

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

2008 Annual Report

Massachusetts Enhanced Emissions and Safety Test
Inspection and Maintenance Program

September 3, 2009

Part 2 – Program Activities and Results
October 1, 2008 through December 31, 2008

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ATTACHMENTS

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2008 Annual Report
Massachusetts Enhanced Inspection and Maintenance Program
Part 2 – October 1, 2008 through December 31, 2008

1 EXECUTIVE SUMMARY

This document is Part 2 of the 2008 Annual Report to the United States Environmental Protection Agency (EPA) on the Massachusetts Enhanced Inspection and Maintenance program (I&M program). This report covers October 1, 2008 through December 31, 2008, the first quarter of Massachusetts' new IM program that started operation on October 1, 2008.

This Annual Report is required by EPA under 40 CFR 51.366. This regulation requires that annual reports cover four categories of information:¹

- Station and inspector oversight,
- Quality control,
- Compliance and enforcement, and
- Emissions test data.

In January 2008, the Commonwealth of Massachusetts signed a contract with a new network contractor, Parsons Commercial Technology, Inc., to manage the day-to-day operation of the state's I&M program. The new contract continued some important features of the I&M program that was implemented from October 1999 through September 30, 2008:

- inspections continue to be provided by a decentralized network of inspection stations,
- stations and inspectors continue to be licensed by the Commonwealth,
- all registered vehicles are still required to be inspected annually (for safety),
- vehicles that fail their initial emissions test must be repaired and pass a re-test within 60 days,
- heavy duty vehicles that are not equipped with OBD continue to be required to undergo an opacity test for emissions,
- vehicles that continue to fail their emissions test after being repaired by a state-registered repairer may be eligible for a one-year waiver of the emissions standards, and
- the inspection fee remains at \$29, unchanged since it was established in 1999.

At the same time, the new contract changed some important features of the Massachusetts I&M program:

¹ See "Attachment A: Index of Report Pages Relevant to EPA Regulation Sections" for details about where specific required items appear in this report.

- Vehicles that are equipped with on-board diagnostic (OBD) systems are required to undergo annual OBD emissions tests (the old program required biennial emissions tests);
- The two-year emissions test exemption for new vehicles was discontinued;
- Tailpipe testing of vehicles that were manufactured before 1996 has been discontinued;
- A new “economic hardship” exemption has been established for vehicles that fail their emissions test and require replacement of a major (and expensive) component to pass, giving the vehicle owner one year to finance repairs or replace the vehicle;
- Twelve Motorist Assistance Centers (MACs) have been established across the state to provide advice to motorists, technical assistance to repair technicians, help with getting vehicles “ready” for testing after emissions repairs, vehicle evaluations for repair waivers and economic hardship extensions, and vehicle testing quality assurance; and
- Massachusetts safety inspections of commercial vehicles have been expanded to include U.S. Department of Transportation requirements, so these vehicles will need to undergo only one comprehensive check, instead of two at different times and locations. Fees for commercial vehicle inspections are market-based (and are separate from the annual Massachusetts I&M program fee).

The new program started operation on October 1, 2008. This report covers the period between that date and December 31, 2008.

1.1 Major Findings

Emissions Tests Conducted

As of October 1, 2008, an annual OBD emissions test is required for the majority of the fleet. The following gasoline fueled vehicles now require an OBD test:

- Vehicles in model years 1996-2007 weighing 8,500 lbs. GVWR or less
- 2008 and newer vehicles weighing 14,000 lbs. GVWR or less

Also, the following diesel fueled vehicles require an OBD test:

- Vehicles in model years 1997-2006 weighing 8,500 lbs. GVWR or less
- 2007 and newer vehicles weighing 14,000 lbs. GVWR or less

An emissions test is also required when an OBD-equipped vehicle changes ownership and when a vehicle is relocated to Massachusetts. Opacity testing for heavy-duty diesel vehicles (weighing 10,000 lbs. GVWR or more) in model years 1984 and newer that are not equipped with OBD is scheduled to start under the new program on October 1, 2009.

In 2008, there were approximately 4.63 million vehicles registered in Massachusetts. From October 1, 2008 through December 31, 2008, the I&M program conducted 828,193 emissions tests on 789,655 unique vehicles (17% of the Massachusetts fleet), including initial tests, retests, and off-cycle tests due to changes of ownership/registration. Of the

vehicles that received an initial emissions test in this period, 787,861 were gasoline fueled and 1,794 were diesel fueled.

Compliance and Enforcement

Of the 787,861 gasoline-fueled vehicles receiving initial emissions tests in Massachusetts between October 1 and December 31, 2008, 70,055 (8.9%) failed their initial emissions tests. Of the 1,794 diesel-fueled vehicles receiving an initial emissions test, 212 (11.8%) failed their initial emissions tests.

Of all gasoline-fueled vehicles tested, 12,974 (1.6%) did not pass a subsequent retest, or receive a waiver or hardship extension by March 31, 2009. Eight waivers from the requirement that failing vehicles pass an emissions re-test were granted in between October 1 and December 31, 2008 along with two hardship extensions (less than 0.01% of vehicles failing initial emissions tests). Of all diesel-fueled vehicles tested, 36 (2.0%) did not pass a subsequent retest by March 31, 2009. No waivers or hardship extensions were granted to diesel vehicles.

While some of the vehicles that failed an initial test and did not pass a re-test were taken off the road with expired registrations, sold out of state, or junked, vehicles failing to receive inspections or emissions tests when required are subject to enforcement by the Registry of Motor Vehicles (RMV) as well as state and local law enforcement agencies.

Emissions Reductions From Transient Tested Vehicles

The Massachusetts I&M program did not conduct any transient tests during the period covered by this report. The program stopped using transient tests for emissions on August 1, 2008, in preparation for the shift to the new “OBD-only” program that started on October 1, 2008. This allowed vehicles that failed a transient test before August 1 to be re-tested using that equipment within the 60 days allowed for repairs. Program support for the transient test equipment stopped on October 1, 2008 (See Part 1 of this Annual Report).

Station and Inspector Oversight

From October 1, 2008 to December 31, 2008, the Massachusetts Registry of Motor Vehicles (RMV) performed 2,555 site audits to determine if the inspectors were correctly performing all safety and emissions tests and if the station’s physical conditions continued to meet program requirements. All stations operating throughout the period covered by this report received at least one visit. Based on the results of the site audits and other data, the RMV held 31 hearings for stations and issued 46 adverse actions against stations (e.g. warning letters, license revoked or suspended).

From October 1, 2008 to December 31, 2008, 4,517 licensed inspectors performed at least one test. Based on the results of the site audits and other data, the RMV held 40 hearings for inspectors. All resulted in adverse actions (e.g., warnings, license revoked or suspended).

2008 Program Changes

The new Massachusetts I&M program started with a contract that was executed in January 2008, and started operation on October 1, 2008. The contract runs through September 30, 2013 and may be extended up to an additional four years. In addition to the program changes described in the introduction to this section, the new I&M program includes:

- Greater emission test frequency: OBD-equipped vehicles now receive an emissions test annually instead of biennially.
- Increased fleet coverage with OBD test: The “new vehicle” two year exemption was eliminated (only vehicles less than one year old and still registered to their original owner are now exempt), and diesel-fueled vehicles now receive an OBD test if they are equipped with OBD systems.
- 100% on-line testing: all tests must be online to the Vehicle Inspection Database (VID) and RMV registration database (ALARS). Online testing reduces inspector input errors and test fraud.
- Elimination of tailpipe testing for model years 1995 and older gasoline fueled vehicles and the elimination of the gas cap pressure test.

1.2 Contents of This Report

Section 2 of this report describes the Massachusetts I&M Program and provides information on the number of vehicles covered, inspection stations and inspectors, and types of emissions tests administered. The remaining sections of the report describe specific aspects of the program:

- Motorist Compliance with Testing Requirements (Section 3)
- Performance of Emissions Test Equipment (Section 4)
- Station and Inspector Oversight (Section 5)

The attachments to this report contain detailed data on vehicles tested, results of emissions tests, and audit results:

- Attachment A: Index of Report Pages Relevant to EPA Regulation Sections
- Attachment B: Detailed Emissions Test Data (October 1 – December 31, 2008)
- Attachment C: Test Data by Station (October 1 – December 31, 2008)
- Attachment D: Quality Control Report (October 1 – December 31, 2008)

2 THE MASSACHUSETTS I&M PROGRAM

2.1 Why Does Massachusetts Have an I&M Program?

Massachusetts continues to be in non-attainment with federal standards for ground-level ozone pollution. On “bad air” days, there are increases in asthma attacks and hospitalizations for people with severe respiratory ailments. To reduce the number of “bad air” days and to comply with the federal Clean Air Act and U.S. Environmental Protection Agency (EPA) regulations, Massachusetts must implement a variety of federally mandated programs.² To reduce pollution from motor vehicles, Massachusetts is required to operate an Enhanced Inspection and Maintenance (I&M) program. EPA sets minimum standards for I&M programs³.

The current Massachusetts I&M program was authorized by the Legislature by Chapter 210 of the Acts of 1997. The Department of Environmental Protection (MassDEP or the Department) and the Registry of Motor Vehicles (RMV) jointly administer the “Massachusetts Vehicle Check Program”. The program’s goals are to implement a comprehensive test that provides the emission reductions needed for the Massachusetts state implementation plan (SIP), is convenient to motorists, ensures vehicle safety, and works well in local inspection shops. To maximize customer convenience, the legislation combines emissions and safety testing, and requires that the combined test be delivered in local inspection stations, convenient to where people live and work.

In January 2008, the Commonwealth contracted with Parsons Commercial Technology Group, Inc., to supply inspection equipment and operate the Massachusetts I&M Program. The new program started operation on October 1, 2008. This report describes the program in effect between October 1, 2008 and December 31, 2008.

2.2 Vehicles Subject to Inspection

40 CFR 51.366 (d) (1) (i): An estimate of the number of vehicles subject to the inspection program, including the results of an analysis of the registration data base;

From October 1, 2008 through December 31, 2008, there were approximately 4.63 million vehicles with active registrations in the Massachusetts fleet. Each vehicle registered in Massachusetts must be inspected annually. All vehicles must receive a safety inspection every year, and the vast majority must also receive an emissions test every year. In addition, all vehicles are required to receive an emissions inspection within seven days of transfer of ownership, or within seven days of their initial Massachusetts registration when moving registration from another state.

² These programs are established in legally binding and federally enforceable “State Implementation Plans” or “SIPs”.

³ 40 CFR Part 51, Subpart S (§51.350 et seq.).

Starting on October 1, 2008, the following gasoline vehicles were exempted from the emissions inspection if they were:

- Light duty vehicles earlier than model year 1996,
- Medium duty vehicles earlier than model year 2008,
- Heavy duty vehicles that are not equipped with an OBD system, and
- Any vehicle that is more than 15 model years old.

Diesel fueled vehicles were exempted from the emissions inspection if they were:

- Light duty vehicles earlier than model year 1997 or more than 15 years old,
- Medium duty vehicles with a GVWR of 10,000 lbs. or less and either earlier than model year 2007 or more than 15 years old, and
- Any vehicle with a GVWR over 10,000 lbs. and a model year earlier than 1984.

Also exempt are vehicles of any fuel type that are less than one year old and still registered to the original owner.

Opacity testing of heavy-duty diesel vehicles (weighing 10,000 lbs. or more GVWR) that are model year 1984 or newer stopped on August 1, 2008 (under the old program) to allow the new program contractor to prepare, test, and install new diesel testing equipment and related software. Heavy duty diesel vehicles were still inspected for safety during the period covered by this report. Opacity testing will be resumed on October 1, 2009 for these vehicles that are not equipped with OBD systems.

2.3 Inspection Stations

40 CFR 51.366 (b)⁴ (1): The number of inspection stations and lanes:

- (i) Operating throughout the year; and
- (ii) Operating for only part of the year;

Most Massachusetts vehicles receive their inspections at local public stations. The program also allows owners of vehicle fleets to purchase their own testing equipment so they can test their own vehicles. The number of public and fleet stations fluctuates slightly from month to month as businesses join or leave the program.

All of the inspection stations participating in the old program were provided with an opportunity to enroll in the new program during Summer 2008. While many stations enrolled by a deadline set to ensure that they would be able to have a new workstation delivered and installed by October 1, some did not return completed participation agreements by the deadline, and could not get set up with new equipment by the new

⁴For all references to 40 CFR 51.366: 57 FR 52987, Nov. 5, 1992, as amended at 61 FR 40945, Aug. 6, 1996; 65 FR 45534, July 24, 2000; 66 FR 18178, Apr. 5, 2001.

program’s “opening day”. The program contractor continued to work with enrolled stations to ensure that they were set up to conduct tests during the first few weeks of the program.

By the end of the new program’s first day (October 1, 2008), 972 stations had performed nearly 21,000 inspections. By the end of the first week, 1,231 stations had performed 131,000 inspections. The program contractor continued to work on getting additional inspection stations up and running over the next several weeks. By December 31, 2008, 1,595 stations had enrolled in the new program, 119 stations more than were testing at the end of the old program. Overall, between October 1, 2008 and December 31, 2008, 1,491 stations conducted emissions tests.

There were 1,533 “workstations” or sets of inspection equipment used for testing emissions during this period (See Table 1 below). A small number of inspection stations have more than one workstation. In Massachusetts, the number of workstations is equivalent to the number of lanes in a centralized testing program.

**Table 1: Number of Stations and Workstations
 October 1, 2008 through December 31, 2008**

	Workstations	Stations
Tested during period	1,604	1,538
Tested emissions during period	1,533	1,491

2.4 Inspectors

40 CFR 51.366 (b) (5): The number of inspectors licensed or certified to conduct testing;

At the close of calendar year 2008, there were 6,642 trained and licensed inspectors certified to conduct emission tests (See Table 2). However, between October 1 and December 31, 2008, only 4,350 inspectors conducted emissions tests, and 4,517 inspectors tested at least one vehicle (for safety or safety plus emissions).

**Table 2: Number of Inspectors
 October 1, 2008 through December 31, 2008**

	# Of Inspectors
Inspectors Trained And Licensed on December 31, 2008	6,642
Inspectors Who Inspected at Least One Vehicle between October 1-December 31, 2008	4,517
Inspectors Who Tested Emissions between October 1 and December 31, 2008	4,350

2.5 Emissions Tests Administered

The Massachusetts I&M Program uses the vehicle's On-Board Diagnostic (OBD) system for emissions testing. These systems include computers and sensors that assess the condition of the vehicle's emissions control systems. The emissions test accesses the OBD system in these vehicles to find out whether the emission control system is working properly. The Massachusetts I&M program started passing or failing all gasoline-fueled vehicles equipped with modern OBD systems (i.e., OBD II) based on the data in those systems on June 14, 2004. The new program that started on October 1, 2008 continued using OBD tests for gasoline-fueled vehicles, and added OBD testing for diesel-fueled vehicles that are equipped with these systems.

Massachusetts has used a snap acceleration opacity test for heavy duty diesel vehicles since 2001. While the program plans to continue to use of the snap acceleration opacity test, this testing was halted on August 1, 2008 to allow the new program contractor to prepare, test, and install new diesel testing equipment and related software. It is expected to resume on October 1, 2009.

In the I&M program that was in place before October 1, 2008, most gasoline fueled vehicles receiving an emissions test also had their gas caps tested. This requirement was not carried over into the new program because OBD systems perform a more comprehensive check of vapor controls than the gas cap-only test and the gas cap test was believed to be redundant.

3 MOTORIST COMPLIANCE WITH TESTING REQUIREMENTS

3.1 Overall Motorist Compliance with Testing Requirements

40 CFR 51.366 (d) (1) (ii): The percentage of motorist compliance based upon a comparison of the number of valid final tests with the number of subject vehicles;

Table 3 summarizes the overall compliance rate for the period October 1-December 31, 2008, which compares the total number of unique vehicles receiving an I&M test (including safety-only tests) to the number of unique registered vehicles that were estimated to be due for an inspection during this period. This estimate was developed from the percentage of the fleet that was inspected between October 1 and December 31, 2007 and would therefore be due for an annual inspection during this period in 2008⁵ (unless the vehicle had changed ownership or was taken off the road after its 2007 inspection) In the period covered by this report, this compliance rate was 86.9%.

Table 3: 2008 Overall Testing Compliance Rates

	Vehicle Count	Compliance %
Average Number of Vehicles Registered in MA, October 1-December 31, 2008	4,631,329	
Estimate of Vehicles Due for Inspection Between October 1-December 31, 2008	1,016,349	
Unique Vehicles Tested between October 1-December 31,2008 (Safety Only or Safety and Emissions Tests)	883,761	86.9%

Please note that a compliance rate specifically for emissions tests in this period is not available, since the program does not track the number of registered vehicles that are exempt from the emissions testing requirement (e.g., those that are less than one year old, or are gasoline fueled and made in model year 1995 and older).

From October 1, 2008 through December 31, 2008, 12,974 (18.5%) of the 70,055 gasoline-fueled vehicles that failed their initial emissions tests did not pass a re-test by March 31, 2009 (the re-test would be considered a “final test” as per EPA’s requirement noted above).

⁵ This estimate is based on the percentage of tested vehicles that had an initial inspection between January 1-December 30, 2007. The estimate does not include new vehicles purchased in Massachusetts in this period or vehicles that changed ownership then and were therefore required to be inspected outside of their annual schedule .

3.2 Registration File Audits and Compliance with Deadlines

40 CFR 51.366 (d) (2) (ii): [Registration denial based enforcement programs shall provide. . .] The number of registration file audits, number of registrations reviewed, and compliance rates found in such audits. . . .

40 CFR 51.366 (d) (3): Computer-matching based enforcement programs shall provide the following additional information:

(i) The number and percentage of subject vehicles that were tested by the initial deadline, and by other milestones in the cycle;

The RMV typically completes two scans of the vehicle registration database each month. These registration reviews examine the testing status of each registered vehicle to determine compliance with testing requirements.

Table 4 (below) summarizes the results of these registration reviews for the period in 2008 that is covered by this report. Please note that the compliance rate is typically higher in the middle of the month than at the start of the month, indicating that a significant number of vehicles were inspected between one day and two weeks after the inspection was due.

The registration reviews described in Table 4 are snapshots in time, and therefore tend to understate compliance. Registration reviews determine whether the most recent inspection for each vehicle was performed within the last 12 months and was a “pass.” The I&M regulations allow up to 60 days for emissions repairs. The registration reviews count vehicles that failed their emissions test as “out of compliance” if they have not completed repairs and passed a re-inspection by the time of the registration review, even though the vehicle may still be within its 60-day period. Also, registration reviews only capture compliance status at a particular moment in time. A vehicle that was tested seven weeks late in 2008 would ultimately have been in compliance but would have been counted as out-of-compliance on four registration reviews.

**Table 4: RMV Registration Reviews
 October 1-December 31, 2008**

Date	Active Registrations	Number Non Compliant	Percent In Compliance
10/01/08	4,660,012	540,465	88.4%
10/15/08	4,642,982	512,801	89.0%
11/1/08	4,649,108	522,803	88.8%
11/15/08	4,619,112	435,707	90.6%
12/1/08	4,603,418	492,847	89.3%
12/15/08	4,619,046	453,043	90.2%
Average	4,632,280	492,944	89.4%

3.2.1 PARKING LOT SURVEYS

40 CFR 51.366 (d) (4) (iii): [Sticker-based enforcement systems shall provide . . .] The number of parking lot sticker audits conducted, the number of vehicles surveyed in each, and the noncompliance rate found during those audits.

The RMV did not conduct any parking lot surveys between October 1 and December 31, 2008.

3.2.2 RMV COMPLIANCE SURVEYS

40 CFR 51.366 (d) (1) (vi): The number of compliance surveys conducted, number of vehicles surveyed in each, and the compliance rates found;

The RMV conducted registration file audits, as described in Sections 3.2. No other compliance surveys were conducted in October 1-December 31, 2008.

The RMV did not implement a registration enforcement program between October 1 and December 31, 2008 (the first three months of the new I&M program's operation), due to program start-up issues with data integrity and test records. RMV has been working with the program contractor to resolve these issues, so that a registration enforcement program will be effective. Due to staff focus on the new program, RMV suspended the mailing of letters to owners of all vehicles that had not passed a retest 30 days after they failed an initial inspection (sample letter was provided in Attachment B of the 2007 Annual Report), and has instead directed efforts toward developing and implementing a more effective enforcement program.

3.2.3 MOTORIST TIME EXTENSIONS

40 CFR 51.366 (d) (1) (v): The number of time extensions and other exemptions granted to motorists;

Beginning October 1, 2008, motorists are eligible for an "economic hardship repair extension" if they meet all of the following criteria:

1. the cost of repairing or replacing a single component to correct a diagnostic trouble code for the component is more than 1.5 times the repair expenditure limit applicable for the model year of the vehicle:
 - (A) \$750 for vehicles five model years old or newer;
 - (B) \$650 for vehicles over five but not exceeding 10 model years old;
 - and
 - (C) \$550 for vehicles over 10 model years old.

2. the vehicle does not qualify for a waiver;
3. the economic hardship repair extension is not for an emissions inspection or re-inspection associated with initial registration or transfer of ownership;
4. MassDEP or its designee agrees with the findings of the registered repair technician regarding the cause of the failure, that the repair estimate is related to repairs appropriate for the failure, and that the repair estimate provided by the registered repair technician is reasonable;
5. the motorist has used all relevant warranty coverage including recalls to repair the vehicle;
6. all safety inspection requirements are met;
7. the vehicle is registered with the Registry as a private passenger motor vehicle or auto home; and
8. the emission control system is present and there is no evidence of tampering;

An economic hardship repair extension is valid until the vehicle's next emissions inspection. A vehicle granted an economic hardship repair extension is not eligible for a waiver or a second economic hardship repair extension in lieu of passing its next emissions inspection or re-inspection.

Between October 1 and December 31, 2008, two economic hardship extensions were issued.

3.2.4 PREVENTING FALSE REGISTRATION BY MOTORISTS

40 CFR 51.366 (d) (2) (i): [Registration denial based enforcement programs shall provide . . .] A report of the program's efforts and actions to prevent motorists from falsely registering vehicles out of the program area or falsely changing fuel type or weight class on the vehicle registration, and the results of special studies to investigate the frequency of such activity; and

40 CFR 51.366 (d) (3) (ii): [Computer-matching based enforcement programs shall provide . . .] A report on the program's efforts to detect and enforce against motorists falsely changing vehicle classifications to circumvent program requirements, and the frequency of this type of activity;

40 CFR 51.366 (d) (4) (ii): [Sticker-based enforcement systems shall provide . . .] A report on the program's efforts to detect and enforce against motorists falsely changing vehicle classifications to circumvent program requirements, and the frequency of this type of activity;

The reporting requirements for efforts to prevent false registration are not relevant to Massachusetts because:

- All of Massachusetts is covered by the program;
- All vehicles are required to be inspected annually for either safety or safety and emissions;

- If a motorist falsely reports fuel type or weight in order to avoid an emissions inspection, the inspector enters corrected data based on his or her examination of the fuel cap and the vehicle information appearing on the vehicle's door label. In addition, a separate VIN decoder is used by the workstation to pre-populate the program's Vehicle Identification Database (VID)'s critical fields (model year, fuel type, and GVWR) that determine whether a vehicle receives an emissions test. Changes to these fields by inspectors are flagged by the VID for investigation by the Registry of Motor Vehicles.

3.2.5 ADDITIONAL STICKER-RELATED ACTIVITIES

40 CFR 51.366 (d) (4): Sticker-based enforcement systems shall provide the following additional information:

- (i) A report on the program's efforts to prevent, detect, and enforce against sticker theft and counterfeiting, and the frequency of this type of activity;

To support the state and local police efforts to enforce inspection-sticker requirements, the RMV mailed a detailed memorandum to state and local police departments in the Commonwealth regarding sticker characteristics for 2008.

RMV also mailed a detailed memorandum to state and local police departments updating sticker characteristics for the new stickers used effective October 1, 2008. While the overall sticker appearance was similar to the stickers that were issued between January 1 and September 30, 2008, some changes were necessary, particularly to distinguish between the FMCSA-approved Massachusetts Commercial Vehicle Inspection and routine passenger vehicle inspections.

Between October 1 and December 31, 2008, state and local police issued 20,629 inspection sticker motor-vehicle violations.

4 PERFORMANCE OF EMISSIONS TEST EQUIPMENT

40 CFR 51.366 (c) Quality control report. ...Basic statistics on the quality control program for January through December of the previous year, including:

- (1) The number of emission testing sites and lanes in use in the program;
- (2) The number of equipment audits by station and lane;
- (3) The number and percentage of stations that have failed equipment audits; and
- (4) Number and percentage of stations and lanes shut down as a result of equipment audits.

MassDEP did not conduct workstation equipment audits between October 1 – December 31, 2008, largely because the equipment was brand new, and had just completed acceptance testing. Also, as reported in Part 1 of this Annual Report (see Section 4 and Attachment D), equipment audits conducted between January 1 and September 30, 2008 indicated that failures of the OBD II equipment were extremely rare. Finally, the new “MASS08” workstations that were deployed at the beginning of the new program employ several “self-checks” to ensure that they are operating properly:

- Every 24 hours, the workstation is programmed to require the inspector to perform equipment checks that ensure the functionality of the OBD scan tool, printer, and barcode scanner.
- The OBD scan tool performs a daily "loopback" check that tests the continuity of the OBD scan tool cable and pins in the Diagnostic Link Connector (DLC). Broken cables and damaged DLC pins are the most common reasons for the OBD scan tool not to communicate with a vehicle. In addition, the inspector is required to perform the loopback check following any OBD test that results in a communication failure to determine if a problem with the OBD cable or DLC pins was the cause of the failure. Whenever a loopback test fails, the workstation is locked out from performing OBD tests until a loopback check can be passed.
- The printer/barcode scanner check begins by the workstation printing sample 1D and 2D barcodes and sample VIR text. The inspector can manually fail the check if the text is not legible. The inspector is then prompted to scan the 1D and 2D barcodes. If the workstation cannot read the barcodes, it fails the check and the workstation is locked out from all testing until it can pass the check. This failure can be caused by a faulty barcode scanner or poor print quality.

5 STATION AND INSPECTOR OVERSIGHT

The Massachusetts I&M Program uses both overt and covert audits to assess station and inspector performance. The results of each type of audit conducted between October 1 and December 31, 2008 are described in this section.

5.1 Overt Performance Audits

40 CFR 51.366 (b) (2): The number of inspection stations and lanes operating throughout the year:

- (i) Receiving overt performance audits in the year;
- (ii) Not receiving overt performance audits in the year;

The RMV conducts regular site visits/performance audits to determine if the inspectors are correctly performing all tests and the station's physical conditions continue to meet program requirements. RMV typically visits inspection stations quarterly and performs additional visits to follow up on past problems or to investigate stations or inspectors that are suspected of violating regulations based on consumer complaints or data analysis.

The I&M contractor maintains records of all inspections in a database to which MassDEP and RMV had access. RMV conducts monthly "digital audits" before visiting stations, to identify areas and stations that may need investigation. A "digital audit" is a query of the database for information that may indicate issues warranting attention during the site visit. Digital audit items include the station's emissions testing and inspection failure rates and vehicle characteristics recorded during the inspection that do not match the vehicle information in the registration database.

The RMV site visits cover a wide range of items including:

- Observing inspectors performing an inspection;
- Examining station and inspector licenses;
- Collecting voided inspection stickers and checking to see that stickers are stored in a secure location;
- Examining the inspection equipment and bay;
- Supplementing the inspector's training; and
- Investigating consumer complaints and/or anomalous digital audit findings.

RMV staff prepares a written report summarizing the results of each inspection. Violations of policies or regulations identified at site visits are forwarded to RMV headquarters for possible enforcement action.

Between October 1 and December 31, 2008, RMV conducted 2,555 overt station visits/audits. All 1,538 stations and 1,604 workstations that conducted inspections during this period received at least one audit. .

5.2 Covert Audits

40 CFR 51.366 (b) (2): The number of inspection stations and lanes operating throughout the year: . . .
(iii) Receiving covert performance audits in the year;
(iv) Not receiving covert performance audits in the year;

40 CFR 51.366 (b) (3): The number of covert audits:
(i) Conducted with the vehicle set to fail per test type;
(ii) Conducted with the vehicle set to fail any combination of two or more test types;
(iii) Resulting in a false pass per test type;
(iv) Resulting in a false pass for any combination of two or more test types;

40 CFR 51.366 (b) (8): The total number of covert vehicles available for undercover audits over the year;
(b) (9): The number of covert auditors available for undercover audits.

Covert audits, or “covert performance audits”, which are under-cover inspections done with vehicles set to fail one or more parts of the emissions test, were not performed between October 1 and December 31, 2008. The contractor is expected to start covert auditing in 2009.

5.2.1 STATION AND INSPECTOR HEARING RESULTS

40 CFR 51.366 (b) (6): The number of hearings:
(i) Held to consider adverse actions against inspectors and stations; and
(ii) Resulting in adverse actions against inspectors and stations;

40 CFR 51.366 (b) (4): The number of inspectors and stations:
(i) That were suspended, fired, or otherwise prohibited from testing as a result of covert audits;
(ii) That were suspended, fired, or otherwise prohibited from testing for other causes; and

40 CFR 51.366 (b) (2): The number of inspection stations and lanes operating throughout the year: . . .
(v) That have been shut down as a result of overt performance audits;

Table 5 summarizes the results of the Registry’s hearings for stations and inspectors, and tabulates the written violations issued to stations and inspectors. This table describes all written violations (“adverse actions”) that were issued between October 1 and December 31, 2008. Data indicating which of these actions resulted from covert audits versus other performance assessments is not available.

**Table 5: Enforcement Against Stations and Inspectors
 October 1-December 31, 2008**

	Number of Enforcement Actions ⁶	
Stations		
Total Number of Written Violations	46	
Warning Letters (no hearing)		8
Violations Filed (no action or hearing)		3
Total Number of Hearings	31	
Revoke		0
Suspensions		15
Warnings		11
Other (abeyance, surveillance)		2
No action		3
Unresolved Cases (As of 12/31/08)	4	
Inspectors		
Total Number of Written Violations	48	
Warning Letters (no hearing)		8
Violations Filed (no action or hearing)		0
Total Number of Hearings	40	
Revoke		8
Suspensions		17
Warnings		14
Other(abeyance, surveillance)		1
No Action		0
Cases Unresolved as of 12/31/08	0	

On October 23, 2008, the Massachusetts Attorney General and the Commissioner of MassDEP announced that their offices had initiated civil and administrative enforcement cases against seven inspection stations and twelve inspectors for allegedly conducting fraudulent inspections. The cases resulted from a joint investigation of stations by the Attorney General, MassDEP, and RMV, which were identified through digital audits conducted by MassDEP staff, and found that the stations were “clean scanning” by

⁶ Some of the actions reported as taken this reporting period were for violations issued during the previous reporting period, and not all violations issued during this reporting period received action during this reporting period. As a result, the sum of the categories may not equal the total number of violations issued in this reporting period.

conducting OBD tests on different vehicles than the ones brought in for inspection, and were using the results from the fraudulent tests to issue stickers.

These cases were resolved in 2009; their results will be reported in the 2009 Annual Report.

5.2.2 FINES COLLECTED

40 CFR 51.366 (b) (4): The number of inspectors and stations: . . . (iii) That received fines; 40 CFR 51.366 (b) (7): The total amount collected in fines from inspectors and stations by type of violation;

Massachusetts did not collect fines from stations or inspectors during the period covered by this report.

5.2.3 STATION COMPLIANCE DOCUMENTS - ISSUED AND MISSING DOCUMENTS

40 CFR 51.366 (d) (1) (iii): The total number of compliance documents issued to inspection stations; (iv) The number of missing compliance documents;
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No sticker accounting information is available for the period October 1 through December 31, 2008. The MASS08 software has been designed to make sticker accounting and reporting more automated than it was in the old program, by recording information about sticker status (including damaged stickers and identifying stickers that have been picked up by RMV field investigators). However, these features were not fully functional in the period covered by this report. Manual accounting records (e.g., of stickers picked up by RMV inspectors) are also not complete for this period.

6 EMISSIONS TEST RESULTS

6.1 Emissions Tests and the Massachusetts Fleet

In the period covered by this report, the Massachusetts I&M program only administered OBD emissions tests. From October 1, 2008 through December 31, 2008, 70,055 (8.9%) of the 787,861 unique gasoline-fueled vehicles receiving initial emissions tests failed their initial emissions tests. Of the 1,794 diesel-fueled vehicles receiving an initial emissions test, 212 (11.8%) failed their initial emissions tests. The Massachusetts Program requires that the vehicle be repaired and re-tested within 60 days of the failing test.

Table 6 summarizes the failure rates for initial emissions tests in Massachusetts in 2008:

**Table 6: Failure Rate for Initial OBD Tests
October 1, 2008 through December 31, 2008**

Vehicle Fuel Types	Failure Rate for MY 1996 and Newer
Non-Diesel	8.9%
Diesel	11.8%
All Initial Emissions Tests	8.9%

Please note:

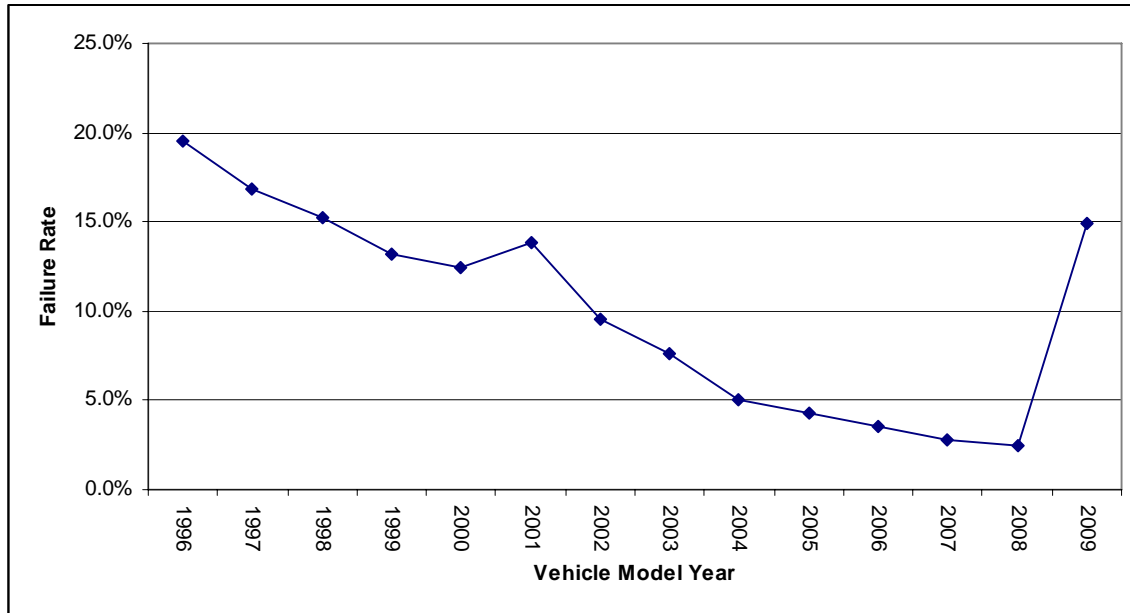
- Ninety-two percent of the vehicles that failed their initial emissions test and received a retest passed.
- A very few vehicles were repaired but were still not able to pass a re-test, and were granted a waiver of the emission requirements. From October 1, 2008 through December 31, 2008, eight waivers and two hardship extensions were granted (less than 0.1% of the vehicles that failed their initial emissions test).
- Of the vehicles that failed their initial test between October 1, 2008 through December 31, 2008, 13,010 (18.5%) had neither passed a re-test nor obtained a waiver by March 31, 2009.

Details of all emissions test results from October 1, 2008 through December 31, 2008 are included in Attachment B.

Figure 1 below shows the emissions failure rates by model year for gasoline-fueled vehicles. As can be seen, the age of the vehicle has a significant impact on failure rate. The Massachusetts I&M program is not designed to achieve a specific overall failure rate or a specific failure rate for any particular test or type of vehicle. Please note: due to a software bug, a number of brand new 2009 government fleet vehicles erroneously received an OBD test and failed due to readiness. This inflated the failure rate for the

period covered by this report. Once this problem was identified, a short-term solution and a software remedy were implemented.

**Figure 1: 2008 Failure Rate by Model Year – Non-Diesel Initial Emissions Tests
October 1, 2008 through December 31, 2008**



6.2 Emission Reductions from Repaired Transient-Tested Vehicles in 2008

40 CFR 51.366 (a) (5): The average increase or decrease in tailpipe emission levels for HC, CO, and NO_x (if applicable) after repairs by model year and vehicle type for vehicles receiving a mass emissions test.

EPA requires states to calculate emission reductions from vehicles that are repaired after failing a “transient” emissions test⁷. Massachusetts stopped performing transient emissions tests when the old program closed on September 30, 2008, and now relies entirely on OBD tests to assess emissions. Therefore, this reporting requirement does not apply to the Massachusetts I&M program.

6.3 Overall Conclusions about Program Operation During 2008

This report covers only the first three months of operation with the new IM program. Emission testing continued seamlessly during the program transition from the old program on September 30, 2008 to the new program on October 1, 2008. Over 15,000 OBD tests were performed on the first day of the new program. OBD failure rates for

⁷ These tests measure specific pollutants in tailpipe exhaust from gasoline-fueled vehicles. Between October 1999 and September 2008, Massachusetts employed transient tests to measure emissions, as described in Part 1 of the 2008 Annual Report.

initial tests are nearly identical to the failure rates seen in the old program, indicating no serious operational issues with the new program.

Most vehicles that failed their initial emissions test were repaired successfully and passed their re-test. The program continues to issue a very small number of waivers (eight during the period covered by this report), far below the commitment in Massachusetts' I&M SIP of limiting waivers to no more than 1% of vehicles that fail an initial emissions test. In addition, only two hardship extensions were issued in 2008.

Attachment A: Index of Report Pages Relevant to EPA Regulation Sections

Massachusetts Enhanced Emissions and Safety Test
Inspection and Maintenance Program

Attachment A: Index of Report Pages Relevant to EPA Regulation Sections

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