240.201 Applicability

This Subpart is applicable beginning February 1, 2012. The standards of this Subpart apply to those vehicles tested pursuant to subsection 13C-25(h) of the Vehicle Emissions Inspection Law of 2005.

(Source: Added at 36 Ill. Reg._____, effective _____)

Section 240.202 Visual Inspection Test Standards

Vehicles subject to visual inspection testing shall fail the visual inspection test if the MIL does not illuminate in the key-on/engine off position or continuously illuminates in the key-on/engine on position.

(Source: Added at 36 Ill. Reg._____, effective _____)

Section 240.203 Compliance Determination

Compliance shall be determined based upon a visual examination of the MIL using the visual inspection test procedures adopted by the Agency in 35 Ill. Adm. Code 276.

(Source: Added at 36 Ill. Reg._____, effective _____)

TECHNICAL SUPPORT DOCUMENT: PROPOSED AMENDMENTS TO 35 ILL. ADM. CODE PART 240 BASED ON AMENDMENTS TO THE VEHICLE EMISSIONS INSPECTION LAW OF 2005 (625 ILCS 5/13C)

SEPTEMBER 2011

Illinois Environmental Protection Agency
Bureau of Air
Division of Mobile Source Programs
1021 North Grand Avenue East
Springfield, IL 62794

SUMMARY

The Illinois Environmental Protection Agency (Agency) is proposing to revise the vehicle emissions test standards contained in 35 Ill. Adm. Code Part 240. These revisions are the result of amendments to the Illinois Vehicle Code signed into law on July 14, 2011 ((Illinois Public Act ("P.A.") No. 97-0106)). The primary modifications to the Vehicle Emissions Inspection Law of 2005 ("VEIL of 2005") (625 ILCS 5/13C) include the following:

a) Sunsets the steady-state idle mode exhaust testing beginning February 1, 2012;
b) Sunsets the evaporative system integrity test (also known as the gas cap test) beginning February 1, 2012;
c) Exempts pre-2007 model year heavy-duty vehicles with gross vehicle weight rating (GVWR) between 8,501 and 14,000 pounds as of February 1, 2012;
d) Exempts all heavy-duty vehicles with GVWR greater than 14,000 pounds as of February 1, 2012; and,
e) Adds a visual inspection test for vehicles where OBD testing is not possible due to the vehicle's design (vehicles identified in Section 13C-25(h) of the VEIL OF 2005).

These proposed revisions to the emissions test standards reflect the applicable statutory changes listed above.

DEFINITIONS

The definition for "visual inspection test" was added to provide a description of this new test.

ELIMINATION OF STEADY-STATE IDLE MODE EXHAUST AND EVAPORATIVE TESTS (IDLE/GAS CAP)

As stated previously, the Illinois General Assembly amended the VEIL of 2005 through P.A. 97-0106, which repeals the steady-state idle and evaporative system integrity (gas cap) emissions tests effective February 1, 2012. Therefore, the Agency will be prohibited from using these tests after January 31, 2012. This rulemaking implements P.A. 97-0106 by proposing to sunset the steady-state idle and evaporative system integrity test standards. The decision to eliminate these tests was based on modeling projections showing negligible emission reduction benefits and a declining subject vehicle fleet.

Currently, less than 3% of the vehicle tests in Illinois are idle exhaust/gas cap tests. In addition, starting with the 2007 model year, heavy-duty vehicles with a GVWR of less than 14,000 are required to be equipped with OBD technology, and will receive the OBD test instead of the idle/gas cap test. As a result, the projected number of idle exhaust/gas cap tests conducted in Illinois is expected to fall to less than 1% by 2015. The idle

exhaust/gas cap tests and standards are no longer economically reasonable in the Illinois vehicle emissions test program given the additional capital and operating costs when only 1% of the fleet will be subject to this type of testing.

Modeling projections of the expected Illinois fleet for 2012 show that approximately 90% of the volatile organic compound (VOC) reductions would come from OBD equipped vehicles.[1] Given the fact that the idle exhaust/gas cap tests are only used on pre-2007 model year, non-OBD equipped vehicles (a small and diminishing portion of the vehicles subject to testing in the future), are not required by federal law or regulations where the OBD test is utilized, and that the cost was significantly higher than OBD testing, the Legislature decided it was technically feasible and economically reasonable to eliminate the requirement for any idle exhaust/gas cap testing in Illinois' program.

The main effect of this change is to sunset all Subpart D (Steady-State Idle Mode Test Emission Standards) and Subpart F (Evaporative Test Standards) contained in 35 Ill. Adm. Code 240, beginning February 1, 2012.

EXEMPTION OF HEAVY-DUTY VEHICLES

As stated earlier in this document, based on amendments to the VEIL of 2005, the idle exhaust/gas cap tests will be eliminated from the Illinois I/M program beginning February 1, 2012. The vast majority of vehicles subject to these tests are those not required to be equipped with OBD. Therefore, the Legislature has exempted these vehicles from the emissions test requirement in Illinois. Specifically, the following heavy-duty vehicles will be exempt:

1. pre-2007 model year heavy-duty vehicles with a GVWR between 8,501 and 14,000 pounds; and
2. heavy-duty vehicles with a GVWR greater than 14,000 pounds.

The exemption of these heavy-duty vehicles is both economically reasonable and technically feasible because modeling projections show no emission reduction benefits, diminishing numbers, and significant long-term costs for continued testing of these vehicles. Also, federal regulations allow states to vary the model year and vehicle type coverage in their programs.

Specifically, modeling projections shows that exempting the vehicles listed above will have no impact on volatile organic emissions (VOC) reductions in the Chicago and Metro-East non-attainment areas. Modeling shows that the loss in VOC reductions will be 0.00 tons per day for the projected calendar year range of 2012 through 2020 in both non-attainment areas.[2,3] Therefore, the Agency could no longer justify the added expense of testing vehicles that provide no emissions reduction benefits.

ADDITION OF VISUAL INSPECTION TEST STANDARDS (35 ILL ADM CODE 240.201, 240.202, and 240.203)

The addition of the visual inspection test is necessary to handle certain vehicles that are equipped with OBD technology, but for which OBD testing is not possible due to the vehicle's design. The new visual inspection test created and allowed by P.A. 97-0106, will provide motorists with the same flexibility they receive through the steady-state idle and evaporative system integrity tests in the current program. Specifically, the visual inspection test will be used only on vehicles for which OBD testing is not possible due to the vehicle's originally certified design or its design as modified in accordance with federal law and regulations, and on any vehicle with known on-board diagnostic communications or software problems, as determined by the Agency. Without this fallback test procedure, these vehicles would not be able to pass an OBD test and the motorist would have no means of correcting the problem and renewing the vehicle's registration. Not having this test would result in an undue burden on the motorist.

The Agency will make the determination as to which vehicles are eligible for the visual inspection test and will develop a list of such vehicles. Any vehicle that does not appear on this list will not be eligible for the visual inspection test and will need to comply with the full OBD inspection.

A vehicle that is eligible for the visual inspection test will be subject to the following procedural checks which will be embodied in the Agency's procedural rules at 35 Ill. Adm. Code Part 276:

1) Key-on/engine off
   The key-on/engine off test starts with the ignition in the key-off/engine-off position. The ignition shall then be turned to the key-on/engine off position. The inspector shall observe whether the malfunction indicator light (MIL) is illuminated.

2) Key-on/engine on
   The key-on/engine on test starts with the ignition in the key-on/engine off position. The ignition shall then be turned to the key-on/engine on position. The inspector shall observe whether the MIL is continuously illuminated.

In order to pass the visual inspection test, the MIL must illuminate during the key-on/engine off check and not illuminate during the key-on/engine on check. Therefore, the Agency is proposing as its visual inspection test standards that vehicles shall fail the visual inspection if the MIL does not illuminate in the key-on/engine off position or continuously illuminates in the key-on/engine on position.

The visual inspection test procedures and standards are based on long-standing practice within the I/M community and federal law. The "key-on/engine off" check verifies that the MIL bulb is functioning properly. Without a properly functioning bulb, the motorist would never be alerted when the OBD system detects potential problems with the vehicle's emissions control equipment. The "key-on/engine on" check verifies that there are no fault codes stored on the vehicle's OBD system which would require the

illumination of the MIL. The OBD system stores fault codes whenever it detects possible problems with the vehicle's emissions control equipment, and are used by repair technicians to help identify areas to focus on during repairs. For the foregoing reasons, the proposed visual inspection test standards are technically feasible.

The addition of the visual inspection test will not require any new test equipment and therefore will not incur any additional costs to the State or motorists. Therefore, the proposed visual inspection test standards are economically reasonable.

ADDITIONAL GENERAL REVISIONS

The following general revisions were made for the reasons specified:

a) Section 240.104 Inspection
   This section was revised to reference the new Visual Inspection Test.
b) Section 240.105 Penalties
   This section was revised to reference the new Visual Inspection Test.
c) Section 240.106 Determination of Violation
d) This section was revised to reference the new Visual Inspection Test.
e) Section 240.151 Applicability
   This section was revised to add the effective period for the Steady-State Idle Mode Test Emission Standards through January 31, 2012.
f) Section 240.171 Applicability
   This section was revised to add the effective period for the Evaporative Test Standards through January 31, 2012.

REFERENCES

1 Illinois Environmental Protection Agency, "Reinventing the Illinois I/M Program," Page 18, Report 2005 CAC, September 2005.

2 Illinois Environmental Protection Agency, "VOC Reduction (TPD) in the Chicago NAA from Existing and Proposed I/M Programs, 2012-2010," Sam Long, ProposedIMBenefits_Sam.xlsx, January 11, 2011.

3 Illinois Environmental Protection Agency, "VOC Reduction (TPD) in the Metro-East + Jersey NAA from Existing and Proposed I/M Programs, 2012-2010," Sam Long, ProposedIMBenefits_Sam.xlsx, January 11, 2011.

United States
Environmental Protection
Agency

Air and Radiation

EPA420-R-01-015
June 2001

EPA

Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program

EPA420-R-01-015
June 2001

Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program

David Sosnowski
Edward Gardetto
Transportation and Regional Programs Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

NOTICE

This technical report does not necessarily represent final EPA decisions or positions. It is intended to present technical analysis of issues using data that are currently available. The purpose in the release of such reports is to facilitate the exchange of technical information and to inform the public of technical developments which may form the basis for a final EPA decision, position, or regulatory action.

Performing Onboard Diagnostic System Checks as Part of a Vehicle Inspection and Maintenance Program

June 2001

Introduction

The Clean Air Act as amended in 1990 (CAA) requires the Environmental Protection Agency (EPA) to set guidelines for states to follow in designing and running vehicle inspection and maintenance (I/M) programs. As well as distinguishing between basic and enhanced I/M programs, these guidelines must clarify how states are to meet other minimum design requirements set by the CAA. One such requirement that applies to both basic and enhanced I/M programs is the performance of Onboard Diagnostic (OBD) system checks as part of the required, periodic inspection.

On November 5, 1992, EPA published the I/M rule to meet most of the above-referenced CAA requirements. At the time the I/M rule was promulgated, however, federal OBD certification standards had not been published. To address the CAA's OBD-I/M requirement, EPA reserved sections in the 1992 rule, 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, so full compliance was not required on all light-duty cars and trucks sold in this country until MY 1996. On August 6, 1996, EPA published amendments to the 1992 I/M rule establishing OBD-I/M requirements for I/M performance standards and I/M State Implementation Plans (SIPs). The 1996 amendments also specified 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 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 were too few to make pilot testing worthwhile. Therefore, in 1998, EPA further amended its OBD-I/M requirements to delay the date by which I/M programs must begin OBD testing to no later than January 1, 2001.

One of the primary reasons for delaying the deadline for beginning OBD-I/M testing was to give EPA time to evaluate the OBD check as an I/M program element and to give states time to prepare for implementation. In conducting its evaluation of OBD, however, EPA found that identifying and recruiting OBD-equipped vehicles in need of repair proved more difficult and time-consuming than originally anticipated. As a result, EPA has only recently completed the assessment of OBD-I/M effectiveness and implementation issues referenced in this guidance.

During the course of this evaluation, however, it became clear that certain regulatory changes were needed to ensure the smooth implementation of OBD-I/M testing by the states.

In response to its findings on OBD effectiveness and its study of the various implementation issues associated with OBD-I/M testing, EPA has amended the OBD-I/M testing requirements by publishing a final rulemaking (FRM) in the Federal Register on April 5, 2001[1]. The goal of these amendments is to update and streamline requirements and to remove regulatory obstacles that may otherwise impede the effective implementation of OBD-I/M testing. Among other things, the revised requirements: 1) provide states several options for extending the current deadline for mandatory implementation of the OBD-I/M inspection beyond January 1, 2001; 2) clarify states' options regarding the integration of OBD-I/M checks into existing I/M networks; 3) revise and simplify the current list of Diagnostic Trouble Codes (DTCs) that constitute the OBD-I/M failure criteria to include any DTC that leads to the dashboard Malfunction Indicator Light (MIL) being commanded on; and 4) provide for exemptions from specific readiness code rejection criteria on OBD-equipped vehicles based upon vehicle model year.

In addition to the above cited regulatory revisions, EPA believes it is important to respond to states' requests to provide additional guidance on how to successfully implement OBD-I/M testing in an I/M program. EPA is therefore issuing this guidance at this time in response to those requests and to assist those states and local areas that are considering or planning early implementation of OBD checks as part of their I/M programs.

Scope of Guidance

This guidance incorporates several key recommendations made to EPA by the OBD Workgroup, which is part of the Mobile Source Technical Review Committee, established under the Federal Advisory Committee Act (FACA). This guidance was also developed by drawing from the experiences of several states that are currently performing some form of OBD-based inspection. As of this writing, ten states (New York, California[2], Colorado, Alaska, Illinois, Wisconsin, Vermont, Oregon, Maine, and Utah[3]) are performing some form of vehicle OBD system check and at least three other states (Indiana, New Hampshire, and Georgia) are actively moving towards early implementation of vehicle OBD system checks. Lastly, the development of this guidance was aided by comments received from stakeholders in response to an earlier, draft guidance released for public comment in December 2000.

---

[1] Copies of the FRM are available via the Internet at www.epa.gov/oms/epg/regs.htm.

[2] Currently, California and New York are performing only a visual check for MIL illumination. A scanner check for trouble codes will be added in the future.

[3] In Utah, the I/M program is administered at the county level (as opposed to at the state level). Although there are several counties in Utah currently required to implement I/M, only one county – Davis – has opted to begin early implementation of the OBD-I/M check.

This guidance reflects EPA's current understanding of the challenges and issues unique to the performance of OBD testing in the I/M program environment, and includes our recommendations for how best to address those issues at this time. As is the case with any technology-driven pollution control measure, our understanding of the issues and the issues themselves are likely to change over time as we gain more experience with them. Therefore, EPA will update this guidance from time to time, as developments warrant. To ensure that this document is updated accurately, EPA invites those involved with performing the OBD-I/M check to share information with us by contacting Ed Gardetto at 734-214-4322, or via e-mail at gardetto.edward@epa.gov. Program data, recommendations, and other forms of feedback relevant to the performance of the OBD-I/M check can also be sent to:

Ed Gardetto c/o
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, MI 48105

Lastly, this guidance does not address those I/M implementation issues which are common to all test types and for which there are no unique, OBD-specific considerations. For example, this guidance does not address geographic coverage requirements or the adequacy of program funding mechanisms. Readers can find EPA's requirements and/or recommendations for these generic I/M implementation issues by consulting the I/M rule (as amended) and EPA's subsequent I/M policy documents, which are available via the Office of Transportation and Air Quality (OTAQ) web site at: http:\\www.epa.gov\otaq\im.htm.

Vehicle OBD System Checks: Basic Requirements

Recommended Model Year Coverage

Although some variety of OBD system has been an option on certain vehicle models since the early 1980's, standardized OBD systems (also known as OBD II) were not introduced until MY 1994, and such systems did not appear on all new light-duty vehicles sold in this country until MY 1996. Therefore, for I/M purposes, EPA does not require that pre-1996 MY vehicles be subject to the OBD inspection discussed in this guidance. Furthermore, EPA does not recommend that such testing include MY 1994-95 vehicles because not all such vehicles are OBD-equipped and the availability to manufacturers of limited waivers from some OBD requirements makes determining which of these vehicles to test (and to what standards) administratively very difficult. Additionally, EPA's MOBILE6 emission factor model will not provide emission reduction credit for the performance of OBD-I/M checks on pre-1996 MY vehicles.

EPA also does not recommend that vehicles older than MY 1994 be subjected to OBD-based I/M testing, even if it is determined that the vehicle is equipped with an OBD computer,

and may even have a malfunction indicator light (MIL) illuminated. The reason we do not recommend performing an OBD-I/M scan on pre-1994 MY OBD-equipped vehicles is because such vehicles use an earlier, non-standardized generation of OBD system (also known as OBD I). Due to the lack of federal standards for OBD I systems, the systems themselves tend to be proprietary and may not be compatible with the standardized OBD II scanners that will be used in most I/M programs[4].

Elements of an OBD-I/M Check

An OBD-I/M check consists of two types of examination: A visual check of the dashboard display function and status (also known as the MIL and/or bulb check) and an electronic examination of the OBD computer itself. These two examinations, taken together, comprise the seven step procedure outlined below.

1) Initiate an official test by scanning or manually inputting the required vehicle and owner information into the reporting medium (i.e., PC-based electronic reporting system or manual test report).

2) Visually examine the instrument panel to determine if the MIL illuminates briefly when the ignition key is turned to the "key on, engine off" (KOEO) position. A brief period of illumination of the MIL at start-up is normal and helps confirm the bulb is in proper, operating condition. This portion of the test procedure is also known as the "bulb check." Enter the results of the bulb check into the reporting medium.

3) Locate the vehicle's data link connector (DLC) and plug a scan tool into the connector. While it is recommended that this step be performed with the ignition in the "off" position, this step can also be performed with the ignition running. Given the variety of locations manufacturers have chosen in practice, locating the DLC may well be the most time-consuming element of the inspection. We will discuss the issue of atypical DLC location elsewhere in this guidance.

4) Start the vehicle's engine so that the vehicle is in the "key on, engine running" (KOER) condition[5]. The MIL may illuminate and then extinguish during this phase. Continued illumination while the engine is running is cause for failure.

---

[4] 40 CFR 85.2222 "On-board diagnostic test procedures" requires that the scan tool used for the OBD-I/M inspection be capable of communicating with the OBD system in compliance with the Society of Automotive Engineers (SAE) Recommended Practice J1979.

[5] While it is possible to perform the electronic scan portion of the OBD-I/M check in the KOEO position for most vehicles, EPA discourages this practice because it can lead to false failures for some makes and models of vehicles (such as MY 1996-2001 Subarus).

Also, if the MIL illuminates during this phase but was not observed in step 2, the vehicle should not be failed for step 2.

5) With the scan tool in the "generic OBD" mode, follow the scan tool manufacturer's instructions[6] to determine:

- Vehicle readiness status[7]
- MIL status (whether commanded on or off)[8], and
- Diagnostic Trouble Codes (DTCs) for those vehicles with MILs commanded on[9].

6) Record the results of the OBD inspection in the appropriate medium. Depending upon the design and feature requirements of the program, this may be an automated process.

7) Without clearing DTCs or readiness codes, turn off the vehicle ignition, and then disconnect the scan tool[10]. Clearing codes – if such is necessary – should be reserved for the repair portion of the program (even though in test-and-repair programs, the same personnel may be engaged in both activities). These codes (and the associated "freeze-frame" data) are important for the performance of proper diagnostics prior to repair.

Although the above inspection elements are listed sequentially, current regulations do not specify the sequence that must be followed in performing the OBD-I/M inspection, and EPA sees no reason for applying a rigid sequence at this time. In some cases it may make more sense to

---

[6] For I/M purposes, the inspectors and repair technicians should be advised to conduct the scan in "generic" mode as opposed to a vehicle manufacturer specific mode. EPA is aware of some instances in which using a scan tool in the vehicle manufacturer specific mode will result in confusing or misleading readings regarding vehicle readiness.

[7] Refer to SAE J1979 MODE 01 PID 01 DATA C and D.

[8] Refer to SAE J1979 MODE 01 PID 01 DATA A BIT 7.

[9] EPA's original OBD-I/M failure criteria were limited to power-train, emission-related DTCs (refer to SAE J1979 MODE 03). In its April 5, 2001 rulemaking, however, EPA simplified the failure-triggering DTC criteria to any DTC that leads to the MIL being commanded on. As part of its technical support efforts for the April 5, 2001 rulemaking, EPA looked at six months' worth of OBD-I/M data from the Wisconsin I/M program and found that less than 0.5% of the OBD-equipped vehicles tested during that period experienced MILs being commanded on for DTCs falling outside the previous failure criteria. As a result, EPA does not believe the simplified failure criteria will result in higher overall I/M failure rates -- especially not in those areas that opt to replace existing tailpipe testing on MY 1996 and newer vehicles with the OBD-I/M scan.

[10] For programs conducting both OBD and tailpipe testing on OBD-equipped vehicles, the tailpipe test may be conducted prior to this step, to avoid an extra, unnecessary key-off, key-on cycle.

conduct the visual portion of the inspection after performing the onboard computer scan. For example, a state choosing to perform both a traditional tailpipe test and the OBD-I/M check on OBD-equipped vehicles may choose to reduce the overall test time involved by conducting the OBD scan at the same time the other test is performed. EPA has found that a scan tool can be plugged into a still-running vehicle without producing erroneous readings. Therefore, we believe states should be allowed the flexibility to determine the optimum test sequence to meet their programmatic needs. However, EPA does caution that unforeseen problems may arise with some subset of the fleet due to changes in the sequence. EPA therefore asks that states consult with the Agency should they find unusual failure patterns among certain makes and models of vehicles in conjunction with the use of alternative test sequences.

For readers who prefer their information presented graphically, a flowchart of an acceptable OBD system check is included in Appendix E of this guidance document. It was developed by the Center for Automotive Science and Technology at Weber State University, and is consistent with EPA guidance.

Basis for Failure or Rejection

Unless otherwise noted in this guidance, a vehicle should be failed for any of the following five reasons, with the exception of the last (for which the appropriate action is rejection):[11]

1) It is a 1996 or newer vehicle and the data link connector (DLC) is missing, has been tampered[12] with, or is otherwise inoperable. (Action: Failure)

2) The MIL does not illuminate at all when the ignition key is turned to the KOEO position. The MIL should illuminate (on some vehicles, only for a brief period of time) when the ignition key is turned to the KOEO position. (Action: Failure)

3) If the MIL illuminates continuously or flashes after the engine has been started, even if no fault codes are present, since this could indicate a serial data link

[11] States should be aware that some vehicles have atypical OBD configurations, and should take steps to avoid unfairly penalizing motorists. For example, states may incorrectly suspect motorist tampering for those vehicles that are manufactured with the DLC in a hard-to-find location. EPA is working with manufacturers, operating OBD-I/M programs, and Weber State University to develop an online clearinghouse of OBD-related information useful to state I/M programs and other stakeholders, including all OBD-related Technical Service Bulletins (TSBs) from the manufacturers and all relevant updates. See Appendices B through D for more information on vehicles with atypical OBD system issues.

[12] Tampering is considered to be any modification of the vehicle that deviates from the certified configuration of the vehicle, particularly if such modification has the practical effect of making the vehicle untestable (by, for example, making the DLC inaccessible) or otherwise constitutes an attempt to evade the program (by, for example, using illegal aftermarket devices designed to circumvent the OBD computer or provide false results during an OBD-I/M check). Under this definition, moving a DLC as part of collision repairs would not necessarily constitute tampering -- provided the DLC was not hidden or rendered otherwise inaccessible as a result of being moved.

failure.[13] (Action: Failure)

4) Any DTCs are present and the MIL status, as indicated by the scan tool, is commanded on, regardless of whether or not the MIL is actually illuminated. Do not fail the vehicle if DTCs are present and the MIL status, as indicated by the scan tool, is off, because such non-MIL-triggering DTCs are considered "pending" and frequently self clear without requiring repair of the vehicle. MIL command status must be determined with the engine running. (Action: Failure)

5) The number of OBD system monitors showing a "not ready" status exceeds the number allowed for the model year in question. (Action: Rejection)[14]

Table 1 below lists the possible test outcomes in tabular form.

Table 1 – Possible OBD-I/M Outcomes

Vehicle Passes If:	* Bulb check OK and * MIL not lit while engine running and * MIL not commanded on for any DTCs and * All required readiness codes are set
Vehicle Fails If:	* Bulb check not OK and/or * MIL lit while engine running and/or * MIL commanded on for any DTC and/or * DLC missing, tampered, or inoperable
Vehicle Rejected If:	* More unset readiness codes found than allowed based on MY and/or * DLC cannot be located or is inaccessible

[13] States should be aware that some vehicles will illuminate a MIL when a scan tool is connected and the vehicle is still in the "key on, engine off" condition. In some cases, the scan tool will indicate that the MIL is, in fact, commanded on -- even though no DTCs may be present. EPA has found that these vehicles will usually extinguish the MIL and remove the "MIL commanded on" indicator when the engine is started. To avoid falsely failing vehicles, therefore, it is important that the electronic portion of the OBD-I/M check be conducted only with the vehicle in the "key on, engine running" condition (as indicated in the test procedure described above).

[14] Although earlier requirements stipulated that OBD-equipped vehicles be rejected from further testing if any monitor was "not ready," EPA has revised these readiness criteria to allow states to not reject MY 1996-2000 vehicles with two or fewer unset readiness codes, or MY 2001 and newer vehicles with no more than one unset readiness code. The complete MIL check and scan should still be run in all cases, however, and the vehicle should still be failed if one or more DTCs are set and the MIL is commanded on. The vehicle should also continue to be rejected if the OBD computer does not set readiness codes for 3 or more monitors on MY 1996-2000 vehicles, or two or more monitors on MY 2001 and newer vehicles. Readiness codes in general, and the specific codes and conditions covered by the April 5, 2001 amendments will be discussed in more detail under a separate section of this guidance.

I/M-Related DTCs

Until recently, Federal I/M regulations identified a subset of power train (or P-code) DTCs as being relevant for I/M purposes. If a vehicle was identified through an I/M program as having a MIL commanded on for one or more of those P-codes, then Federal regulations required that the vehicle fail the inspection. In an attempt to simplify these failure criteria – and to harmonize Federal requirements with California Air Resources Board (CARB) requirements – EPA amended this requirement as part of its April 5, 2001 rulemaking. Under the revised failure criteria, a vehicle shall now be failed for the presence of any DTC that results in the "Check Engine" MIL being commanded on.

In commenting on an earlier draft of this implementation guidance, several commenters raised concerns that EPA's simplified failure criteria would result in vehicles being failed for non-emission related components or systems, such as the brakes or suspension. Although some vehicle onboard computers may monitor non-emission-related components and systems at the manufacturer's discretion, Federal regulations require that the "Check Engine" MIL only be illuminated for emission-related malfunctions. Other dashboard lights may be illuminated to indicate the need for service of a non-emission-related component or system, but the presence of such lights does not constitute grounds for failing the OBD-I/M check. Furthermore, EPA has examined data from over 300,000 OBD-I/M checks performed in actual I/M lanes and has not found a single instance of the simplified failure criteria leading to the failure of a vehicle for a non-emission-related component or system.

EPA also wants to acknowledge that it is possible we may need to limit the criteria for failing OBD-equipped vehicles after such vehicles reach an as-yet undetermined age and/or mileage. The reason for considering this possibility stems from the fundamental difference between how OBD triggers repairs versus how traditional tailpipe tests trigger repairs. Traditional I/M tailpipe tests identify a vehicle as failing for a given pollutant through direct sampling of the exhaust plume. These tests vary in the degree to which they provide any additional information that can be used to target the component or system failure that has led to the high emission reading. In such programs, repair technicians have a fair degree of discretion when it comes to recommending repairs to address a given failure, although owners are protected from excessive economic hardship by the cost waiver option. OBD, on the other hand, identifies specific components and/or systems in need of repair or replacement. As a result, EPA foresees the possibility that some advanced-aged OBD-equipped vehicles could be failed for DTCs for which the only available repair option would cost substantially more than the fair market value of the vehicle itself. Under such a scenario, the waiver option does not offer much consumer protection, since such repairs tend to be all-or-nothing propositions. For example, a motorist faced with a transmission repair cannot reasonably opt to have the transmission "half fixed" to take advantage of the cost waiver option.

Given the relative newness of OBD II, EPA has not been able to gather the data

necessary to determine whether situations like the one above will actually happen in practice (though the Agency certainly plans to gather such data in the future). We do believe however that program requirements should be reasonable, and that the economic burdens of a program should be balanced by the environmental benefit likely to result from the imposition of those burdens. Therefore, we may revise our failure criteria at some future date, once data has been gathered and analyzed concerning the actual costs associated with repairing high mileage/age OBD-equipped vehicles across the full range of possible MIL-triggering DTCs.

Test Report

If a vehicle fails, the test report given to the motorist should include the status of the MIL illumination command and the alphanumeric fault code(s) listed along with the DTC definition(s) as specified per SAE J2012 and J1930. Only the fault codes leading to the inspection failure should be listed on the report given to the motorist. EPA makes this recommendation because it is possible that an OBD system may set DTCs without commanding a MIL to be illuminated. These DTCs usually reflect an intermittent condition which may or may not be a problem at the time of testing. If the condition does not recur within a certain number of trips, the code will eventually be cleared; if the condition does recur, the system may then determine that a MIL should be illuminated. Therefore, no DTCs should be printed on test reports for vehicles that pass the inspection. An owner who receives notice of these codes on the same sheet of paper with notification of passing the state inspection may become confused or desensitized to the importance of DTCs and the MIL. Lastly, unset readiness codes should also be listed on the report if the number of unset readiness codes exceeds the limit for which an exemption is allowed (i.e., if the outcome of the test is rejection based upon the presence of too many unset readiness codes). If the number of unset readiness codes falls below the limit for which an exemption is allowed (and the vehicle would otherwise pass the inspection) then no unset readiness codes should be listed on the test report provided to the motorist.

Readiness Status: Initial Test

The OBD system monitors the status of up to 11 emission control related subsystems by performing either continuous or periodic functional tests of specific components and vehicle conditions. The first three testing categories – misfire, fuel trim, and comprehensive components – are continuous, while the remaining eight only run after a certain set of conditions has been met. The algorithms for running these eight, periodic monitors are unique to each manufacturer and involve such things as ambient temperature as well as driving conditions. Most vehicles will have at least five of the eight remaining monitors (catalyst, evaporative system, oxygen sensor, heated oxygen sensor, and exhaust gas recirculation or EGR system) while the remaining three (air conditioning, secondary air, and heated catalyst) are not necessarily applicable to all vehicles. When a vehicle is scanned at an OBD-I/M test site, these monitors can appear as either "ready" (meaning the monitor in question has been evaluated),

"not ready" (meaning the monitor has not yet been evaluated), or "not applicable" (meaning the vehicle is not equipped with the component monitor in question).

There are several reasons why a vehicle may arrive for testing without the required readiness codes set. These reasons include the following:

1) Failure to operate the vehicle under the conditions necessary to evaluate the monitor(s) in question;

2) A recent resetting of the OBD system due to battery disconnection or replacement, or routine maintenance immediately prior to testing[15];

3) A unique, vehicle-specific OBD system failure;

4) An as-of-yet undefined system design anomaly; or

5) A fraudulent attempt to avoid I/M program requirements by clearing OBD codes just prior to OBD-I/M testing (by, for example, temporarily disconnecting the battery).

In addition to the above considerations, EPA has also found that a small number of vehicles may be flagged as "not ready" or "not supported" for one or more of the continuous monitors (i.e., misfire, fuel trim, and/or comprehensive components). This makes no sense because continuous monitors are designed to run continuously (as their name implies) and therefore should always be flagged as "ready." In its investigation of this issue, EPA has determined that the problem is the result of incompatibility between the vehicle and scanner software and is not indicative of a fault with the vehicle's OBD system. As a result of this discovery, EPA recommends that programs disregard these continuous monitors when establishing the readiness status of the vehicle. This exclusion is for readiness determination purposes only; a vehicle with a MIL commanded on for a continuous monitor based DTC should continue to be failed in compliance with the test procedure discussed earlier in this guidance. EPA is working with state programs and OBD software suppliers to address this issue and will issue revised guidance as warranted.

Because the presence of unset readiness codes among the non-continuous monitors could be a sign of attempted fraud, it is important that all OBD-equipped vehicles be checked to confirm that readiness codes have been set as one of the pre-requisites for a valid OBD-I/M inspection. Nevertheless, as described in the FRM, EPA also believes that the previous requirement regarding readiness codes (i.e., that a vehicle be rejected from further testing if any monitor is found to be "not ready") was more rigorous than either necessary or practical. Therefore, as discussed under "Basis for Failure or Rejection" above, EPA has revised the

[15] As part of a program's outreach effort, car owners should be advised to allow for approximately one week of normal vehicle operation after repairs and prior to OBD-I/M testing (or retesting).

readiness requirement so as to allow states to complete the testing process on MY 1996-2000 vehicles with two or fewer unset readiness codes; for MY 2001 and newer vehicles, the testing process can still be completed provided there is no more than one unset readiness code. This does not mean that these vehicles are exempt from the OBD-I/M check[16]. The complete MIL check and scan must be run in all cases, and the vehicle still must be failed if any of the failure criteria discussed in this guidance are met. The vehicle should continue to be rejected if it is MY 1996-2000 and has three or more unset, non-continuous readiness codes or is MY 2001 or newer and has two or more unset, non-continuous readiness codes.

As discussed in the Technical Support Document for the FRM, this amendment is based upon EPA's findings regarding readiness codes from Wisconsin's OBD-I/M data and also reflects a FACA workgroup recommendation. Since August 1998, Wisconsin's I/M program contractor has been sending to EPA OBD scanning and IM240 test results data collected on MY 1996 and newer vehicles coming through the Wisconsin I/M test lanes. In analyzing the Wisconsin data, EPA made the following observations regarding the readiness status of the OBD-equipped vehicles presented for testing[17]:

- The majority of vehicles showing up at the I/M lane with readiness codes reading "not ready" were from MY 1996; the "not ready" rate for MY 1996 vehicles was 5.8%.

- The frequency of vehicles with readiness codes reading "not ready" dropped off with each successive model year – to 2.2% for MY 1997 and 1.4% for MY 1998.

- If an exemption were allowed for up to two readiness codes to read "not ready" before a vehicle would be rejected from further testing, the rejection rate drops – to 2.2% for MY 1996 and to 0.2% for MY 1997 and MY 1998, for a three model year average of 0.9%.

The intention behind EPA's decision to allow limited exemptions from the readiness

---

[16] As discussed above, when determining the readiness status of a vehicle, EPA recommends that programs only consider the non-continuous monitors. Likewise, in assessing whether a "not ready" vehicle can be exempt from the readiness rejection requirement based upon the number of unset readiness codes present, only unset readiness codes among the non-continuous monitors should be counted.

[17] In commenting on an earlier draft of this implementation guidance, some commenters suggested that EPA's figures regarding the frequency of "not ready" vehicles in the in-use fleet are skewed downward because the Agency's data comes from a program where the OBD-I/M check is being performed on an "advisory only" basis. These commenters argued that in an "advisory only" program motorists had no incentive to fraudulently clear MILs by disconnecting the battery since there was no negative repercussion from showing up for the inspection with a lit MIL. These commenters further argued that once motorists began failing based upon MILs, the frequency of vehicles with unset readiness codes at the time of the initial test would go up. To test this hypothesis, EPA has begun analyzing program data from the Oregon OBD-I/M program, which is currently failing vehicles based upon the results of the OBD-I/M check. Based upon a preliminary analysis of the Oregon data, EPA has found that roughly 1.4% of MY1996+ vehicles are being rejected at the time of the initial test due to an excessive number of "not ready" codes (assuming the readiness exemption allowance provided by the April 5, 2001 FRM).

rejection criteria is exclusively to avoid inconveniencing motorists on the basis of vehicle conditions that are beyond their control, that are currently the subject of discussion between EPA and various manufacturers, and that, in some cases, may result in potential enforcement action. The purpose of the limited readiness exemption is not to relieve manufacturers of their responsibility to design and market OBD systems that comply with existing OBD certification requirements[18]. Nothing in this guidance in any way changes or otherwise impacts these obligations on the part of vehicle manufacturers. In fact, EPA has already initiated several investigations which may result in enforcement actions related to these requirements.

Because of the small number of vehicles involved, EPA believes that the environmental impact of the limited readiness exemption will be negligible, especially given the likelihood that at least some of these readiness codes will have been set in time for subsequent OBD-I/M checks, and the fact that an unset readiness code is not itself an indication of an emission problem. EPA believes that allowing limited exemptions from the readiness code requirement as described above makes the most sense at this time, while EPA, CARB, and the manufacturers work to clarify system function requirements with regard to I/M. Lastly, EPA does not believe that allowing these limited exemptions will interfere with the use of readiness codes to help deter possible fraud because such fraud would inevitably lead to more monitors being set to "not ready" than are allowed under EPA's limited exemptions.

In addition to the above exemptions, EPA also recommends that I/M programs waive the readiness requirement or otherwise accommodate specific makes, models, and model years of vehicles with known readiness design problems, in accordance with applicable technical service bulletins and/or EPA guidance. EPA has compiled a list of such vehicles and included it in Appendix D.

Even with these vehicle-specific accommodations and the above exemptions, however, some vehicles will still need to be rejected based upon readiness code status. In the case of a vehicle rejected for unset readiness codes (which does not otherwise meet the failure criteria described in this guidance), the motorist should be given the option of operating the vehicle for a week under normal operating conditions in an attempt to evaluate the necessary monitors without being required to visit a repair facility prior to retesting. If the monitors still have not performed an evaluation by the first retest, the motorist should then be advised to visit a repair

---

[18] To help emphasize this point, EPA clarifies here that the obligations of the automobile manufacturers with regard to OBD equipment are specified in regulatory section 40 CFR 86.094-17(e)(1): "Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines: Regulations Requiring On-Board Diagnostic Systems on 1994 and Later Model Year Light-Duty Vehicles and Light-Duty Trucks," which imposes, among other things, the obligation to design, build and certify OBD systems that: "record code(s) indicating the status of the emission control system. Absent the presence of any fault codes, separate status codes shall be used to identify correctly functioning emission control systems and those emission control systems which need further vehicle operation to be fully evaluated." In promulgating these requirements on February 19, 1993 the Agency stated: "The readiness code will ensure I/M testing personnel and service technicians that malfunction codes have not been cleared since the last OBD check of the vehicle's emission-related control systems. This code will be essential ... since I/M personnel must be sure that the OBD system has sufficient time to completely check all components and systems. The readiness code is also crucial for indicating to service personnel whether any repairs have been conducted properly."

facility where the monitors can be set based upon vehicle-specific, manufacturer guidance. Alternatively, states may decide to allow such vehicles to default back to the traditional I/M tests performed on the vehicles in question prior to introduction of the OBD-I/M test requirement. EPA recommends that states that choose to use back-up tailpipe testing in lieu of rejection track this activity carefully to ensure that the practice does not lead to an inadvertent loophole through which motorists routinely avoid the OBD-I/M inspection in favor of the tailpipe test.

In all cases, it is important to emphasize that lack of readiness is a special status particular to OBD systems and that the vehicle is not necessarily producing excess emissions. Instead, the vehicle's emissions status is officially "Unknown," due to a failure to meet certain monitoring conditions prior to the inspection. In order to minimize confusion, EPA recommends that states provide a written statement about OBD and readiness status to motorists who are rejected based upon an excessive number of unset readiness codes. Such a statement should make the following key points:

1) A vehicle rejected as "not ready" is not necessarily "dirty."

2) "Not ready" just means the vehicle's computer has not had an opportunity to fully evaluate the vehicle's performance.

3) Many circumstances can lead to a vehicle being "not ready," including recent vehicle repairs and/or battery replacement.

4) In most cases, a week's worth of continued vehicle operation under normal operating conditions will be sufficient to make a "not ready" vehicle "ready."

5) In a very limited number of cases (less than 1%), a "not ready" vehicle may need to be taken to a repair facility, where the readiness codes can be set based upon vehicle-specific, manufacturer guidance.

Readiness Status: Retest After Repairs -- Non-catalyst-related DTCs

OBD-I/M programs also must address the readiness code status of vehicles returning for retesting after repairs have been performed to correct an initial OBD-I/M failure. Even if the vehicle showed all readiness codes as "ready" on the initial test, vehicles returning to the I/M lane immediately following repair will likely have just had the fault code memory cleared by the repair technician (the proper step following a repair). Upon clearing the fault code memory, however, all readiness codes will also be cleared and set to "not ready." If the vehicle returns for retesting immediately after repair, it is possible that one or more readiness codes will register as "not ready." To address this possibility, EPA recommends that the vehicle be held to the same readiness criteria as are applicable for an initial test (i.e., if the vehicle is MY 1996-

2000, a maximum of any two unset readiness codes may be allowed, while for MY 2001 and newer vehicles, no more than one unset readiness code is allowed).

To help minimize the potential for vehicles showing up for their retest with an excessive number of unset readiness codes, outreach to the repair community should stress the importance of confirming vehicle readiness prior to returning a repaired, OBD-equipped vehicle to its owner. Motorists should also be informed that they should plan to allow a week's worth of ordinary driving between receiving repairs and getting a vehicle retested, to avoid being rejected based upon an excessive number of unset readiness codes. If, despite these caveats, a vehicle is presented for retesting with an excessive number of unset readiness codes after repair, EPA believes that the submission of repair receipts as proof of repair is an adequate method for establishing that the necessary repairs have been performed. EPA appreciates that the ability of inspectors to confirm repairs prior to retesting will vary, depending upon whether the I/M program is a test-and-repair or test-only program. In the case of test-only programs, outreach efforts to the repair community should stress the importance of including an indication on the repair receipt that the repairs in question are OBD-related (i.e., by including the diagnostic scan in an itemized list of services performed). A repair receipt (as opposed to a repair estimate) including evidence of a diagnostic scan and dated either on the same day as the initial test or sometime thereafter may be considered adequate for establishing proof-of-repair for retest purposes in test-only programs. In the case of owner-performed repairs, the program should require the submission of appropriately dated parts receipts prior to retesting, and these receipts should be reviewed by the test station manager, who in turn should be trained to determine whether the parts in question are relevant to the cause of failure. EPA believes that the number of vehicles falling into this last category (i.e., OBD-equipped vehicles that fail the initial test and return for retesting with owner-performed repairs and an excessive number of unset readiness codes) should be relatively small[19].

In commenting on an earlier draft of this implementation guidance, some commenters raised concern that it would be possible for repair technicians to selectively clear DTCs without performing repairs and without setting the remaining monitors (i.e., those without DTCs recorded) to "not ready." If this were possible -- the commenters argued -- then vehicles that should be failed could be fraudulently passed on the retest (even without receiving repairs) because of the readiness exemptions allowed by EPA (assuming the number of DTCs resulting in the initial failure did not exceed the number of readiness exemptions allowed for the model year in question). In reality, it is not possible to selectively clear DTCs or to only set some readiness monitors to "not ready" while leaving the remaining monitors "ready." As currently designed, the feature which allows the clearing of DTCs is an all-or-nothing proposition --

[19] In looking at data from the Oregon OBD-I/M program, EPA has found that for the tailpipe test, the average number of retests required before passing after the initial failure is 2.01, while for vehicles failing the OBD-I/M check, the average number of retests required before passing after the initial failure is 1.39 (even after accounting for the retest rejection rate associated with the readiness issue described in this section).

specifically to avoid fraud such as that suggested by the commenters[20].

Readiness Status: Retest After Repairs -- Catalyst-related DTCs (P0420 - P0439)

Based upon an analysis of data from the Oregon OBD-I/M program EPA recommends that vehicles which fail the initial OBD test for any of the catalyst monitoring codes (P0420 through P0439) be held to a higher standard for the retest than is the case with other failure codes. EPA recommends that initial catalyst failures follow one of the following steps at the time of retest:

1) If the catalyst monitor is "ready" at the time of retest, then the vehicle should be treated like any other vehicle returning for retest after failing for any non-catalyst-related DTC.

2) If the catalyst monitor is "not ready" at the time of retest, then the owner should be required to provide proof of repair, or the vehicle should be required to pass a tailpipe test to verify catalyst function.

3) Alternatively, at the program's discretion, if the catalyst monitor is "not ready" at the time of retest, the vehicle should be rejected until the catalyst monitor has been set to "ready."

Readiness Status: Continuous Monitors

As previously mentioned, EPA has found that a small number of vehicles may be flagged as "not ready" or "not supported" for one or more of the continuous monitors (i.e., misfire, fuel trim, and/or comprehensive components). EPA recommends that programs exclude these continuous monitors from consideration when establishing the initial readiness status of the vehicle. This exclusion is for readiness determination purposes only; a vehicle with a MIL commanded on for continuous monitor based DTCs should continue to be failed in compliance with the test procedure discussed earlier in this guidance. EPA is working with state programs and OBD software suppliers to address this issue and will provide revised guidance as warranted.

In the case of vehicles which fail the initial OBD-I/M check exclusively for DTCs related to the continuous monitors, repair technicians should be instructed to not clear the DTCs electronically after performing the necessary repairs. Instead, the success of repairs based upon continuous monitor related DTCs should be confirmed by letting the OBD system detect the repair and reset itself to "ready" (a process which should occur naturally after 3 engine key-

[20] Refer to SAE J1979 - "E/E Diagnostic Test Modes," Mode $04.

on/key-off cycles, provided the repairs were performed correctly). In the case of initial failures for a mix of continuous and non-continuous monitor related DTCs, the DTCs should continue to be cleared, post-repair, as recommended elsewhere in this guidance.

Evaporative System Testing and OBD

EPA's analysis of the Wisconsin I/M lane data suggests that OBD-I/M testing can be supplemented by including a separate gas-cap check. When EPA compared failure rates for the evaporative portion of the OBD-I/M test to the failure rate for the stand-alone gas cap test we found that the separate gas cap test was able to identify a substantial number of leaking gas caps that were not identified by the OBD monitors due to the different failure thresholds.

The seeming disparity described above is a result of the different detection thresholds for the two tests. The stand-alone gas cap test was designed to detect a leak as small as 60 cubic centimeters per minute (cc/min) at a pressure of 30 inches of water, while OBD systems were designed to detect leaks equal to a circular hole 0.040 inches in diameter. The 0.040 inch hole equates to a flow rate in excess of 2,600 cc/min at 10 inches of water column (i.e., the maximum allowable internal tank pressure using the enhanced evaporative emission test)[21]. As a result, an OBD system can reliably detect a loose or missing gas cap, while a properly tightened but leaking gas cap that can easily be identified by the gas cap test will probably not be identified by OBD.

Since the gas cap test is able to identify an excessive emission condition not identified by OBD, EPA recommends including this additional testing element in those areas that need substantial reductions in hydrocarbon (HC) emissions from mobile sources as part of their ozone attainment plans. For states with more modest air quality needs with regard to mobile sources, EPA is leaving it to the states to assess their needs regarding whether or not gas cap testing is added to the OBD testing regime. EPA is reserving judgement at this time because we still do not have sufficient data to draw reliable conclusions concerning the frequency of leaking gas caps in the in-use fleet. Our efforts in these areas have been complicated as a result of pre-inspection replacement of the gas cap and, in some cases, a failure by inspectors to record the initial gas cap failure as a failure. During informal audits of such programs, EPA has found that the faulty gas cap is frequently replaced on the spot, or the owner is directed to simply replace the cap later without being required to return for a retest[22].

---

[21] During its pilot testing of OBD evaporative monitor effectiveness, EPA found that some in-use OBD systems were capable of detecting leaks from holes as small as 0.020 inches in diameter. A 0.020 inch hole equates to 600 cc/min at 10 inches of water column pressure.

[22] EPA encourages states conducting the gas cap pressure check to stress the importance of performing and recording the results of the gas cap test accurately as part of their on-going outreach, training, and enforcement activities.

Implementation Issues for Centralized vs. Decentralized OBD-Based Testing

While EPA recommends that I/M programs integrate OBD-I/M test procedures into an overall, PC-based, real-time data-linked testing system, we understand that some programs which do not currently require test stations to be linked to a real-time database may opt to use generic, stand-alone, handheld scanners that do not generate automatic test reports and are not tied to a real-time data-linked system. While the use of stand-alone scanners is not barred by I/M regulations for those areas not otherwise required to employ a real-time database, EPA nevertheless sees several drawbacks to the stand-alone approach to OBD-I/M testing. For example, the lack of a real-time data link will mean that program oversight will necessarily be more costly, more labor intensive, and also less comprehensive, leaving the program perhaps more vulnerable to fraud. This decrease in program oversight effectiveness would come at a time when a significant portion of the program itself is reverting to what is, in effect, a manual test program, where test reports are filled out by hand from information read off a handheld scanner's screen. Historically, programs that rely upon a non-automated process for making pass/fail decisions have been found to be even more difficult to oversee than traditional decentralized programs, since no electronic record is produced, making auditing more difficult. Furthermore, the use of computer matching to identify non-complying vehicles would be seriously restricted under such a system, assuming that such a system would not result in an electronically searchable testing database. And while it is possible that manually-completed test reports could be made computer-scannable and collected during site visits or sent to the state, the inherent time lag between the test and inclusion in the state database makes this a challenging implementation issue (i.e., a negative hit could equal data lag, not necessarily non-compliance). Lastly, the individual station's access to extensive and important program information (for example, DLC location databases and technical service bulletins regarding program updates, pattern failures, etc.) would be limited, both in terms of availability and timeliness.

At a minimum, EPA believes that for an OBD-I/M test program to be most effective -- whether centralized or decentralized -- it should be designed in such a way as to allow for:

- Real-time data link connection to a centralized testing database;
- Quality-controlled input of vehicle and owner identification information (preferably automated, for example, through the use of bar code); and
- Automated generation of test reports.

OBD and Inspector Fraud

As is the case with all other I/M test types, the OBD-I/M check is vulnerable to inspector fraud, and program managers need to be on guard to limit the opportunities for this

kind of activity. For example, it is currently possible for an unscrupulous inspector in a tailpipe-based program to engage in a practice known as "clean piping," where a known-clean vehicle is tested while the vehicle identification information for another (presumably dirty) vehicle is entered into the test record. Similarly, there is a limited opportunity for an inspector to "clean scan" an OBD-equipped vehicle, but there are also methods for keeping this type of activity in check. The opportunity for "clean scanning" exists because the vehicle identification number (VIN) is not currently included in the data stored in the vehicle's onboard computer. Unlike "clean piping," however (where almost any known-clean vehicle will do), the opportunity for large-scale "clean scanning" can be greatly reduced through the use of identity-limiting information which is currently available from the vehicle's OBD system. For example, programs could tally the number of Parameter Identifications (PIDs)[23] supported by the vehicle, which can be used as a check against the other vehicle information entered into the test record. Another important number to capture and track for quality control purposes is the Powertrain Control Module (PCM) diagnostic address[24]. While these numbers do not identify a vehicle down to the level of an individual registration and owner, they do allow for the separation of vehicles into different makes, models, and engine families. Put another way, the PID count and PCM diagnostic address for a Honda Accord will be different from that of a Ford Escort. Therefore, programs can limit the potential for fraud via "clean scanning" by comparing the PID count and/or the PCM diagnostic address to the other vehicle information in the test record. EPA is working with manufacturers and states currently implementing the OBD-I/M inspection to gather the data necessary to interpret PID count and PCM diagnostic address information so it can be used for this purpose.

In commenting on an earlier draft of this implementation guidance, some commenters suggested that even though the use of PID counts and PCM diagnostic addresses could limit the potential for fraud via "clean scanning" among garages and service stations, it does not pose much of a deterrent for dealerships, which have a readily available supply of vehicles of the same make and model as vehicles being tested. While this may be the case, EPA does not believe that the potential for fraud among OBD-equipped vehicles is any higher than the current potential for fraud via clean piping. Furthermore, if a state is concerned that dealerships pose a greater fraud threat than other service providers, the state certainly has the discretion to monitor the compliance of those dealerships and take appropriate enforcement action, should fraud be detected.

Repair Cost Waivers and OBD

Though for equity reasons it may be difficult for states to eliminate the waiver option for OBD-tested vehicles, EPA recommends that states consider at least modifying waiver

---

[23] Refer to SAE J1979 MODE 01 PID 00.

[24] Refer to SAE J1979 Section 4.2.4 Header Bytes.

requirements for such vehicles. The reason for wanting to avoid granting a waiver to a vehicle with an illuminated MIL is two-fold: 1) it reinforces bad behavior (i.e., ignoring illuminated MILs) and 2) once lit, a MIL that was illuminated for a relatively minor problem effectively eclipses new, major problems, should they develop. At a minimum, the state's public education efforts regarding the OBD inspection should stress the importance of responding to illuminated MILs in a timely manner.

Public Outreach

In recognition of the pivotal role repair technicians and the public play in the success of I/M programs, EPA recommends that all states required to perform vehicle OBD system checks begin public outreach and technician training six months to a year prior to the beginning of mandatory OBD testing[25]. Therefore, another reason for issuing this guidance at this time is to give states the opportunity to consider the various issues raised by and addressed in this guidance in the development of their public outreach and technician training efforts. The need for public outreach is also one of the reasons EPA has provided states several options for postponing the deadline for mandatory OBD testing beyond January 1, 2001 as part of its April 5, 2001 rulemaking.

To facilitate a smooth incorporation of OBD-based testing of OBD-equipped vehicles into I/M programs states should not underestimate the importance of effective public outreach campaigns to inform motorists and the repair community about OBD and how it works, what the MIL is and how to respond to it, and the environmental and consumer benefits of OBD. Thorough explanation of the OBD system within the context of I/M testing may guard against the negative public perception which accompanied the introduction of loaded mode testing in many areas. Extra care may need to be taken in areas where loaded mode testing made the state emissions testing a "hot button" issue.

Once developed, public educational materials should be disseminated as widely as possible. Relevant distribution points include: Trade organizations, dealerships (service writers as well as technicians), AAA and other insurance-provider newsletters, private garages, owners manuals for MY 1996 and newer vehicles, EPA publications, auto shows, drive-time radio advertisements, automotive magazines, and environmental public service announcements. In pursuing their public outreach efforts, states should be sure to involve all relevant parties in the process of developing and distributing materials. These include: State

[25] EPA also recommends that states consider factoring in a month or more of voluntary, advisory-only testing to allow inspectors and motorists to get accustomed to the program and to allow for debugging prior to the beginning of mandatory testing with mandatory repairs upon failure. Under such a scenario, a vehicle would be given a complete OBD-I/M test with the exception that vehicles would not be failed on the basis of the OBD-I/M check alone, and would, instead, be issued an advisory notice indicating that the vehicle is experiencing a problem for which it will be failed if corrective action is not taken prior to the next test cycle. Under the one-test-cycle phase-in option allowed by the April 5, 2001 FRM, vehicles which fail the OBD-I/M check but pass the tailpipe inspection should be provided an advisory such as the one described above if they are excused from being repaired during the phase-in period.

legislators, local leaders, automobile manufacturers, automobile enthusiasts, scan tool manufacturers, EPA regional offices, emission inspection contractors, environmentalists, health professionals, AAA and other automotive insurance providers, technical colleges, service writers, private garages and repair chains.

Technician Training

The success of a state's OBD-I/M effort will also depend on making sure that the repair community is prepared to address the sorts of vehicles that are identified by the OBD scan as needing service and/or repair. States should work with their local educational institutions, OBD equipment vendors, and other training providers to ensure that the necessary training is available to repair technicians in the field well in advance of mandatory OBD-I/M testing. In addition, states should also work with the various organizations representing the repair community to stress the need for repair technicians to take advantage of the training opportunities that are available.

In I/M programs where repair technicians are licensed or certified by the state to participate in the program, OBD-specific repair technician training should be required as a prerequisite to such licensing or certification. Such training should address the following topics, at a minimum:

- The basics of OBD (i.e., theory, terminology, legal requirements, etc.)
- The differences between OBD I and OBD II
- The OBD-I/M inspection procedure
- The pass, fail, and rejection criteria for OBD-equipped vehicles
- Readiness, the setting and clearing of codes, and MIL-triggering vs. pending DTCs
- The link between the OBD-I/M check and the environment, and
- Proper diagnostic procedures and available sources of diagnostic materials (i.e., manufacturers, hotlines, web sites, etc.).

APPENDIX A

Glossary of I/M- and OBD-Related Terms

Basic I/M: A vehicle inspection and maintenance program designed to meet the basic I/M performance standard which includes performance of an idle test on 1968+ passenger cars. Under the 1990 Amendments to the Clean Air Act, basic I/M is required in moderate nonattainment areas, as well as those areas already implementing or required to implement a basic I/M program prior to passage of the 1990 Amendments.

"Check Engine" Light: See the definition for Malfunction Indicator Light (MIL) below.

Diagnostic Trouble Codes (DTCs): An alphanumeric code which is set in a vehicle's onboard computer when a monitor detects a condition likely to lead to (or has already produced) a component or system failure, or otherwise contribute to exceeding emissions standards by 1.5 times the certification standard.

Enhanced I/M: A vehicle inspection and maintenance program designed to meet one of three enhanced I/M performance standards – high, low, and ozone transport region (OTR) low. The high enhanced standard is designed around IM240 tailpipe testing and purge and pressure evaporative system testing. The low enhanced standard is similar to the basic I/M performance standard, but includes light-duty trucks and a visual antitampering inspection. The OTR low enhanced performance standard is designed for areas which would not be required to do I/M at all, save for their location within the Northeast Ozone Transport Region. The OTR low enhanced standard is based upon tailpipe testing using remote sensing devices and visual antitampering inspections. Serious and worse nonattainment areas are required to implement enhanced I/M, as well as all areas within the OTR with populations over 100,000, regardless of attainment status.

Evaporative System Test: A test of a vehicle's evaporative control system to determine if the system is 1) leaking and/or 2) purging properly.

Malfunction Indicator Light (MIL): Also known as a Check Engine light, the Malfunction Indicator Light of MIL is illuminated on the dashboard when conditions exist likely to result in emissions exceeding standards by 1.5 times or worse. Alternatives include "Service Engine Soon," as well as an unlabeled picture of an engine.

Onboard Diagnostics (OBD): A system of vehicle component and condition monitors controlled by a central, onboard computer running software designed to signal the motorist when conditions exist which could lead to a vehicle's exceeding its emission standards by 1.5 times the standard.

OBD Data Link Connector (DLC): The interface – usually located under the dashboard on the driver's side – between a vehicle's OBD computer and the OBD scanner. Connecting an

OBD scanner to the DLC allows I/M inspectors and vehicle repair technicians to read the readiness status of the vehicle's various onboard monitors as well as any diagnostic trouble codes (DTCs).

Readiness Code: A status flag stored by a vehicle's onboard computer which is different from a DTC in that it does not indicate a vehicle fault, but rather whether or not a given monitor has been run (i.e., whether or not the component or system in question has been checked to determine if it is functioning properly).

Scanner or Scan Tool: A PC-based or handheld device used to interface with a vehicle's onboard computer for the purpose of reading DTCs and monitor readiness status.

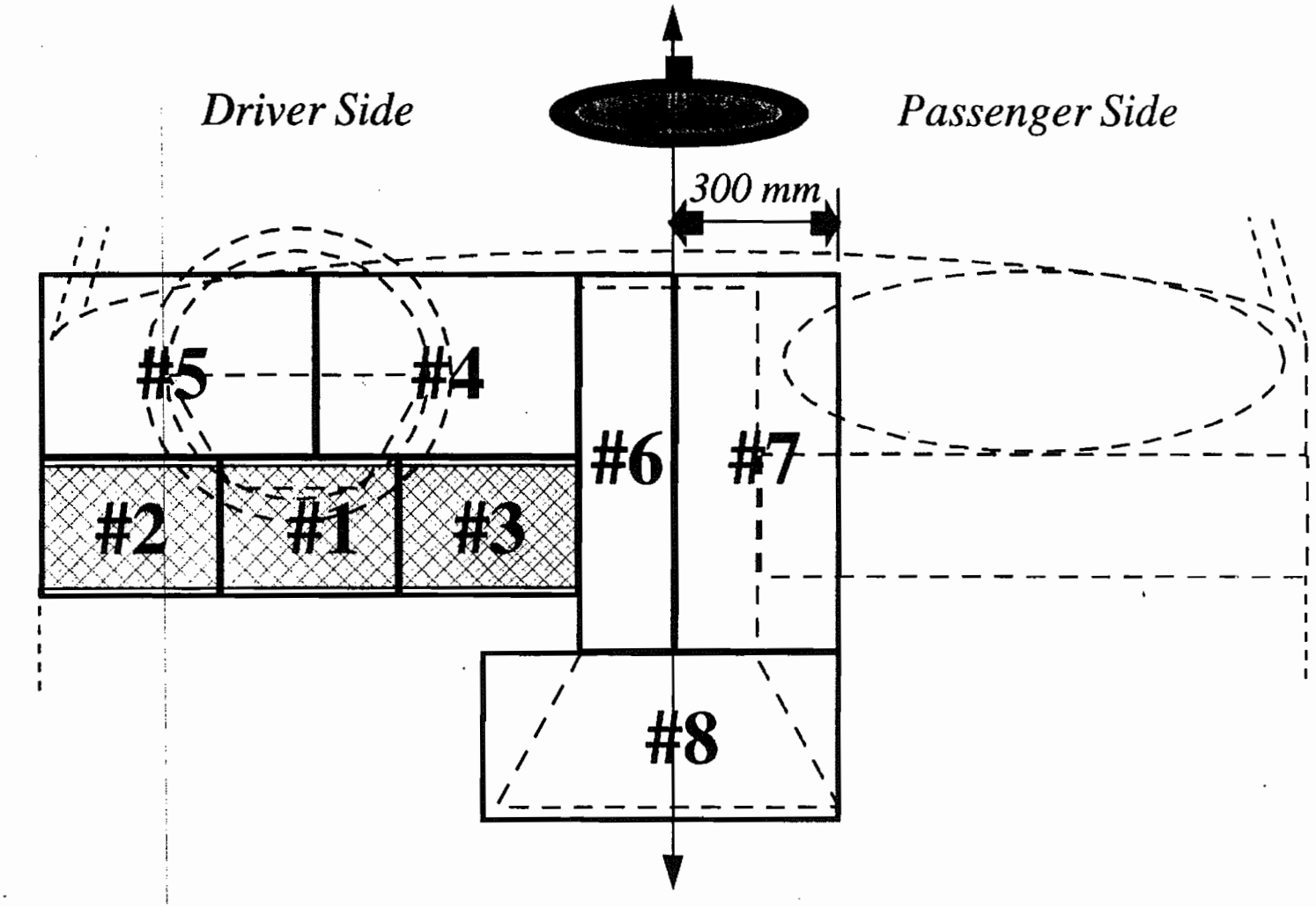
Test-and-Repair: An I/M program which allows the same people who test a vehicle to also repair the same vehicle and retest it to determine whether or not the repairs performed were adequate. Test-and-repair programs are also generally decentralized, though not all decentralized programs are necessarily test-and-repair.

Test-Only: An I/M program – usually, though not exclusively centralized – which requires that the functions of testing and repair be performed by different, financially unrelated parties.

APPENDIX B

Data Link Connector Mapping Diagram

Diagnostic Link Connector Mapping Diagram



Diagnostic Link Connector (DLC) Mapping Diagram Explanation

The mapping diagram of DLC locations contains a divided instrument panel (IP) with numbered areas. Each numbered area represents specific sections of the IP where manufacturers may have located DLCs. This document briefly clarifies the numbered locations on the mapping diagram. Areas 1-3 fall within the preferred DLC location while the remaining areas, 4-8, fall into the allowable DLC location according to EPA requirements. Areas 4-8 require that manufacturers label the vehicle in the preferred location to notify parties of the alternate connector location.

Preferred Location(s)

Location #1:
This location represents a DLC positioned on the underside of the IP directly under the steering column (or approximately 150mm left or right of the steering column). Visualizing the underside of an IP divided into three equal parts from inside the passenger compartment, this represents the center section.

Location #2
This location represents a DLC positioned on the underside of the IP between the steering column and the driver's side passenger door. Visualizing the underside of an IP divided into three equal parts from inside the passenger compartment, this represents the left section.

Location #3
This location represents a DLC positioned on the underside of the IP between the steering column and the center console. Visualizing the underside of an IP divided into three equal parts from inside the passenger compartment, this represents the right section.

Allowable Location(s)

Location #4
This location represents a DLC positioned on the upper part of the IP between the steering column and the center console (but not on the center console, see location #6).

Location #5
This location represents a DLC positioned on the upper part of the IP between the steering column and the driver side, passenger door.

Location #6
This location represents a DLC positioned on the vertical section of the center console and left of the vehicle center line.
Location #7

This location represents a DLC positioned 300 mm right of the vehicle centerline either on the vertical section of the center console or on the passenger side of the vehicle.

Location #8
This location represents a DLC positioned on the horizontal section of the center console either left or right of the vehicle center line. This does not include the horizontal section of the center console that extends into the rear passenger area (see location #9).

Location #9
This location, not shown, represents any DLC positioned in an area other than those mentioned above (e.g., in the rear passenger area on the driver side armrest).

APPENDIX C

Vehicles with Hard-to-Find Data Link Connector Locations*, by Make and Model Year

(*Location numbers refer to DLC map in Appendix B)

Manufacturer	Year	Model	Location/ Access	Comments
Audi	1996, 1997	Cabriolet, A6	9/cover	rear ashtray
Bentley	1996-2000	all	9/cover	in glove box
BMW	1999-2000	3 Series	2/cover	1/4 turn slot head screw
BMW	1996-1998	3 Series (including '96-'99 M3)	2/cover	1/4 turn slot head screw
BMW	1996-2000	5 Series	2/cover	1/4 turn slot head screw
BMW	1996 - 2000	7-series	6/cover	under stero cntrl
BMW	1996-2000	X3/M Roadster	7/cover	passenger side of console
BMW	1996 - 2000	Z3-series	9/cover	under passgr. dash
Ferrari	1996-2000	all	3/open	up high under the dash board
Ford	1996	Bronco	7/cover	
Ford	1996	F Series	7/cover	
Ford	1996, 1997	Thunderbird/Cougar	7/cover	
Honda	1996 - 1997	Accord	6/cover	behind ashtray
Honda	1997-1998	Acura CL	7/open	under passgr. dash
Honda	1999	Acura CL	8/open	above shifter
Honda	1999-2000	Acura RL	8/cover	in front of shifter behind ashtray
Honda	1996-1998	Acura TL	8/cover	behind ashtray
Honda	1999-2000	Acura TL	6/cover	below radio next to seat heater control
Honda	1997-2000	CR-V	7/open	under passgr. dash
Honda	1996-2000	DelSol/Hybrid	7/open	under passgr. dash
Honda	1996-1999	Integra	7/open	under passgr. dash
Honda	1997-2000	NSX, S2,000	7/open	under passgr. dash
Honda	1996- 1998	Odyssey	7/cover	console under passgr. dash
Honda	1997- 2000	Prelude	7/cover	under passgr. dash
Honda	1996	Prelude	8/open	above shifter
Honda	1996-1998	Acura RL	7/open	passenger side center console front
Hyundai	1996-1998	Accent	2/open	in coin box
Lexus	1996	ES300	2/cover	behind fuse box panel
Lexus	1996- 2000	LS400	2/cover	above parking brake
Lotus	1997 - 2000	Esprit	7/open	Above Passenger Dash
Mazda	1998-1999	Miata	2/cover	behind fuse box panel
Mitsubishi	1996	Expo	2/open	behind fuse box
Porsche	1996	All Vehicles	6/cover	driver's side of console
Rolls- Royce	1996-2000	all	9/cover	in glove box
Rover	1997	Defender	6/cover	under parcel tray
Rover	1996 - 2000	Range Rover	7/open	under passngr dash
Subaru	1996-2000	Legacy	2/cover	behind plastic hinged cover
Subaru	1996- 1997	SVX	1/cover	right side of steering column
Toyota	1996	Avalon	2/cover	behind fuse box panel
Toyota	1996	Camry	2/cover	behind coin box
Toyota	2000	New Hybrid	7/open	
Toyota	1996 - 1997	Previa (2/4 WD)	6/cover	top instrumt panel
Toyota	1996-1998	Tercel	2/cover	behind fuse box panel
Volvo	1997-1998	850	8/cover	in front of shifter under coin tray
VOLVO	1998 - 1999	all vehicles except S80	9/cover	hand brake area
Volvo	2000	C/S/V 70	8/cover	
Volvo	2000	S/V 40	6/cover	
VW	1996-1998	Cabrio, Golf, Jetta	7/cover	right side of ashtray
VW	1996-1999	Eurovan	4/cover	on dash behind wiper lever
VW	1999	Golf,Jetta	7/cover	
VW	1996 - 1997	Passat	4/cover	on dash behind wiper lever

APPENDIX D

Manufacturers Known to Have OBD Readiness Issues

1996 Chrysler vehicles - Vehicles may clear readiness at key-off. Vehicles should be tested normally. If vehicles are found to be "Not Ready," they should be referred to a qualified service provider so the OBD software can be updated.

1996 - 1998 Mitsubishi vehicles - These vehicles may have a high degree of "Not Ready" for catalyst monitor due to a "trip based" design. Mitsubishi has provided driving cycles in its service information to allow monitors to operate. These vehicles should be scanned for MIL illumination without regard to readiness status.

1996 Nissan vehicles and 1997 Nissan 2.0 liter 200SX - These vehicles may have a high degree of "Not Ready"for catalyst and evaporative monitors due to a "trip based" design. Nissan has provided driving cycles in its service information to allow monitors to operate. These vehicles should be treated as other non-problematic vehicles. Nissan Technical Service Bulletin #NTB98-018, February 18, 1998.

1996-98 Saab vehicles - These vehicles may have a high degree of "Not Ready"for catalyst and evaporative monitors due to a "trip based" design. Saab has provided driving cycles in its service information to allow monitors to operate. These vehicles should be treated as other non-problematic vehicles. Saab Technical Service Bulletin not yet available.

1996 Subaru vehicles - Vehicles will clear readiness at key-off. There is no reprogramming available for this line of vehicles. These vehicles should be scanned for MIL illumination without regard to readiness status. Subaru Technical Service Bulletin #11-49-97R (see Appendix F of this guidance).

1997 Toyota Tercel and Paseo - Vehicles will never clear the evaporative monitor to "Ready." At this time no fix is available. Vehicles should be scanned using remaining readiness monitors as described for non-problematic vehicles.

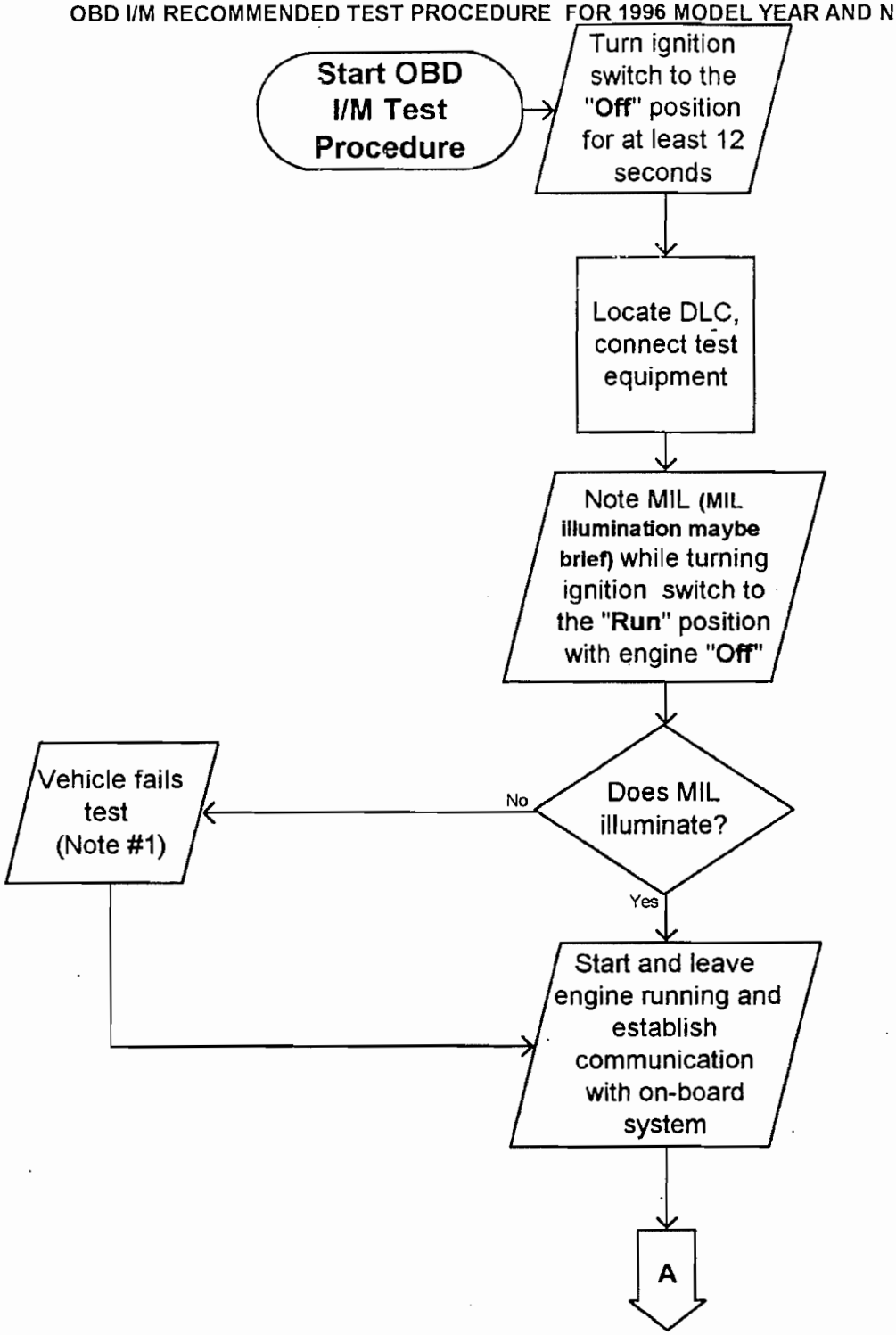
1996 Volvo 850 Turbo - Vehicles will clear readiness at key-off. There is no reprogramming available for this line of vehicles. These vehicles should be scanned for MIL illumination without regard to readiness status. Volvo Technical Service Bulletin #SB 2-23-0056.

1996-98 Volvo vehicles (excluding 850 Turbo) - These vehicles may have a high degree of "Not Ready"for catalyst and evaporative monitors due to a "trip based" design. Volvo has provided driving cycles in its service information to allow monitors to operate. These vehicles should be treated as other non-problematic vehicles. Volvo Technical Service Bulletin #SB 2-23-0056.

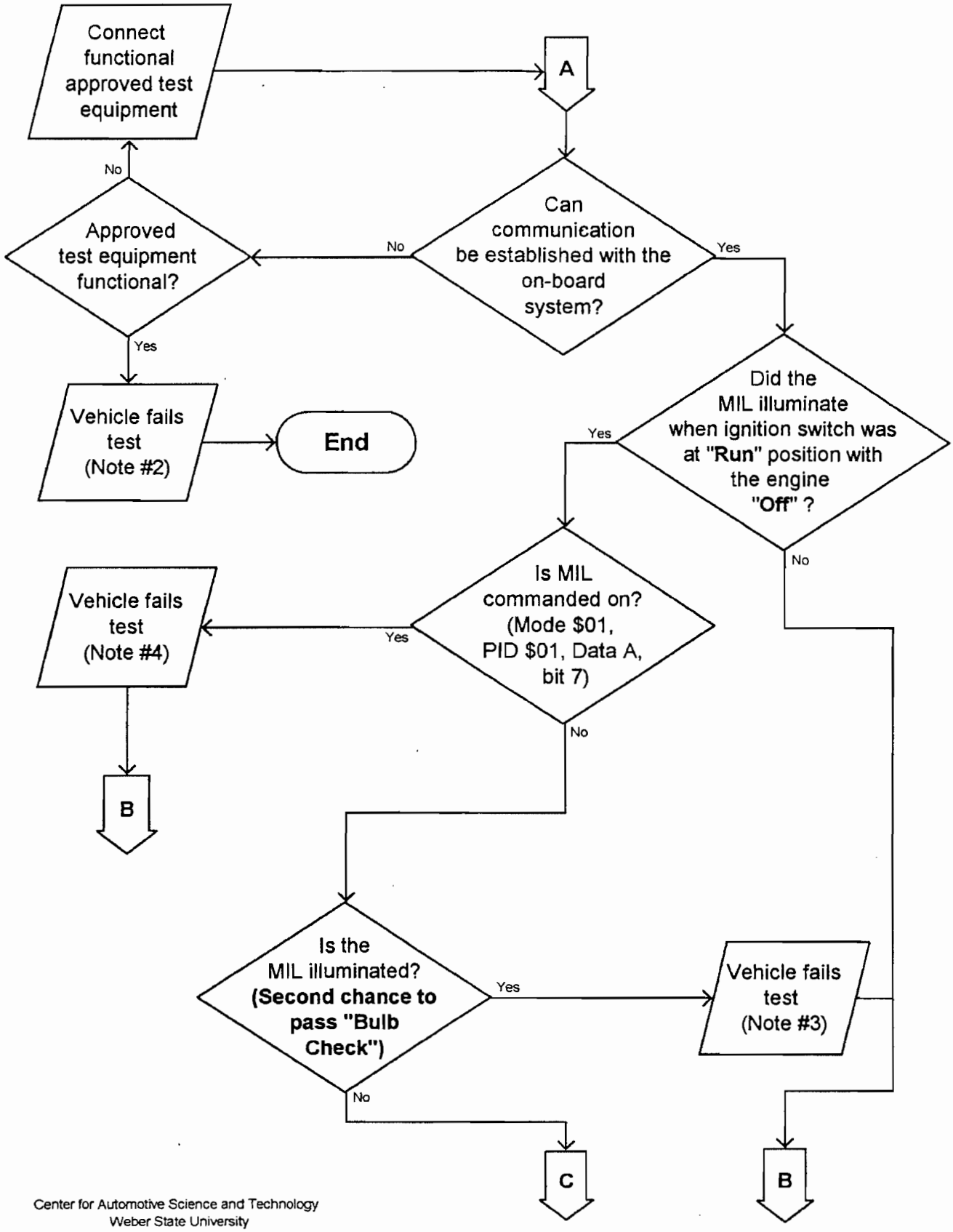
APPENDIX E

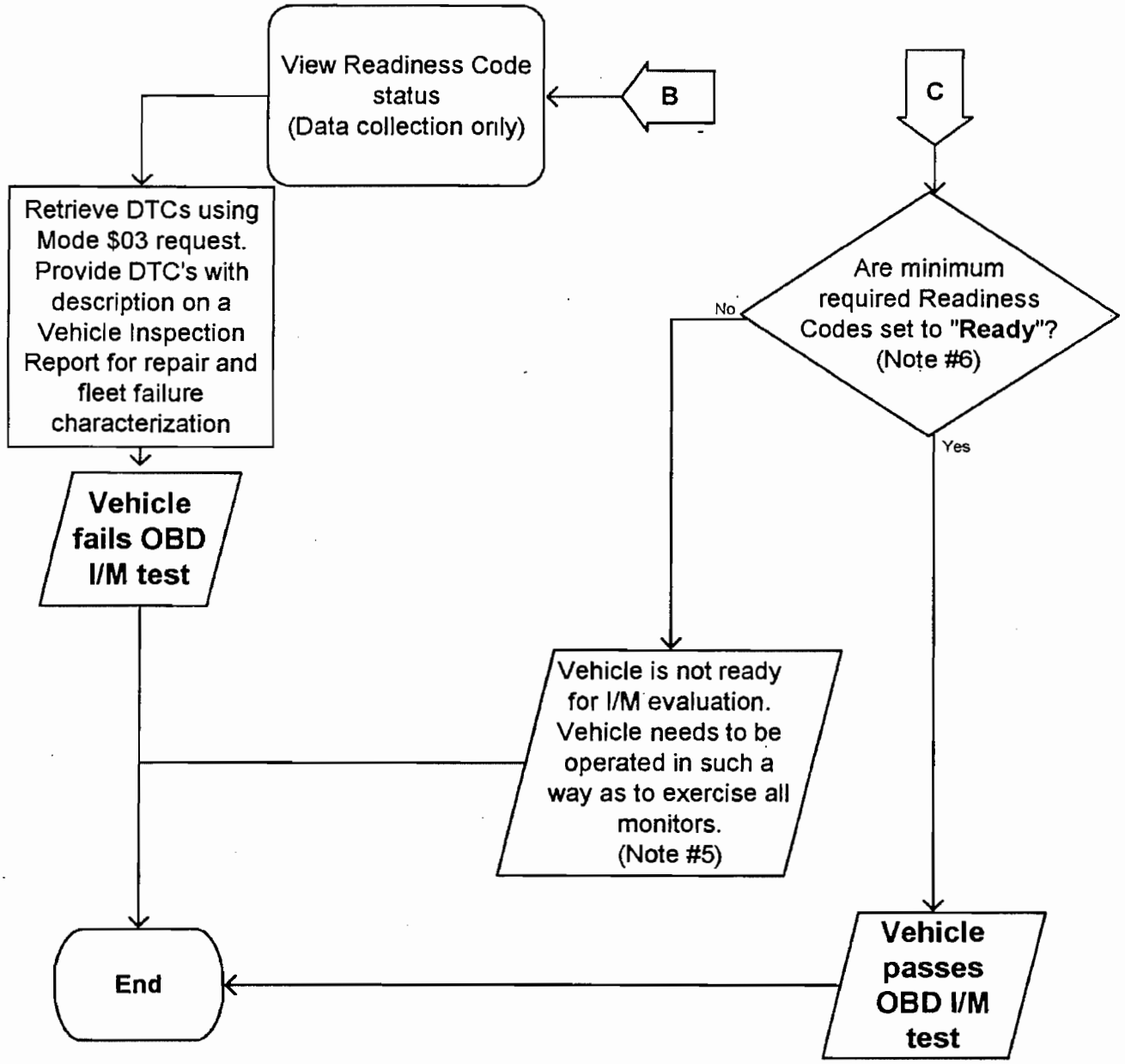
OBD-I/M Test Procedure Flow Chart

OBD I/M RECOMMENDED TEST PROCEDURE FOR 1996 MODEL YEAR AND NEWER VEHICLES



Center for Automotive Science and Technology
Weber State University


Connect functional approved test equipment
A
Can communication be established with the on-board system?
No
Yes
Approved test equipment functional?
No
Yes
Vehicle fails test (Note #2)
End
Did the MIL illuminate when ignition switch was at "Run" position with the engine "Off" ?
Yes
No
Is MIL commanded on? (Mode $01, PID $01, Data A, bit 7)
Yes
No
Vehicle fails test (Note #4)
B
Is the MIL illuminated? (Second chance to pass "Bulb Check")
Yes
No
Vehicle fails test (Note #3)
C
B


View Readiness Code status (Data collection only)
B
C
Retrieve DTCs using Mode $03 request. Provide DTC's with description on a Vehicle Inspection Report for repair and fleet failure characterization
Are minimum required Readiness Codes set to "Ready"? (Note #6)
No
Yes
Vehicle fails OBD I/M test
Vehicle is not ready for I/M evaluation. Vehicle needs to be operated in such a way as to exercise all monitors. (Note #5)
End
Vehicle passes OBD I/M test

Notes on flow chart:

Note 1: The purpose of this step is to verify the On-Board Diagnostic (OBD) system has control of the Malfunction Indicator Light (MIL) and the MIL is functional. Operation of the MIL varies between vehicle manufacturers. Key On Engine Off (KOEO) typically results in the MIL on steady, however, there are systems which will illuminate the MIL only briefly during KOEO. In either situation MIL presence and illumination capability has been established.
If the vehicle fails the I/M test at this point, the vehicle inspection report should indicate the MIL problem should be repaired and also include information gathered during the remaining I/M test steps.

Note 2: It is important for the I/M testing personnel to verify proper diagnostic equipment operation before failing the vehicle. If the diagnostic equipment is functional then the vehicle's communication problem must be resolved.
Without communication between the OBD system and the test equipment the I/M test must be ended and the problem resolved before further interrogation of the vehicle can be performed. This step includes identification of Data Link Connector (DLC) tampering, serial data circuit problems and any other condition that would prevent the OBD system from communicating with the test equipment.

Note 3: I/M test failure is a result of MIL illumination even though the OBD system has not commanded the MIL on, or has stored any Diagnostic Trouble Codes (DTCs); e.g., a serial data line failure between the OBD computer and the Instrument Panel.

Note 4: I/M test failure is a result of both the actual and commanded state of the MIL. DTCs should be stored since the MIL is commanded on. A vehicle **should not** fail an I/M test when DTCs are stored but there is no MIL on; e.g., the DTC was stored by a loose gas cap which was subsequently tightened.

Note 5: Readiness Code status must be identified at this stage in the I/M test to determine whether or not all emission control systems have been tested by the OBD system. If any one (or more) Readiness Code(s) are not set ("ready") the OBD system has not yet completed testing of the system(s) and failures may be present but not yet identified. It is important to understand that the vehicle **does not** fail the I/M test at this point; no emission related faults have been identified. The current state of the vehicle's emission control system is **undetermined**.
The emission control systems and related components are tested under specific vehicle operating conditions. Therefore, to set the Readiness Codes the vehicle must be operated within these specific conditions (commonly referred to as "enable criteria") for the OBD system tests to be performed. Once testing of an emission control system is complete, the related Readiness Code will be set ("ready"). When all Readiness Codes are set, the vehicle is ready for further I/M testing.
It will be at the states discretion whether to recommend the customer drive the vehicle to set the Readiness Codes or to take the vehicle for service. The state may also choose to use a dynamometer drive cycle.

Note 6: EPA has revised the current readiness code requirement to allow states to complete the testing process on model year 1996 thru 2000 vehicles with two or fewer unset readiness codes; for model year 2001 and newer vehicles, the testing process could still be complete provided there is no more than one unset readiness code. It is important to understand that the vehicle **does not** fail the I/M test because an unset readiness code is not itself an indication of an emission problem with the vehicle.

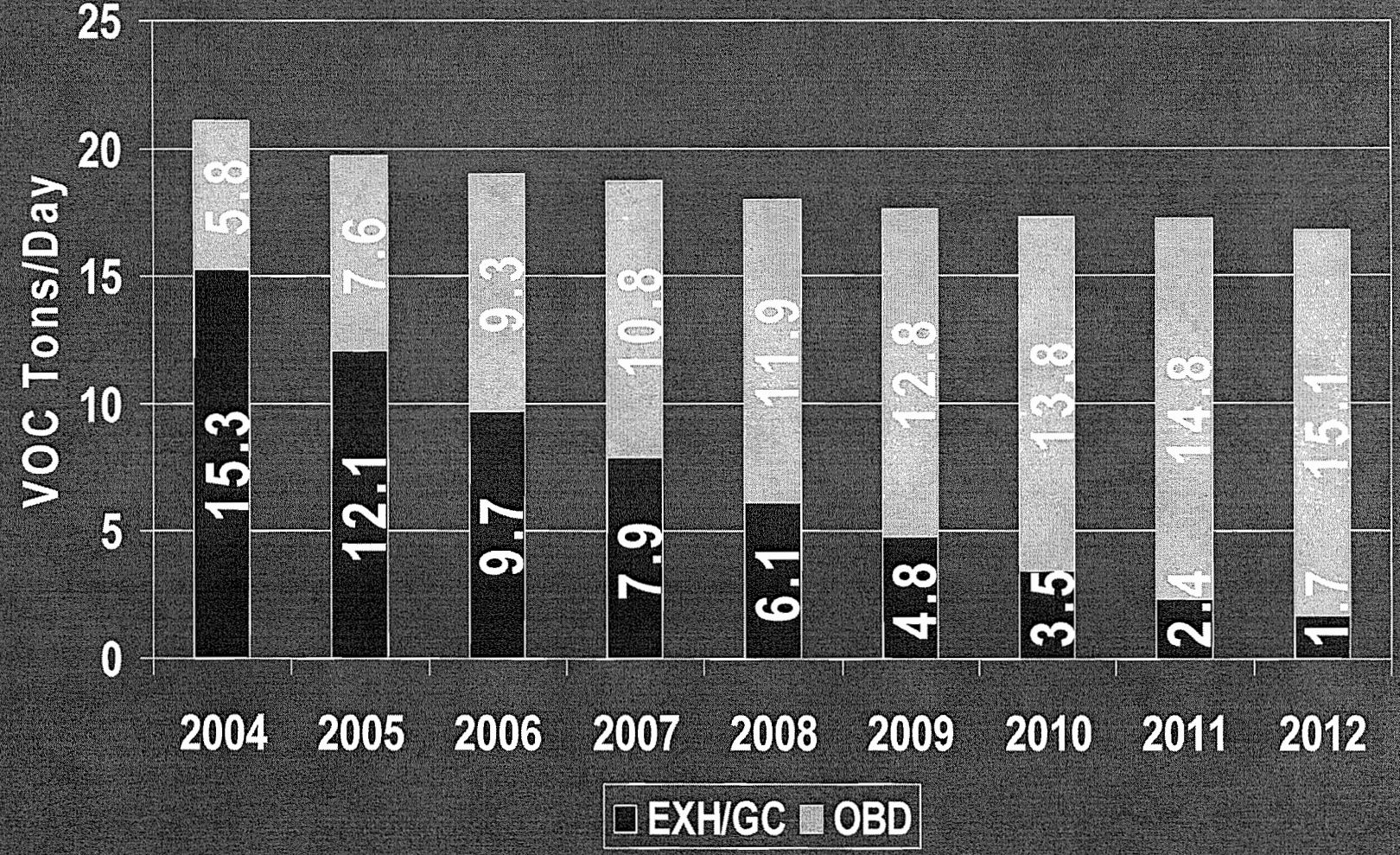
Reinventing the Illinois I/M Program

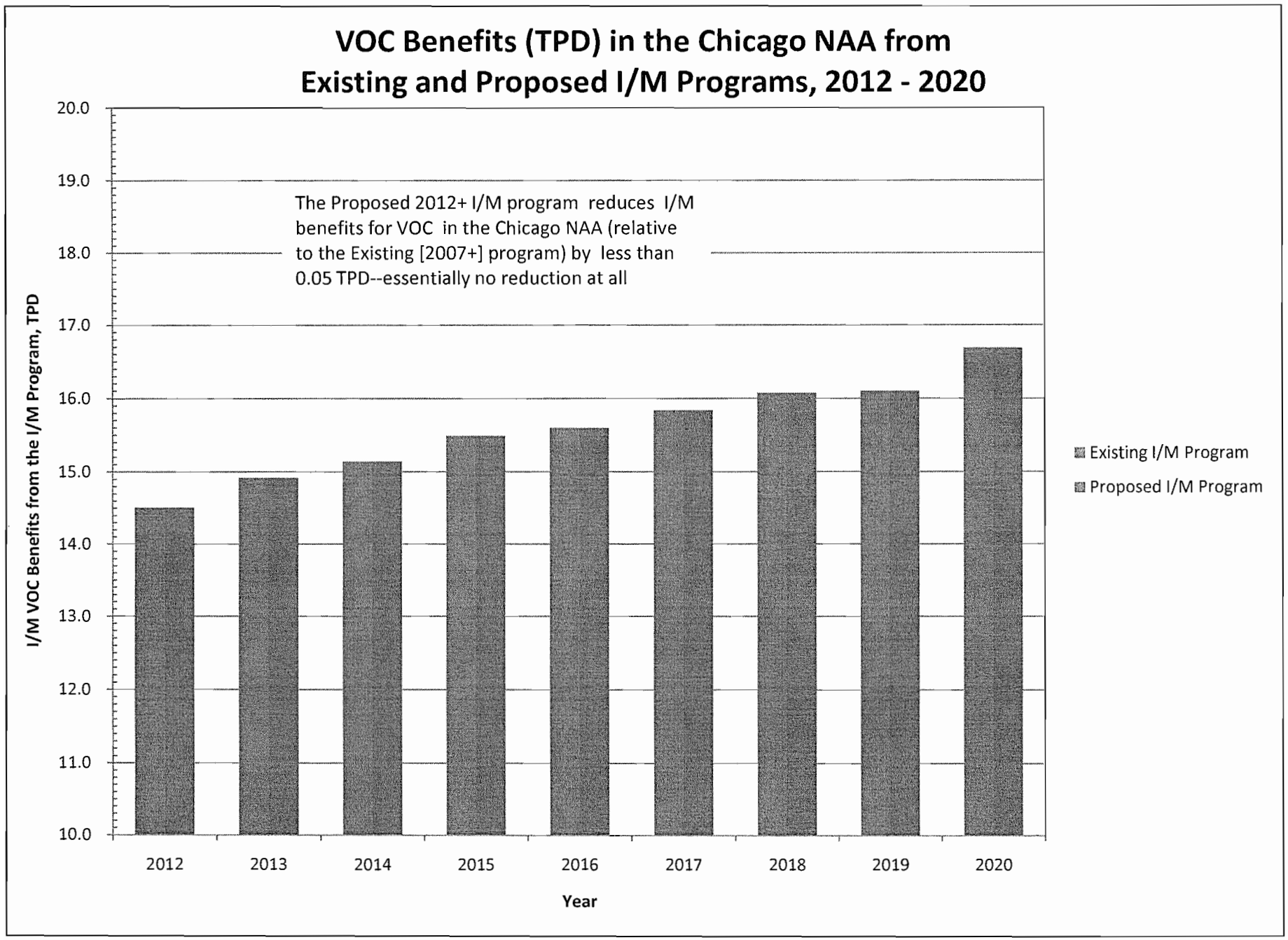
2005 Clean Air Conference

James Matheny, P.E.

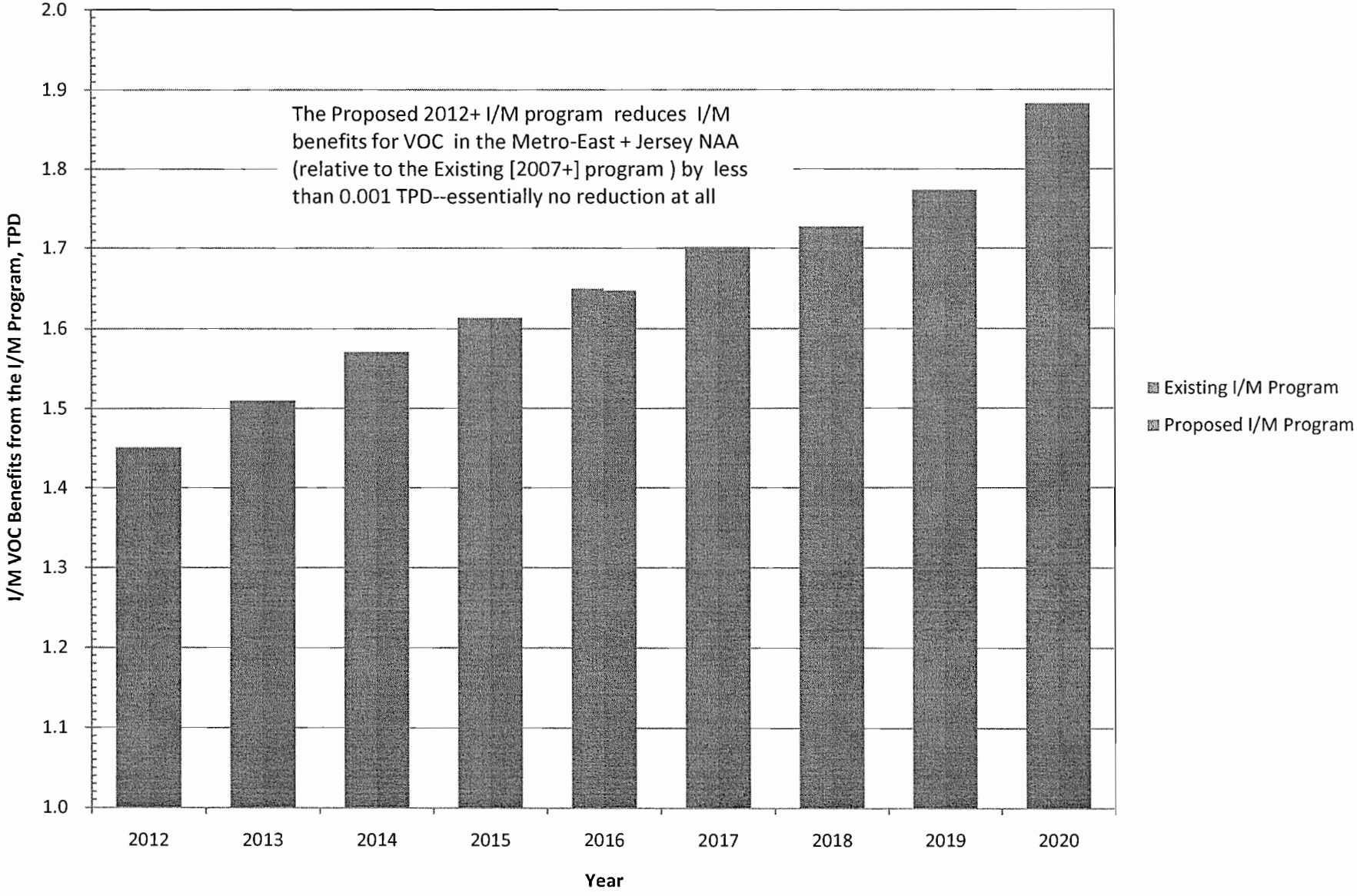
Illinois Environmental Protection Agency

NE Illinois I/M VOC Reductions




VOC Benefits (TPD) in the Chicago NAA from Existing and Proposed I/M Programs, 2012 - 2020
The Proposed 2012+ I/M program reduces I/M benefits for VOC in the Chicago NAA (relative to the Existing [2007+] program) by less than 0.05 TPD--essentially no reduction at all
I/M VOC Benefits from the I/M Program, TPD
20.0
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year
Existing I/M Program
Proposed I/M Program

VOC Benefits (TPD) in the Metro-East + Jersey NAA from Existing and Proposed I/M Programs, 2012 - 2020



STATE OF ILLINOIS)
) SS
COUNTY OF SANGAMON)

CERTIFICATE OF SERVICE

I, the undersigned, an attorney, state that I have served the attached REGULATORY PROPOSAL entitled "REVISION OF ENHANCED VEHICLE EMISSION INSPECTION AND MAINTENANCE (I/M) REGULATIONS: AMENDMENTS TO 35 ILL. ADM. CODE PART 240," MOTION FOR WAIVER OF COPY REQUIREMENTS, and APPEARANCE of the Illinois Environmental Protection Agency by first-class mail from Springfield, Illinois, with sufficient postage affixed, upon the following persons:

John Therriault, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601

Matthew Dunn, Chief
Division of Environmental Enforcement
Office of the Attorney General
James R. Thompson Center
69 West Washington, Suite 1800
Chicago, Illinois 60602

Virginia Yang, Deputy Legal Counsel
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702-1271

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
Kent E. Mohr Jr.
Assistant Counsel
Division of Legal Counsel

DATED: September 30, 2011

1021 N. Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 782-5544