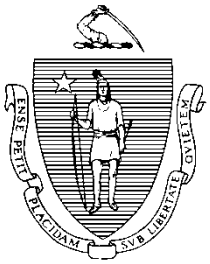

**COMMONWEALTH OF MASSACHUSETTS**
**EXECUTIVE OFFICE OF ENERGY &ENVIRONMENTAL AFFAIRS**
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

# 2012 Annual Report

## Massachusetts Vehicle Check Inspection and Maintenance Program

July 2013

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# 2012 Annual Report
# Massachusetts Enhanced Inspection and Maintenance Program

## 1 EXECUTIVE SUMMARY

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.

2012 was the fourth full year of operation for Massachusetts Vehicle Check, the Commonwealth's updated Inspection and Maintenance (I&M) program.

The Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Department of Transportation's RMV Division (RMV) jointly administer the Massachusetts Vehicle Check Program. In January 2008, the Commonwealth contracted with Parsons Commercial Technology Group, Inc. to manage and implement the Vehicle Check Program. The contract implements program changes for vehicle inspections starting October 1, 2008. The current program continues important features of the I&M program that were implemented from October 1999 through September 30, 2008, as well as adding new features. The Massachusetts Vehicle Check is a comprehensive vehicle emissions and safety testing program including:

- Inspections provided by a decentralized network of inspection stations;
- Stations and inspectors licensed by the Commonwealth;
- Annual safety tests;
- Commercial vehicle safety inspections that meet U.S. Department of Transportation requirements, so these vehicles only need one comprehensive check;
- An annual OBD emissions test for vehicles that are equipped with on-board diagnostic (OBD) systems (vehicles 15 or more years old are exempt);
- An annual opacity test for emissions for diesel vehicles model year 1984 and newer greater than 10,000 lbs. GVWR that are not equipped with OBD;
- A safety test and any applicable emissions test upon transfer of ownership;
- Vehicles that fail their initial emissions test be repaired and pass a re-test within 60 days;

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

- Waiver eligibility, for a one-year waiver of the emissions standards, for certain vehicles that fail their emissions test after being repaired by a state-registered repairer;
- An "economic hardship" extension for vehicles that failed 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) located across the state to provide information 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;
- An inspection fee of $29, unchanged since 1999; and
- Market-based fees for commercial vehicle inspections.

The Agencies amended the program's implementing regulations (MassDEP at 310 CMR 60.02, and RMV at 540 CMR 4.00-4.09) to incorporate these changes in September 2008, and the updated program started operation on October 1, 2008. A revision to the Massachusetts State Implementation Plan (SIP), reflecting the changes to MassDEP and RMV regulations, was submitted to EPA in June 2009, with a minor revision in November, 2009. The regulatory changes received EPA approval effective March 26, 2013.

This report covers the period between January 1, 2012 and December 31, 2012.

## 1.1 Major Findings

***Emissions Tests Conducted***

In 2012, an annual emissions test was required for the majority of the fleet. The following non-diesel[2] vehicles required an OBD test:

- Vehicles in model years 1998-2007 weighing 8,500 lbs. GVWR or less,
- Model year 2008 and newer vehicles weighting 14,000 lbs. GVWR or less.

The following diesel vehicles required an OBD test:

- Vehicles in model years 1998-2006 weighing 8,500 lbs. GVWR or less,
- Model year 2007 and newer vehicles weighing 14,000 lbs. GVWR or less.

Heavy duty diesel vehicles (weighing over 10,000 lbs. GVWR) with model year 1984 or newer that were not subject to the OBD test required an opacity test.

An emissions test was also required when a vehicle meeting any of the above requirements changed ownership or had its registration transferred to Massachusetts from another state.

[2] A diesel vehicle is defined as a vehicle powered by an engine using a compression ignition thermodynamic cycle. Non-diesel vehicles are typically fueled with gasoline, including hybrids, but may also be powered by alternative fuels such as natural gas.

In 2012, there were approximately 4.68 million vehicles registered in Massachusetts. From January 1, 2012 through December 31, 2012, the I&M program conducted 3,791,991[3] emissions tests, including initial tests and retests. 3,594,837 unique vehicles (77% of the Massachusetts fleet) received an initial emissions test in 2012. Of these vehicles, 3,482,058 were non-diesel fueled (e.g. gasoline, natural gas, etc.) and 112,779 were diesel fueled.

***Compliance and Enforcement***

Of the 3,482,058 non-diesel vehicles receiving an initial OBD test in 2012, 224,103 (6.4%) failed their initial test. Of the 20,339 diesel vehicles receiving an initial OBD test, 1,414 (7.0%) failed their initial test. Of the 92,440 diesel vehicles receiving an initial opacity test, 1,670 (1.8%) failed their initial test.

Of all non-diesel vehicles tested, 38,538 (1.1%) did not pass a subsequent retest, or receive a waiver or hardship extension by March 31, 2013. Four waivers from the requirement that failing vehicles pass an emissions re-test were granted in 2012 along with 82 economic hardship extensions (less than 0.1% of vehicles failing initial emissions tests). Of all diesel vehicles receiving an OBD test, 168 (0.7%) did not pass a subsequent retest by March 31, 2013

The 38,706 vehicles (non-diesel and diesel) with no known outcome do not include vehicles that have expired or cancelled registrations. If those vehicles are included, the total number of vehicles with no known outcome increases to 44,219 (1.3%). Vehicles failing to receive safety 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.

***Station and Inspector Oversight***

In 2012, the Massachusetts Registry of Motor Vehicles (RMV) performed 8,628 site audits to determine if program 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 year received at least one visit. Based on the results of the site audits and other data, RMV held 241 hearings for stations and issued 319 adverse actions against stations (e.g., warning letters, license revocations or license suspensions).

In 2012, 6,929 licensed inspectors performed at least one test. Based on the results of the site audits and other data, RMV held 210 hearings for inspectors, and issued 278 adverse actions against inspectors (e.g., warnings, license revocations or license suspensions).

In 2012, Massachusetts settled ten enforcement cases against three inspectors and seven stations, for a total of $139,000 in penalties assessed.

[3] The 3,791,991 emissions tests reflects one initial test for the year for each vehicle, even though some vehicles go through the emissions test cycle more than once because of off-cycle tests at change of ownership.

***2012 Program Changes***
There were no significant program changes in 2012.

## 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: 2012 Detailed Emissions Test Data (see data disk)
- Attachment C: 2012 Test Data by Station (see data disk)
- Attachment D: 2012 Quality Control Report

# 2 THE MASSACHUSETTS I&M PROGRAM

## 2.1 Why Does Massachusetts Have an I&M Program?

In 2012 EPA designated Dukes County (Martha's Vineyard) as non attainment for the 2008 8-hour ozone standard (0.075 ppm), and designated the remainder of the Commonwealth as unclassifiable/attainment. To maintain the air quality improvements that have been made, Massachusetts must implement a variety of federally mandated programs.[4] 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 programs[5].

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 Department of Transportation's Registry of Motor Vehicles Division ("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 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 current program started operation on October 1, 2008. This report describes the program in 2012.

## 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; |

In 2012, there were approximately 4.68 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, vehicles are required to receive a safety and an emissions inspection within seven days of transfer of ownership, or within seven days of their initial Massachusetts registration when transferring registration from another state.

[4] These programs are established in legally binding and federally enforceable "State Implementation Plans" or "SIPs."
[5] 40 CFR Part 51, Subpart S (§51.350 et seq.).

In 2012, non-diesel[6] vehicles were exempted from the emissions inspection if they were:

- Light duty vehicles older than model year 1998,
- Medium duty vehicles older than model year 2008, and
- Heavy duty vehicles not equipped with an OBD system.

Diesel vehicles were exempted from the emissions inspection in 2012 if they were:

- Light duty vehicles older than model year 1998,
- Medium duty vehicles with a GVWR of 10,000 lbs. or less and older than model year 2007, and
- Heavy duty vehicles with a GVWR of more than 10,000 lbs with a model year earlier than 1984.

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

## 2.3 Inspection Stations

| |
|---|
| 40 CFR 51.366 (b)[7] (1): The number of inspection stations and lanes:<br>(i) Operating throughout the year; and<br>(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.

In 2012, 1,654 stations conducted emissions tests throughout the year, and another 180 conducted tests during part of the year. There were 1,715 "workstations" or sets of inspection equipment used for testing emissions throughout 2012, and 153 workstations used for testing emissions during part of the year. A small number of inspection stations has more than one workstation. In Massachusetts, the number of workstations is equivalent to the number of lanes in a centralized testing program. Table 1 shows the numbers of workstations and stations testing emissions throughout the year and for part of the year.

At any given time, some of the workstations and stations are not operating, due to factors such as station renovation, or change of ownership or location. Table 1 also shows that the number of workstations and stations testing in any given month is fewer than the total

[6]Non-diesel vehicles are typically fueled with gasoline, including hybrids, but may also be powered by alternative fuels such as natural gas.
[7]For 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.

number of workstations and stations, as seen by the number of stations and workstations testing in December.

**Table 1: Number of Stations and Workstations Testing Emissions in 2012**

| | Workstations[8] | Stations |
|---|---|---|
| Testing All Year | 1,715 | 1,654 |
| Testing for Part of Year | 153 | 180 |
| Total During Year | 1,868 | 1,834 |
| Testing in December | 1,812 | 1,756 |

Table 2 shows the breakdown of fleet and public stations.

**Table 2: Public and Fleet Stations in 2012**

| | Public | Fleet | Total Stations |
|---|---|---|---|
| Testing All Year | 1,555 | 99 | 1,654 |
| Testing for Part of Year | 136 | 44 | 180 |
| Total During Year | 1,691 | 143 | 1,834 |
| Testing in December | 1,630 | 126 | 1,756 |

In Tables 1 and 2, a station or workstation must have conducted emissions inspections in each month in 2012 to be counted as "testing all year." Stations or workstations that were licensed for the entire year, but did not test in one or more months are considered "testing for part of the year," as are stations that entered or left the program during the year.

## 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 2012, there were 7,444 trained and licensed inspectors certified to conduct emission tests (See Table 3). However, in 2012 only 6,867 inspectors conducted emissions tests and 6,929 inspectors tested at least one vehicle for safety or safety plus emissions.

[8] If a workstation was moved to a different station during 2012, it was counted as the same workstation, but as a different station. Relocated workstations may have tested for all or part of the year. These statistics reflect the circumstances of each workstation.

**Table 3: Number of Inspectors**
**January 1, 2012 through December 31, 2012**

| | #Inspectors |
|---|---|
| Inspectors Trained And Licensed on December 31, 2012 | 7,444 |
| Inspectors Who Inspected at Least One Vehicle in 2012 | 6,929 |
| Inspectors Who Tested Emissions in 2012 | 6,867 |

## 2.5 Emissions Tests Administered

The Massachusetts I&M Program uses the vehicle's On-Board Diagnostic (OBD) system for emissions testing of most vehicles. 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 non-diesel vehicles equipped with modern OBD systems (i.e., OBD II) based on the data in those systems on June 14, 2004. The program that started on October 1, 2008 continued using OBD tests for non-diesel vehicles, and added OBD testing for diesel vehicles that are equipped with these systems.

Massachusetts has used a snap acceleration opacity test for heavy duty diesel vehicles since 2001 (except between August 2008 and October 2009, when the new program contractor was preparing, testing, and installing new diesel testing equipment and related software).

# 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 4 summarizes the overall compliance rate for 2012, 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.

**Table 4: 2012 Overall Testing Compliance Rates**

| | Vehicle Count | Compliance % |
|---|---|---|
| Average Number of Vehicles Registered in MA in 2012 | 4,675,009 | |
| Unique Vehicles Tested in 2012 (Safety Only or Safety and Emissions Tests) | 4,536,027 | 97.0% |

Please note that Table 4 may overstate compliance with testing requirements: the *average number of vehicles registered in the Commonwealth* can fluctuate from month to month, as vehicles are removed from the fleet and possibly replaced with new or out of state vehicles. By contrast, the *unique vehicles tested in 2012* counts all Massachusetts-registered vehicles that were tested during the year, even though they may only have been part of the fleet for a portion of the year. 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 non-diesel and are older than model year 1998).

Of the 224,103 non-diesel vehicles that failed their initial OBD test, 38,538 (17.2% of the failing vehicles, and 1.1% of all non-diesel vehicles tested) did not pass a subsequent retest, or receive a waiver or economic hardship extension by March 31, 2013. (The re-test would be considered a "final test" as per EPA's requirement noted above). Of the 20,339 diesel vehicles receiving an OBD test, 168 (0.7%) did not pass a subsequent retest by March 31, 2013. Four waivers from the requirement that failing vehicles pass an emissions re-test were granted in 2012 along with 82 economic hardship extensions (less than 0.1% of vehicles failing initial emissions tests).

The 38,706 vehicles (non-diesel and diesel) with no known outcome do not include vehicles that have expired or cancelled registrations. If those vehicles are included, the total number of vehicles with no known outcome increases to 44,219 (1.3%). Vehicles failing to receive safety 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.

## 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;

In 2012, RMV completed a scan of the vehicle registration database each month. These registration reviews examine the testing status of each registered vehicle to determine compliance with testing requirements. The results of these reviews are summarized in Table 5, below.

These registration reviews 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 and re-testing. The registration reviews count vehicles that failed their emissions test as "out of compliance" if they did not complete repairs and pass 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 2012 would ultimately have been in compliance but would have been counted as out-of-compliance on two registration reviews.

**Table 5: 2012 RMV Registration Reviews**

| Date | Active Registrations | Number Non Compliant | Percent In Compliance |
|---|---|---|---|
| 1/15/2012 | 4,636,793 | 450,866 | 90.3% |
| 2/15/2012 | 4,635,994 | 455,219 | 90.2% |
| 3/15/2012 | 4,643,402 | 446,708 | 90.4% |
| 4/15/2012 | 4,653,177 | 443,714 | 90.5% |
| 5/15/2012 | 4,668,544 | 446,251 | 90.4% |
| 6/15/2012 | 4,685,659 | 441,191 | 90.6% |
| 7/15/2012 | 4,693,900 | 444,904 | 90.5% |
| 8/15/2012 | 4,701,216 | 440,610 | 90.6% |
| 9/15/2012 | 4,706,644 | 440,204 | 90.6% |
| 10/15/2012 | 4,704,178 | 446,541 | 90.5% |
| 11/15/2012 | 4,684,840 | 444,001 | 90.5% |
| 12/15/2012 | 4,685,765 | 436,097 | 90.7% |
| **Average** | **4,675,009** | **444,692** | **90.5%** |

## 3.3 Parking Lot Audits

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.

In 2012, RMV conducted audits of vehicle stickers at 153 Massachusetts parking lots. Table 6 summarizes the results of these audits.

**Table 6: 2012 Parking Lot Audits**

| | |
|---|---|
| Parking lot audits conducted | 153 |
| Vehicles surveyed | 3,827 |
| Vehicles with valid inspection stickers | 3,665 |
| Compliance rate | 95.8% |

## 3.4 Other 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;

RMV conducted registration file audits and vehicle sticker audits at Massachusetts parking lots, as described in Sections 3.2 and 3.3 respectively. No other compliance surveys were conducted in 2012.

RMV recognizes the need to have a registration enforcement program to enhance its efforts to ensure that motorists comply with the requirements of the Massachusetts I&M program. However, in today's era of unprecedented state resource limitations, the Agency's aging information technology infrastructure cannot support a registration enforcement program while also meeting the data requirements of the other federal programs that the Agency works under (which are increasing at unparalleled levels). RMV is continually exploring more cost-effective ways to get this job done in a proficient manner, and is working to replace its primary registration, license, and title database. The replacement is expected to provide significantly more efficient data processing, which would allow the Agency to move forward with the development and implementation of a successful registration enforcement program.

RMV continues to be committed to the registration enforcement requirement and is anxious to see it implemented. At the same time, the Agency observes that Massachusetts enjoys a compliance rate of approximately 90% in database surveys and 96% in actual parking lot surveys, which is similar to the rates found in many other states.

## 3.5 Motorist Time Extensions

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

Massachusetts offers an economic hardship repair extension for non-commercial vehicles that do not pass their initial emissions test and a re-test. Motorists are eligible for this extension if they meet all of the following criteria:

- 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:
    - $1,230 for vehicles five model years old or newer;
    - $1,080 for vehicles over five but not exceeding 10 model years old; and
    - $930 for vehicles over 10 model years old.
- the vehicle does not qualify for a waiver;
- the economic hardship repair extension is not for an emissions inspection or re-inspection associated with initial registration or transfer of ownership;

- MassDEP or its designee agrees with the findings of the registered repair technician regarding the cause of the failure, and the appropriateness and reasonableness of the repair estimate;
- the motorist has used all relevant warranty coverage including recalls to repair the vehicle;
- all safety inspection requirements are met;
- the vehicle is registered with the Registry as a private passenger motor vehicle or auto home; and
- 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. This extension cannot be renewed or extended: at the end of the extension period, the vehicle must pass its emissions test.

In 2012, 82 economic hardship extensions were issued.

### 3.6 Waivers of Emission Standards

A non-commercial vehicle that does not pass a re-test is eligible for a waiver of the emissions standards if the following criteria are satisfied:

- At least the following amount has been spent for a Registered Emissions Repair Technician to repair the vehicle's emissions system (including labor and materials)[9]:
    - $820 for a vehicle five model years old or newer
    - $720 for a vehicle more than five but less than ten model years old
    - $620 for a vehicle more than ten model years old
- The vehicle's emissions-control system must be intact with no evidence of tampering;
- The vehicle must have passed its safety inspection within the previous 60 days; and
- The vehicle's OBD system must connect successfully with the inspection station's computer, must be "ready" for its re-test, and cannot be showing diagnostic trouble codes for engine misfire, catalytic converter efficiency failure, or energy storage for a hybrid vehicle.

To obtain a waiver, the motorist must bring the vehicle to a Motorist Assistance Center for an evaluation of eligibility. If the Center determines that the vehicle meets all the requirements for a waiver, the Center provides a waiver authorization, which the motorist must bring to an inspection station to obtain a valid sticker.

A waiver is valid until the vehicle's next emissions inspection.

[9] Only the cost of repairs performed by a Registered Emissions Repair Technician qualifies for a waiver. Expenditures for repairs made by non-registered technicians are not eligible.

In 2012, four waivers were issued.

## 3.7 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, the workstation uses a separate VIN decoder to pre-populate 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 software for investigation by the Registry of Motor Vehicles.

## 3.8 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, RMV mailed a detailed memorandum to state and local police departments in the Commonwealth regarding sticker characteristics for 2012.

In 2012, state and local police issued 70,859 inspection sticker motor-vehicle violations.

# 4 PERFORMANCE OF EMISSIONS TEST EQUIPMENT

The Massachusetts Vehicle Check program uses two methods to ensure that the emissions test equipment is operating properly:

1. The workstations have been designed to run daily "self-checks" and self checks after vehicles fail to communicate so that equipment with significant issues is identified (and repaired) as quickly as possible,
2. RMV field investigators audit equipment performance in the field.

## 4.1 OBD Test Equipment Self Checks

Workstations have been designed to run several daily "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, barcode scanner, and, if equipped, diesel opacity meter. The self checks include:

- A daily "loopback" check that tests the continuity of the OBD scan tool cable and pins in the Diagnostic Link Connector (DLC). If a loopback test fails, the workstation is locked out from performing OBD tests until a loopback check can be passed. Inspectors are also required to perform a loopback check prior to a vehicle failing its emissions test for failure to communicate with the workstation. This is to verify that the emissions test failure is not due to an equipment-related problem.
- A daily printer/barcode scanner check that tests print quality and the proper function of the barcode scanner. The workstation prints sample 1D and 2D barcodes and sample Vehicle Inspection Report (VIR) text. The inspector examines the quality of the printed sample and records a failure if the text is not legible. If the print quality is good, the inspector is then prompted to scan the 1D and 2D barcodes. If the workstation cannot read the barcodes, the workstation records a failure. Failure to read the barcodes can be caused by a faulty barcode scanner or poor print quality. If the printer/barcode scanner check fails, the workstation is locked out from performing all inspections until it can pass the check.
- For workstations equipped with diesel opacity meters, the three daily self-checks are electronic zero and span; accuracy at 37.5% opacity by extinguishing 3 of 8 light pulses; and current draw of the sample fan. All three checks have tolerances which must be met to pass. If any of the three checks fails, the workstation is locked out from performing diesel opacity tests until all three checks pass.

## 4.2 OBD Test Equipment Audits

> 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.

In Massachusetts' decentralized program, the number of workstations is equivalent to the number of lanes in a centralized testing program. Most Massachusetts stations have only one workstation.

In 2012 RMV field investigators conducted 5,180 audits of the OBD emissions test equipment used to conduct vehicle inspections in the Commonwealth.

In 2012, 1,654 stations and 1,715 workstations (lanes) conducted emissions inspections throughout the period[10]. A total of 1,834 stations and 1,868 workstations conducted at least one emissions test at some time during the year.

Thirty-three RMV field investigators performed a total of 5,180 OBD test equipment audits in 2012. This covered 1,666 different workstations (lanes) and 1,625 different inspection stations, with 1,448 workstations being audited more than once.

The results of these audits are described in detail in Attachment D, and are summarized here[11].

## 4.3 Audit Results for OBD Test Equipment

To pass an overall audit, the workstation cannot fail any of the audit's individual parts.

Table 7 describes the results of the workstation OBD test equipment audits conducted in 2012. It summarizes the workstation audit results for each individual OBD audit part and the overall workstation audit results.

[10] A station or workstation must have conducted at least one emissions inspection in each month in 2012 to be counted as "testing throughout the period."
[11] The OBD test equipment audits focus on workstation performance. In this report, the data for 40 CFR 51.366(c)(3) is provided for workstations, rather than for stations. A summary of failures for stations can be found in Attachment D, 2012 Quality Control Report.

**Table 7: 2012 OBD Test Equipment Audit Results**

| Audit Part | 2012 Audit Results | | | |
|---|---|---|---|---|
| | **Pass** | **Fail** | **Tested** | **Failure Rate** |
| Functional Checks | | | | |
| Communications Check | 5,175 | 5 | 5,180 | 0.1% |
| Accuracy Check, (Including engine RPM) | 5,174 | 1 | 5,175[12] | 0.0% |
| Number of Audits Failing One or More Functional Checks | 5,174 | 6 | 5,180 | 0.1% |
| Visual Cable and Connector Check | 5,134 | 41 | 5,175[13] | 0.8% |
| **Overall Audit Results (Audits that Failed One or More Audit Parts)** | 5,133 | 47 | 5,180 | 0.9% |

Six workstation audits failed a functional check: five failed the communication check and one failed the accuracy check.

For the five workstation audits that failed the communications check:

- Two of the workstations that failed to communicate had already been automatically locked out from performing inspections by the workstation software prior to the audit being conducted.
- One workstation was communicating with after-market cables, but failed to communicate with the approved cables, and therefore required repair.
- One of the communication failures was at a new car dealership. The communication protocol of the simulator used on the audit is not typically seen by the dealership because the protocol is not associated with the line of vehicles it sells. Because the workstation appeared to be communicating during inspections, an audit was required to detect the communication failure for the particular communication protocol.

The workstation that failed the accuracy check was not displaying or recording results for RPM. The repair record for this failure indicated that the connection was intermittent and you had to "play with" the connection in order to communicate. The OBD interface and cables were replaced.

Forty-one workstation audits failed the visual cable and connector check. While all forty-one of these workstation audits passed for both communication and accuracy, six had already been automatically locked out from performing inspections by the workstation software prior to the audit being conducted.

[12] The accuracy check could not be done for the five workstation audits that had failed for communication.
[13] Due to a bug with the current audit software, the visual cable and connector check results were not recorded in the database for the five workstation audits that failed for communication.

Inspection stations are required to open service request tickets for all audit failures. Field investigators continue to monitor the cable and connector conditions for all stations and issue station violations if the stations are unresponsive to repair requirements.

No workstations were manually shut down as a result of the equipment audit failures. Eight workstations were automatically locked out from performing inspections by the workstation software prior to the audits, preventing improper inspections from occurring.

# 5 STATION AND INSPECTOR OVERSIGHT

The Massachusetts I&M Program uses overt, digital and covert audits to assess station and inspector performance. The results of each type of audit conducted in 2012 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:<br>(i) Receiving overt performance audits in the year;<br>(ii) Not receiving overt performance audits in the year; |

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 at least three times during the year, and performs additional visits to follow up on past problems or to investigate stations or inspectors based on consumer complaints or data analysis.

The I&M contractor maintains records of all inspections in a database to which MassDEP and RMV have access. RMV conducts monthly "digital audits" before visiting stations, to identify 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.

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.

In 2012, RMV conducted 8,628 overt station visits/audits. All 1,834 stations and 1,868 workstations that conducted emissions inspections during this period received at least one audit.

## 5.2 Digital Audits

In addition to RMV's overt station visits/audits, in 2012 MassDEP continued an initiative that started in late 2008 to use digital audits of the inspection database to identify suspected improper emissions inspections, and in many cases, to determine that an improper inspection occurred. Where the data indicated that an improper inspection most likely occurred, MassDEP staff visited the station to confirm the accuracy of digital audit findings and to gather more information about the unusual situations that had been identified. RMV staff participated in many of these station visits.

These digital audits were an effective tool for identifying improper inspections, particularly cases in which stations were "clean scanning" by conducting OBD tests on different vehicles than the ones brought in for inspection, and using the results from the fraudulent tests to issue stickers. Digital audits were the initial basis for ten enforcement cases settled against specific inspectors and stations by the Massachusetts Attorney General's Office or by MassDEP and RMV in 2012. The digital audits were supplemented by findings from the overt station visits. The enforcement actions reported in Section 5.4 include the results of these cases. Financial penalties resulting from these cases are reported in Section 5.4.2.

## 5.3 Covert Audits

Covert audits, or "covert performance audits," are under-cover inspections done with vehicles set to fail one or more parts of the emissions test. This section summarizes covert audits performed by the Network Contractor. While RMV staff also conducts covert audits as part of their enforcement activities, the results of their covert audits are not included in the following tables.

In 2012, the Network Contractor performed 1,402 covert vehicle audits. Of these, seven were scheduled in response to Agency requests and the remaining 1,395 audits were selected randomly or targeted based on data analysis. Some stations received more than one covert audit, as summarized in Table 8.

**Table 8: 2012 Covert Audits per Station**

| Number of Audits Per Station | Count of Stations |
|---|---|
| 1 | 936 |
| 2 | 233 |
| Total Number of Stations Audited | 1,169 |
| Total Number of 2012 Audits | 1,402 |

### 5.3.1 Covert Auditors and Covert Vehicles

> 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 audit vehicles are selected to represent the range of OBD communication protocols. Seven vehicles were used for covert audits in 2012, representing five communication protocols:

- CAN,
- KWP (ISO 14230-4),
- ISO (ISO-9141),
- VPW and
- PWM.

In 2012, six covert auditors conducted covert vehicle audits.

### 5.3.2 Number of Covert Audits Conducted in 2012

> 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;

Table 9 summarizes the number of covert audits conducted during 2012 for each type of inspection station. To be considered "operating throughout the year" a station must have conducted at least one emissions test during each month of the year. Only public stations can receive covert vehicle audits because fleet stations only test vehicles that are part of the company's fleet, making it impossible for the Network Contractor to present a covert (or "undercover") vehicle for testing. Also, covert vehicle audits are not conducted at stations that inspect only heavy duty vehicles.

**Table 9: Number of Inspection Stations and Covert Audits in 2012**

| | | | 2012 Covert Audits | | |
|---|---|---|---|---|---|
| | | 2012 # of Stations | Audited Stations | # Of Audits | Stations NOT Receiving Covert Audits |
| Operating Throughout the Year | Fleet stations | 99 | 0 | 0 | 99 |
| | Public stations | 1,555 | 1,128 | 1,361 | 427 |
| | **All stations** | **1,654** | **1,128** | **1,361** | **526** |
| Operating Part of the Year | Fleet stations | 44 | 0 | 0 | 44 |
| | Public Stations | 136 | 40 | 40 | 96 |
| | **All stations** | **180** | **40** | **40** | **140** |
| **TOTAL** | | **1,834** | **1,168** | **1,401**[14] | **666** |

Table 10 shows the total number of workstations in the inspection network and the number of workstations that received covert audits. A workstation is counted as "operating throughout the year" if it conducted at least one emissions inspection each month of the year.

Since the inspector is required to drive the vehicle into the inspection bay during a covert audit, the covert auditor has no control over which workstation is used at stations with multiple workstations.

**Table 10: Number of Workstations and Covert Audits in 2012**

| | # of Workstations | Audited Workstations | # of Audits | Workstations Not Audited |
|---|---|---|---|---|
| **Operating Throughout the Year** | 1,715 | 1,132 | 1,363 | 583 |
| **Operating Part of the Year** | 153 | 37 | 38 | 116 |
| **TOTAL** | **1,868** | **1,169** | **1,401** | **699** |

[14] One additional audit was conducted at a station that did no inspections in 2012, bringing the total number of covert vehicle audits up to 1,402. The station would not inspect the covert vehicle. Two days after the audit the station was locked out from performing inspections and is now "retired."

### 5.3.3 Covert Audit Overview

A "false pass" on a covert audit is an inspection that passes a vehicle that was set to fail its OBD test.

Covert vehicles are set to fail the OBD test in a variety of ways including:

- diagnostic trouble codes being set,
- failing to communicate, and
- failing because the readiness monitors are not set.

In addition to these three types of OBD failures, the Malfunction Indicator Lamp (MIL) was made inoperable for some of the vehicles that were set to fail with diagnostic trouble codes set.

For some covert audits, the vehicles were also set to fail the safety test.

### 5.3.4 Covert Audit Results by Type of OBD Failure

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

Since OBD tests are the only type of emissions test covered by the covert audit program, there were no audits set to fail two or more test types. For the 1,402 covert audits with OBD set to fail, there were no false passes.

## 5.4 Station and Inspector Enforcement

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

| |
|---|
| 40 CFR 51.366 (b) (4): The number of inspectors and stations:<br>(i) That were suspended, fired, or otherwise prohibited from testing as a result of covert audits;<br>(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: . . .<br>(v) That have been shut down as a result of overt performance audits; |

In 2012, RMV issued 366 written violations to stations resulting in 241 hearings. Of the hearings held, 111 resulted in the station's license being suspended or revoked. Of the 27

suspensions and revocations that were appealed, 21 were affirmed or modified with suspensions, resulting in 105 station license suspensions or revocations.

RMV issued 304 written violations to inspectors resulting in 210 hearings. Of the hearings held, 97 resulted in the inspector's license being suspended or revoked. Of the five suspensions and revocations that were appealed, five were upheld, resulting in 97 inspector license suspensions or revocations.

Tables 11 and 12 summarize the results of RMV's hearings and enforcement actions for stations and inspectors in 2012. Some stations and inspectors appealed hearing results that were suspensions or revocations of their licenses. The results of the appeals are summarized in Table 13. Table 14 summarizes all adverse actions, including license suspensions, license revocations, and formal warnings.

**Table 11: Number of Written Violations and Subsequent Actions Taken Against Stations and Inspectors in 2012**

| Type of Action Following Written Violations | Inspection Stations | Inspectors |
|---|---|---|
| Actions Following Written Violations | | |
| Warning Letters (no hearing) | 106 | 80 |
| Violations Filed (no action or hearing) | 8 | 4 |
| Hearings Held (no appeal) | 214 | 205 |
| Hearing Held and Results Appealed | 27 | 5 |
| 2012 Written Violations Unresolved (As of 4/11/2013, open, or hearing not yet held) | 11 | 10 |
| | 366 | 304 |

**Table 12: Types of Enforcement Resulting from 2012 Hearings for Stations and Inspectors**

| Types of Enforcement Resulting from Hearings (Excluding hearings where the results were appealed) | Inspection Stations | Inspectors |
|---|---|---|
| Total Number of Hearings Held | 214 | 205 |
| License Revocations | 4 | 8 |
| License Suspensions | 80 | 84 |
| Warnings | 108 | 101 |
| Total Number of Adverse Actions | 192 | 193 |
| Other Action (e.g., abeyance, surveillance) | 3 | 0 |
| No Action | 19 | 12 |

**Table 13: Outcomes of Appeals of Hearing Results**

| Outcomes from the Board of Appeals | Inspection Stations | Inspectors |
|---|---|---|
| Total Number of Appeals | 27 | 5 |
| Adverse Actions | | |
| Affirmed RMV Decision (suspended or revoked) | 14 | 5 |
| Modified RMV Decision (reduced suspension) | 7 | 0 |
| Total Number of Adverse Actions | 21 | 5 |
| Decisions Pending at RMV's Board of Appeals | 0 | 0 |
| Board of Appeals Vacated RMV Decision | 6 | 0 |

**Table 14: Total Adverse Actions Against Stations and Inspectors in 2012**

| Adverse Actions | Inspection Stations | Inspectors |
|---|---|---|
| Warning Letters (no hearing) | 106 | 80 |
| Total Number of Adverse Actions as a Result of Hearings (Hearing results that were not appealed) | 192 | 193 |
| Total Number of Adverse Actions - Board of Appeals[15] | 21 | 5 |
| Total Adverse Actions for 2012 | 319 | 278 |

### 5.4.2 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;

[15] Some of the Board of Appeals cases for 2012 violations were resolved in 2013.

In 2012, Massachusetts settled ten enforcement cases against three inspectors and seven stations, for a total of $139,000 in penalties assessed. Of the total penalty assessment, $91,000 was stayed as long as the station or inspector complies with all program requirements during the period covered by the settlement. Each settlement agreement provides a schedule for the collection of the penalties.

All ten settled cases included violations due to OBD "clean scans." A clean scan is a fraudulent OBD test conducted on a motor vehicle other than the vehicle reportedly tested, or using an electronic device designed to simulate a vehicle's OBD system.

### 5.4.3 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; |

Inspection stations are responsible for the compliance documents (stickers) shipped to them. Failure to properly account for unused stickers may subject a station or inspector to enforcement action.

The sticker accounting system is intended to allow the tracking of all stickers from the time they are delivered to the inspection stations to when they are placed on vehicles or are voided and collected by RMV Field Investigators. During 2012, software bugs in the sticker accounting system continued to cause the Agencies to be unable to accurately determine the final status of all stickers:

- Some stickers that were placed on vehicles were later incorrectly changed to year-end overstock in the database tables, making it impossible to accurately determine the number of stickers that had been placed on vehicles.
- Some stickers collected by RMV could not be recorded in the software as collected for disposal because the software did not identify the stickers as needing collection and allow RMV to record their collection.

In 2012, 5,361,700 stickers were issued to inspection stations, approximately 5,008,480 stickers were placed on vehicles, and 297,204 stickers were known to have been picked up by RMV and destroyed. This includes end-of-year overstock, as well as individual stickers that had been voided by the stations.

The remaining 56,016 stickers are regarded as unaccounted for, since the sticker management software cannot accurately account for them. However, many of these stickers were full packages of stickers (100 stickers per package) collected by RMV as year-end overstock but not recorded in the sticker accounting system. The remainder were reported as stolen, were missing when RMV attempted collection, or could not be recorded as collected by the RMV in the sticker accounting system.

In spite of these bugs, the vast majority of stickers that were issued to stations were accounted for. The following table summarizes the sticker accounting for 2012 stickers.

**Table 15: 2012 Inspection Stickers**

| | Number of Stickers |
|---|---|
| **Total Number Printed** | **5,412,000** |
| **Assigned to Station** | **5,361,700** |
| Total Used (on vehicles) | -5,008,480 |
| Collected and destroyed by RMV (as recorded by software) | -296,604 |
| Remaining "unaccounted for" | 56,616[16] |

RMV continues to investigate and take enforcement action against stations and inspectors who are unable to account for stickers that are known to have been voided due to printing errors, damaged by mishandling, or otherwise voided by the station through the workstation software.

[16] Of these 56,616 stickers, 1,101 are known to be missing or stolen.

# 6 EMISSIONS TEST RESULTS

## 6.1 Emissions Tests and the Massachusetts Fleet

The Massachusetts I&M program administered OBD and opacity emissions tests during all of 2012.

In 2012, 224,103 (6.4%) of the 3,482,058 unique non-diesel (gasoline, natural gas, etc.) vehicles receiving initial OBD tests failed their initial tests. Of the 23,339 diesel vehicles receiving an initial OBD test, 1,414 (7.0%) failed their initial tests. Of 92,440 diesel vehicles receiving an initial opacity test, 1,670 (1.8%) failed their initial opacity tests. The Massachusetts Program requires that failing vehicles be repaired and re-tested within 60 days of the failing their initial emissions test.

Table 15 summarizes the failure rates for initial OBD tests in Massachusetts in 2012:

**Table 16: 2012 Failure Rate for Initial Emissions Tests by Test Type and Fuel**

| Test Type | Fuel | Failure Rate |
|---|---|---|
| Opacity | Diesel | 1.8% |
| OBD | Non-Diesel | 6.4% |
| OBD | Diesel | 7.0% |
| All Initial OBD Tests | | 6.4% |
| All Initial Emissions Tests | | 6.3% |

Of the initial emissions test failures, please note:

- Approximately 95.3% of retested vehicles passed the retest.
- 38,706, (17.2%) of vehicles that failed an initial OBD test and were still registered in Massachusetts had not passed a retest, obtained a waiver or been granted a hardship extension by March 31, 2013.[17]
- Four waivers and 82 hardship extensions were granted (less than 0.1% of the vehicles that failed their initial emissions test).

Details of all emissions test results from are included in Attachment B.

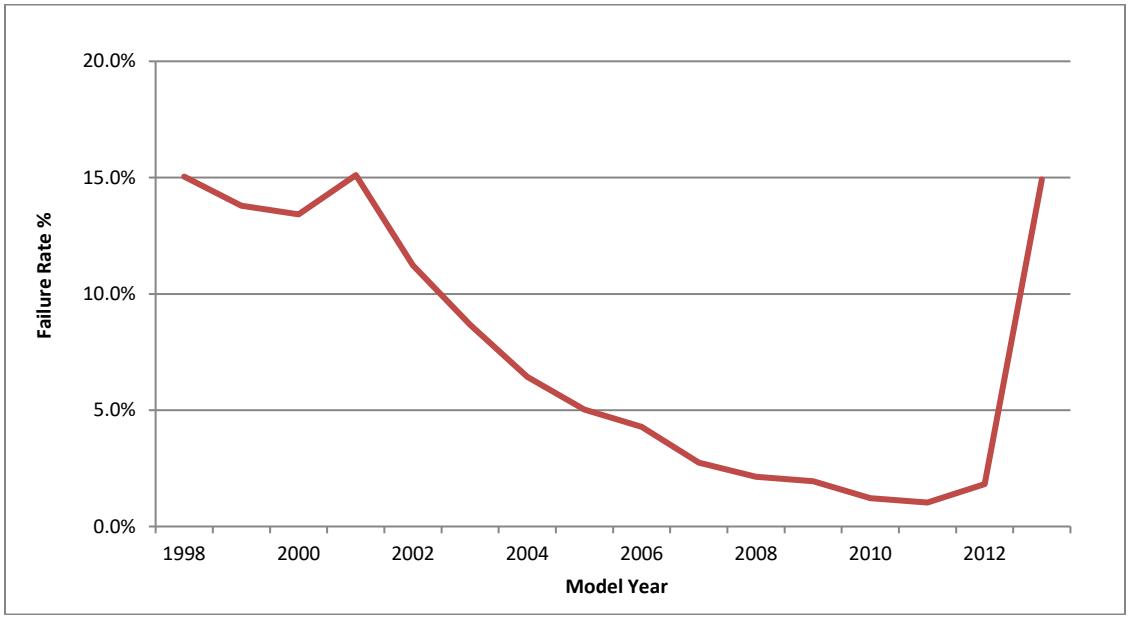
[17] 44,219 vehicles failed an initial OBD test and had not passed a retest by March 31, 2013, including vehicles with expired or cancelled registrations.

A limited number of vehicles failed their initial inspections because their OBD computer could not communicate with the OBD scan tool and workstation equipment. In these cases, the workstation allows an alternative test to be performed, which consists of performing a Key-On Engine-Off (KOEO) bulb check to see whether the MIL bulb is functioning and a Key-On Engine-Running (KOER) to see if the MIL is commanded on. Failing either check will result in an OBD test failure.

In 2012, 97 of the 3,502,397 OBD tests were alternative tests. Attachment B describes the particular years, makes, models and counts of vehicles receiving these tests. The Network Contractor and the Agencies continue efforts to determine why the OBD scan tool has difficulty communicating with certain vehicles to minimize the number of alternative tests.

Figure 1 shows the initial OBD failure rates by model year. As can be seen, the age of the vehicle has a significant impact on failure rate. Please note that the spike in the failure rate in for model year 2013 is based on a very small sample size (476). While this includes some new vehicles that have changed ownership within the first year, most of these failures were for readiness for new vehicles that inadvertently received an emissions test due to inspector error. 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.

**Figure 1: 2012 Failure Rates by Model Year – Initial OBD Tests Only**



## 6.2 Overall Conclusions about Program Operation During 2012

2012 was the fourth full year of operation for the updated Massachusetts I&M Program. The program is meeting its goals of a comprehensive test that provides the emission reductions needed for the Massachusetts SIP, is convenient to motorists, ensures vehicle safety, and works well in local inspection shops.

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, far below the commitment in the Massachusetts SIP to limit waivers to no more than 1% of vehicles that fail an initial emissions test.

# 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

Rules

## Attachment B: Detailed 2012 Emissions Test Data

**Massachusetts Enhanced Emissions and Safety Test**
**Inspection and Maintenance Program**

See data disk

## Attachment C: 2012 Test Data by Station

**Massachusetts Enhanced Emissions and Safety Test**
**Inspection and Maintenance Program**

See data disk