



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

Biennial Report: 2006-2007

Massachusetts Enhanced Emissions and Safety Test
Inspection and Maintenance Program

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**BIENNIAL REPORT
MASSACHUSETTS ENHANCED EMISSIONS AND SAFETY TEST
INSPECTION AND MAINTENANCE PROGRAM
2006-2007**

1. Introduction

This report has been prepared for the U.S. Environmental Protection Agency (US EPA), in compliance with the requirements of 40 CFR 51.366. The information in this report covers the reporting period of calendar years 2006-2007.

The Massachusetts Enhanced Emissions and Safety Test (Inspection and Maintenance) Program, which started on October 1, 1999, is an important tool for improving air quality in the Commonwealth, as well as for ensuring that Massachusetts cars are safe to drive. The Program was established in M.G.L. c. 111, §§142J and 142M, and G.L. c.21A, §§2(28) and 16. Implementing regulations were adopted initially in January 1999 by the Massachusetts Department of Environmental Protection (“MassDEP”, at 310 CMR 60.02) and the Registry of Motor Vehicles (“RMV”, at 540 CMR 4.00-4.09). MassDEP and RMV run the Program through a contract executed in January 1999 with Keating Technologies, Inc. (now known as Applus Technologies, Inc.)¹.

In 2006-2007, the Program contract was amended once, the sixth amendment since its initial execution. Contract Amendment No. 6 (executed in May 2006) extended the contract for two years beyond its initial expiration date of September 30, 2006, to maintain Program continuity while the Agencies procured a subsequent contract. With this extension, the contractor agreed to make additional improvements in equipment maintenance and service to inspection stations and to further increase the reliability of emission testing equipment, an effort that started with Contract Amendment No. 4 that was executed in 2004.

From the Program’s start in October 1999 until June 2004, most model year 1984 and newer vehicles were tested on a dynamometer, which measures emissions as actual driving conditions are simulated over a 31-second “drive trace².” The measured emissions are then compared to regulatory standards for nitrogen oxide, hydrocarbons, and carbon monoxide to determine whether the vehicle passes or fails. Since June 15, 2004, most model year 1996 and newer vehicles have been tested through the vehicle’s On-Board Diagnostic (OBD) computer systems to determine whether emission control systems or related vehicle components are operating properly.

In 2007, OBD tests were used for 79% of the vehicles that received an initial emissions test. Sixteen percent of the vehicles receiving initial emissions tests were tested using the transient

¹ In July 2001, Keating changed its name to Agbar Technologies, Inc. (due to a change in corporate ownership). In February 2005, the firm changed its name again to Applus Technologies, Inc. This report refers to the contractor as “Applus” since it continues doing business under that name today.

² If a gasoline-fueled vehicle could not be given a dynamometer or “transient” test (e.g., vehicles with all-wheel drive and vehicles weighing more than 10,000 pounds), it was given a “two-speed idle or “TSI” test, which measures emissions while the engine is operating at 2500 revolutions per minute with the transmission in neutral, and while the vehicle is idling.

test. The remaining vehicles receiving an initial emissions test were given a Two Speed Idle test (2.6% in 2007) or a snap opacity test for heavy duty diesel vehicles (2.2%).

Vehicles that fail their initial emissions test must have their emission control system and/or related components repaired, and must pass a re-test (or obtain a waiver of emissions requirements from the Commonwealth³).

The Enhanced Emissions and Safety Test Program was designed to balance three goals:

- *Pollution reductions* - Vehicles with high emission levels must be identified and repaired using test equipment appropriate for today's high-tech vehicles.
- *Motorist convenience* – The test must be as convenient as possible for Massachusetts motorists.
- *Fitting in with the automotive service industry* – Attractive business opportunities must be provided to the program's private sector partners: the inspection stations and repair shops that test and fix vehicles.

The program was designed to give drivers easy access to local inspection stations within a few miles of where they work or live. In 2007, 1,408 stations conducted emissions tests for the public throughout the year, and another 248 conducted tests during part of the year. In addition, approximately 48 fleet stations conducted emissions tests throughout 2007, and another 61 fleet stations tested emissions during part of the year. This distribution means that more than 90 percent of motorists can find an inspection station within two miles of where they live or work, and more than 98 percent can find a station within ten miles.

To help motorists who need emissions repairs, the program has established a network of registered repair technicians who are specially trained to diagnose emissions problems and repair modern vehicles effectively. By December 2007, there were 358 technicians who were trained and registered with the Commonwealth. These technicians were employed by 316 registered repair shops.

2. Program Changes Implemented Since 1999

Program Design: Massachusetts has not changed the Program's basic design to test emissions from model year 1984 and newer vehicles and to ensure that those failing the test are repaired. However, in 2006-07, MassDEP and RMV developed a framework for the next contract for implementing the Program from October 1, 2008 through September 31, 2013, and procured a new contract. The new contract was executed in January 2008, and work started immediately to develop the new program in preparation for its launch on October 1, 2008.

The program that will start inspecting vehicles on October 1, 2008 maintains many significant features of the existing program, notably:

- The Program's three primary goals (to improve air quality, be convenient for motorists, and fit with the industry) are unchanged, and

³ Waivers are only provided if some repairs are made and certain other conditions are met. In 2007, waivers were provided to only 184 vehicles or 0.01% of the vehicles that failed their initial emissions test

- The program will continue to deliver a combined safety and emissions test at a decentralized network of inspection stations.

However, some changes in the basic design of the Program will be made:

- Since the percentage of the Massachusetts vehicle fleet that is equipped with On-Board Diagnostic II computers is now greater than 70% and is expected to reach 94% by 2012, the program will rely exclusively on OBDII testing, and will discontinue transient (i.e., tailpipe) testing at its outset;
- The Program will exempt vehicles that are more than 15 years old from emission testing, but will maintain a requirement that vehicles emitting visible smoke must fail their safety inspection.
- The Program will continue using opacity testing for emissions from diesel vehicles weighing more than 10,000 pounds GVWR, and will phase in OBDII testing of other diesel vehicles as the fleet becomes equipped with OBDII systems: emissions testing of light duty diesel vehicles (those weighing less than 8,500 pounds GVWR) will start with model year 1997 and emission testing of medium duty diesel vehicles (those weighing between 8,501 and 14,000 pounds GVWR) will start with model year 2007;
- Requirements of U.S. Department of Transportation commercial vehicle safety inspections will be incorporated into Massachusetts safety inspections of commercial vehicles;
- The program's data systems will be improved and their connection to RMV's primary data base will be strengthened, so that "off-line" inspections will be prohibited; and
- RMV will start suspending the registrations of vehicles that fail to appear for an inspection, or do not pass a re-test within 60 days of failing an initial inspection.

MassDEP plans to submit a proposed revision to the State Implementation Plan for Vehicle Inspection and Maintenance (based on modeling using EPA's prescribed MOBILE 6 model) that demonstrates that the new program will be at least as effective in achieving emission reductions as the current program, with the possible exception of the new program's first year. MassDEP does not believe that the small increment in expected increased NOx emissions in the new program's first year is significant because the model does not account for emission reductions carrying over from the existing program (as vehicles' emission control systems have been tested and repaired where necessary and produced emission reductions over the last eight years).

Funding: No changes in the structure of Program funding were made in 2006 or 2007. The fee of \$29 for each vehicle inspection, which was established in regulation in 1999 (covering safety as well as emissions tests), remained in place. Inspection stations retained \$20.50 of the fee. The remaining \$8.50 was deposited into the Commonwealth's "Inspection and Maintenance" Trust Account, which is managed by RMV. From this account, Applus Technologies, Inc. was paid \$5.803 for each of the first 4.2 million "paid" inspections, and \$1.49 for each additional "paid" inspection thereafter. MassDEP and RMV used the remaining funds to oversee the Program (e.g., auditing equipment at inspection stations and ensuring that inspectors are conducting tests properly). MassDEP was provided with funds from the Trust Account through an Inter-Agency Service Agreement with RMV, which has been updated annually.

Funding levels (from the Inspection and Maintenance Trust Fund) for the Program were generally stable in 2006-07. Applus Technologies, Inc. was paid \$24,443,730 in FY 2007 (July 1, 2006 through June 30, 2007). RMV's expenditures totaled \$33,698,410 in FY 2007. MassDEP's expenditures totaled \$2,504,550 in FY 2007.

Personnel Levels: Staffing levels for the Enhanced Emissions and Safety Test Program have been generally stable since the program's inception. In FY 2007, RMV assigned 39 staff (full time equivalents) to the Program, and MassDEP had 15 staff assigned during the fiscal year.

Procedures: Since the Program started operations in 1999, a number of procedures have been modified or adopted to ensure that the Program meets its goals. In the period covered by this report, procedural changes were established by a contract amendment (No. 6, executed in May 2006), which was designed to correct specific issues that are described in Section 3 below. Earlier procedural changes (e.g., installation of final cutpoints and the implementation and discontinuation of a "low emitter profile") were described in the biennial reports covering the years in which they were implemented.

Program Authority (Legislation and Regulations): Neither the Program's authorizing legislation nor its regulations were amended in 2006 or 2007.

3. Program Issues Identified and Corrected

- *Equipment Reliability:* The Program's 2002 and 2003 Annual Reports to EPA identified equipment reliability as an issue. To resolve this issue, MassDEP required the Program contractor to audit all workstation performance between October and December 2003. Analysis of the audit results led to an amendment of the Commonwealth's contract with Applus Technologies, Inc. on June 1, 2004.

The contract amendment requires Applus to meet specific equipment reliability standards. To meet those standards, Applus found it necessary to replace one vendor's workstations because they were unlikely to be sufficiently reliable, and to upgrade the remaining workstations. The contract amendment also required Applus to significantly increase its maintenance and monitoring of workstations, and to provide early identification of needed adjustments and repairs. As reported in the 2004-05 Biennial Report, MassDEP continued to audit inspection equipment performance as these requirements were implemented.

Equipment audits and program evaluation efforts conducted in 2005 and 2006 indicated that, while the equipment reliability framework established in Contract Amendment No. 4 had resulted in significant improvements, the standards needed to be expanded and clarified, to ensure that the goals of the earlier contract amendment would be met throughout the remaining life of the contract. Contract Amendment No. 6, which was signed on May 30, 2006, extended the contract's termination date from September 30, 2006 to September 30, 2008, and established additional requirements for the program contractor, within the framework of the reliability standards established by Contract Amendment No. 4. Contract Amendment No. 6 required the contractor to:

- Improve its response time to requests from inspection stations for workstation repairs,
- Meet performance standards for workstation maintenance and repairs identified by digital and MassDEP audits,
- Upgrade workstation software to correct gas bench response times and VMAS flow adjustments,
- Reformat the Vehicle Inspection Report (which is provided to vehicle owners at the conclusion of each inspection) and implement a communications plan to encourage motorists to use a Registered Repairer for emission control system repairs, and
- Implement updated and expanded training for emission control repair technicians, and

- Correct the protocol for inspecting heavy duty vehicles to require that parking brakes are “off” before an inspection is performed.

Since July 2005, MassDEP has used its audits to evaluate whether workstations are functioning within the equipment reliability standards established by Contract Amendment No. 4. Starting in June 2006 and continuing throughout 2007, MassDEP has also determined whether the program contractor has met the requirements of Contract Amendment No. 6. Liquidated damages have been assessed when the contractual standards were not met.

- *Registration Enforcement:* Responsibility for enforcement against motorists who fail to get their vehicles inspected or fail to pass their inspection is shared by the Registry of Motor Vehicles, and local and state police. Since the program’s inception, RMV’s enforcement efforts have focused primarily on ensuring that inspectors and inspection stations properly administer the test, while local and state police have issued citations to motorists found to be driving vehicles without proper inspection stickers.

The RMV’s registration enforcement program, originally scheduled to begin in late 2004, had not been implemented by the end of 2007. However, on February 25, 2007, RMV started to routinely send letters to owners of all vehicles that had not passed a retest 30 days after they failed an initial inspection (A sample letter can be found in Attachment E of the 2007 Annual Report). Between February 25, 2007 and December 31, 2007, 120,400 letters were sent. This reminder appears to have been effective: In calendar year 2007, 18.7% of the gasoline-fueled vehicles that failed an initial emissions test did not pass a subsequent retest or obtain a waiver, which is a significant reduction from 26.2% in 2006.

State and local police continue to issue tickets for vehicles they find on the road without proper inspection stickers. In 2007, state and local police together issued 92,989 motor vehicle violation notices related to inspection stickers.

4. Reports Referenced

- Annual Reports to the U.S. Environmental Protection Agency describing the implementation of the Massachusetts Enhanced Emissions and Safety Test Program for 2000 (which includes the program operations between October 1, 1999 and December 31, 2000) –2007 can be found at the program’s web site: www.mass.gov/vehiclecheck
- Biennial Reports to the U.S. Environmental Protection Agency describing the program in 2000-01-02, 2002-03, and 2004-05 can also be found at the same web site.