MASSACHUSETTS
VEHICLE CHECK
Cleaner Air • Safer Roads

INSPECTION UPDATE

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Contents

Inspection Update is a publication produced by Massachusetts Vehicle Check; a joint program of the Massachusetts Department of Environmental Protection (MassDEP), the Registry of Motor Vehicles (RMV) and Parsons Environment and Infrastructure Group, Inc.

U.S. EPA Strengthens Ozone Standards to Protect Public Health

WASHINGTON – The U.S. Environmental Protection Agency (EPA) has strengthened the National Ambient Air Quality Standards (NAAQS) for ground-level ozone, which is one of the air pollutants that the Massachusetts Vehicle Check Program's emissions test was designed to address.

The ozone standard was updated to 70 parts per billion (ppb) from 75 ppb to protect public health. According to EPA, the updated standards will reduce Americans' exposure to ozone, improving public health protection, particularly for at risk groups including children, older adults, and people of all ages who have lung diseases such as asthma.

The update is based on extensive scientific evidence on effects that ground-level ozone pollution, or smog, has on public health and welfare. Ground-level ozone forms when nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the air.

"Put simply – ozone pollution means it hurts to breathe for those most vulnerable: our kids, our elderly and those suffering from heart and lung ailments," said EPA Administrator Gina McCarthy. "Our job is to set science-backed standards that protect the health of the American people. [This] action is one of the most important measures we can take for improving public health, reducing the costs of illness and protecting our children's health."

EPA examined nearly 2,300 studies in this review of the ozone standards including more than 1,000 new studies published since the last review of the standards in 2008. Scientific evidence shows that ozone can cause a number of harmful effects on the respiratory system, including difficulty breathing and inflammation of the airways.

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It's Summer Smog Season from April to October

New England has experienced a significant decrease in the number of unhealthy ozone days when measured over the long term. Using the new 75 parts per billion ozone standard, New England experienced 38 unhealthy days in 2015 compared to 118 in 1983. This downward trend is due to a reduction in the emissions that form ozone. While the number of unhealthy days for air quality may vary from year to year due to weather conditions, with your help we can continue this improvement in air quality.

When air quality is predicted to be unhealthy for sensitive populations, EPA recommends that people in these areas limit strenuous outdoor activity and asks that on these days, citizens and businesses take actions that will help reduce air pollution and protect the public health. Everyone can reduce air pollution by:

- Using public transportation or walk whenever possible
- Combining errands and car-pool to reduce driving time and mileage

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U.S. DOT Announces Deal to Make Automatic Emergency Braking Standard on New Vehicles

Within six years, automatic emergency braking (AEB) will be a standard feature on virtually all new vehicles. In March 2016, the U.S. Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) and the Insurance Institute for Highway Safety (IIHS) announced a historic commitment by 20 automakers representing more than 99 percent of the U.S. auto market to establish the new feature no later than Sept. 1, 2022 on vehicles up to 8,500 pounds Gross Vehicle Weight Rating (GVWR). AEB will become standard on all trucks with a GVWR up to 10,000 pounds by Sept. 1, 2025.

AEB uses cameras, radar and other sensors to determine if a crash is imminent and automatically apply the brakes if the driver doesn't respond quickly enough. The agreement will cover nearly all light-duty cars and trucks, although automakers will have a slightly longer timetable to add the capability to certain vehicles with manual transmissions. Automakers making the commitment are: Audi, BMW, Fiat-Chrysler US LLC, Ford, General Motors, Honda, Hyundai, Jaguar Land Rover, Kia, Maserati, Mazda, Mercedes-Benz, Mitsubishi Motors, Nissan, Porsche, Subaru, Tesla Motors Inc., Toyota, Volkswagen and Volvo Car USA.

According to an article in Detroit News, IIHS has estimated that about 2 million crashes "could be prevented or be made less severe each year if all" U.S. vehicles "were equipped with forward-collision braking systems." According to the report, the National Transportation Safety Board has said that nearly "half of all two-vehicle crashes involved one running into the rear of another; about 1,700 are killed and 500,000 injured every year as a result."

The announcement is available at http://www.nhtsa.gov/About+NHTSA/Press+Releases/nhtsa-iihs-commitment-on-aeb-03172016. For more information about AEB, visit http://www.safercar.gov/aeb.

Catalytic Converter Theft Prevention Tips

Catalytic converters are essential to the pollution control systems of all modern vehicles, because they eliminate harmful emissions that cause ground-level ozone from vehicle exhaust. Thieves target catalytic converters because inside the shell of the converter are valuable metals such as platinum, palladium, or rhodium that have high scrap-metal value.

According to the New York Police Department Community Affairs Bureau's alert about this type of crime, most converter thefts occur in large shopping center parking lots or commuter garages where vehicles are parked for long periods of time. Larger vehicles and trucks with higher ground clearance are more vulnerable because thieves can more easily fit under the vehicle and use a battery-powered reciprocating saw to remove the converter in minutes. A victim of theft may end up paying more than $1,000 to get their vehicle's converter replaced.

To reduce the chances of catalytic converter theft, follow these recommended tips:

- Engrave or etch your vehicle's license plate number on the converter to make it traceable
- Ask your mechanic to have the converter secured to the vehicle's frame with a hardened steel bracket welded to the frame or purchase a catalytic converter theft prevention kit designed to create a cage around your converter
- If you own or work at a business with secured parking, park within a fenced area that's busy during the day and secured at night
- At shopping centers and other similar parking lots, park close to the entrance of the building or near the access road where there's a lot of foot traffic. Always try to park in well lit areas

To read the full alert, please visit: http://www.nyc.gov/html/nypd/downloads/pdf/crime_prevention/catalytic_converter.pdf

Inspection Procedure Reminders

▶ 7D Vehicle Inspection Reminders

If you are licensed to perform school pupil transport (7D) vehicle inspections, the Registry of Motor Vehicles (RMV) would like to remind you that the following markings, signage, lights and supplemental safety equipment are part of the 7D safety inspection. Please ensure all 7D vehicles are in compliance with the following guidelines:

7D Safety Inspection Item	Inspection Requirements
School bus sign (8" black lettering on school bus yellow background) on front and rear of vehicle	Must be present and operate as designed
Front and rear alternating flashing "School Bus" red signal lamps	
Emergency buzzer or warning light to alert driver of any open doors	
Safety belts for each permanent seat (including operator's seat)	Designed and installed per U.S. Federal Motor Vehicle (FMV) Safety Standards
Fire extinguisher	Charged and mounted within reach of the operator. (Extinguishers shall be of a type approved by the Underwriters Laboratories, Inc.)
First aid kit	Sufficiently stocked for expected vehicle occupancy
Three (3) flares meeting U.S. DOT FMV Safety Standard #125, or Triangles	Must be present
At least two (2) chock blocks	
Markings	If transporting Special Needs pupils, Minimum 4" square lettering identifying name and address of vehicle owner, per M.G.L. c.90 Sec.7CC.
Vehicle Inspection Sticker (required after registration)	Must be current and affixed to the vehicle

Recently, the RMV has worked with 7D vehicle suppliers to ensure that the required "School Bus" sign and signal lamps are visible at all times during pupil loading or unloading.

Above are two brand-new Ford Transit 7D vehicles. The van on the left has a correctly installed rear 7D sign and signal lamps, while the van on the right has an incorrectly installed rear 7D sign and signal lamps.

7D vehicles are required to have the words "School Bus" and alternating flashing red lights visible from the front and rear of the vehicle. If the words "School Bus" or the flashing red lights are not clearly visible, or they are displayed across the rear doors with the ability to be pivoted away from view when opened, inspectors should consider the vehicle signage as non-compliant and fail the vehicle.

▶ Station Licensing Renewal Reminders

Recently, the Massachusetts Vehicle Check Technical Hotline has received phone calls and e-mails from inspection stations about the requirement that a Certificate of Good Standing issued by the Massachusetts Department of Revenue (DOR) be submitted with the inspection station license renewal application. Below are a few station licensing reminders for station owners and managers.

1) Prior to the issuance of a station license, and any renewal or extension thereof, applicants shall provide the Registry of Motor Vehicles (RMV) with a Certificate of Good Standing from the DOR as to all Massachusetts corporate, trustee, and other taxes to which the applicant is subject.
2) The Registrar requires a Certificate of Good Standing to verify that all licensed inspection stations are in compliance with tax laws of the Commonwealth. The license renewal notification sent by RMV to all inspection stations states that the certificate shall not be dated more that 60 days prior to submission to the RMV.
3) The RMV will return all incomplete station license applications. Please do not submit a partial application without the Certificate of Good Standing document.
4) Inspection stations that are on an agreed upon payment plan with DOR can still obtain a Certificate of Good Standing provided they are up to date with their scheduled payments.
5) Inspection stations will always be notified prior to any lock out for noncompliance. Unlike inspector licenses, a station will not be automatically locked out if they don't complete the inspection station license renewal process by the station license expiration date. Stations should take the requisite amount of time to turn in a complete station license application, rather than a partial application with the Certificate of Good Standing document missing.
6) Business owners can find information about the Certificate of Good Standing at the DOR's web page http://www.mass.gov/dor/businesses/programs-and-services/certificate-of-good-standing.html. This page gives users the options to apply for a Certificate of Good Standing online via MassTaxConnect (https://mtc.dor.state.ma.us/mtc/_/#2) with an estimated two-to-three day response time or by paper application (http://www.mass.gov/dor/docs/dor/forms/miscform/pdfs/certgoodstanding.pdf) with an estimated four-to-six week response time. For additional assistance licensees may also contact DOR directly at (617) 887-6367.

U.S. EPA Strengthens Ozone Standards to Protect Public Health

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The revised standards will significantly improve public health protection, resulting in fewer premature deaths, and thousands fewer missed school and work days and asthma attacks. For people with lung diseases like chronic obstructive pulmonary disease (COPD) or the 23 million Americans and 6 million children living with asthma, these effects can aggravate their diseases, leading to increased medication use, emergency room visits and hospital admissions.

Advances in pollution control technology for vehicles and industry along with other emission reduction standards, including "Tier 3" clean vehicle and fuels standards (https://www3.epa.gov/otaq/tier3.htm), the Clean Power Plan (https://www.epa.gov/cleanpowerplan) and the Mercury and Air Toxics Standards (https://www3.epa.gov/mats/), will significantly cut smog-forming emissions, helping states meet today's updated ozone standards.

To ensure that people are alerted when ozone reaches unhealthy levels, EPA is extending the ozone monitoring season for 32 states and the District of Columbia. This is particularly important for at-risk groups, including children and people with asthma because it will provide information so families can take steps to protect their health on smoggy days.

EPA is also strengthening the "secondary ozone standard" to 70 ppb, which will improve protection for trees, plants and ecosystems. New studies since the last review of the standards add to evidence showing that repeated exposure to ozone reduces growth and has other harmful effects on plants and trees. These types of effects have the potential to harm ecosystems and the benefits they provide.

It's Summer Smog Season from April to October

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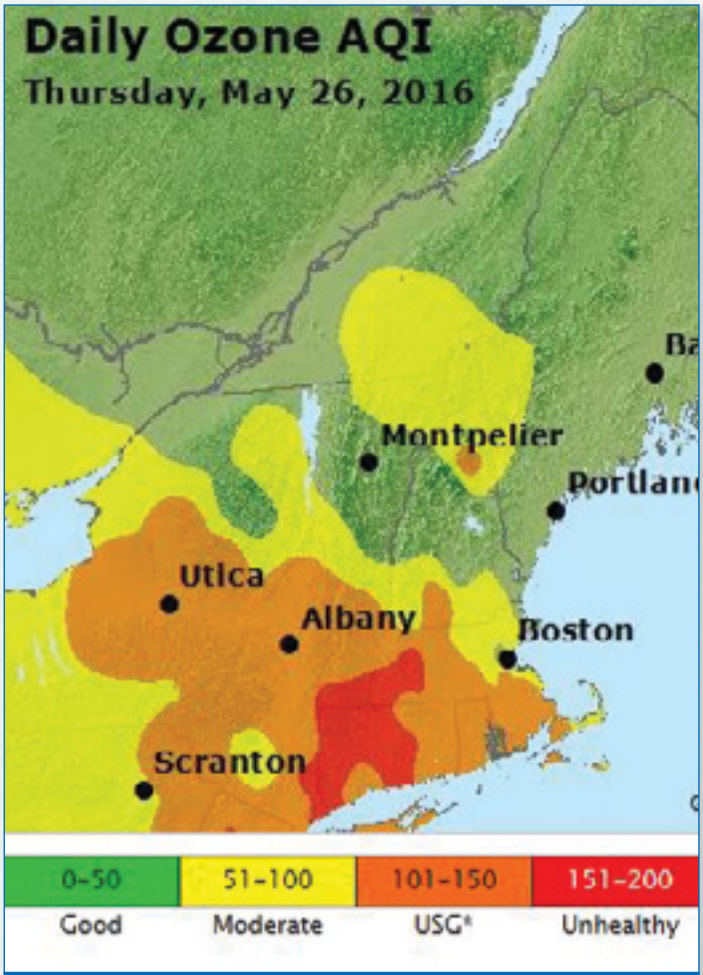
- Using less electricity by turning air conditioning to a higher temperature setting, and turning off lights, TVs and computers when they are not being used
- Avoiding use of small gasoline-powered engines, such as lawn mowers, string trimmers, chain saws, power-washers, air compressors and leaf blowers on unhealthy air days

Cars, motorcycles, trucks, and buses are a major source of the pollutants that form smog. Coal burning at electric generating stations, particularly on hot days, also generates significant smog-forming pollution. Other industries and small businesses such as gasoline stations and print shops also contribute to smog. In addition, household products like paints and cleaners, as well as gasoline-powered lawn and garden equipment, contribute to ozone formation.

For more air quality information, please visit the following websites:

- EPA Air Quality Forecasts and Alerts: https://www3.epa.gov/region1/aqi/
- MassDEP MassAir Online: http://public.dep.state.ma.us/MassAir/
- Massachusetts ozone exceedances by date and monitor location: https://www3.epa.gov/region1/airquality/o3exceed-16.html#ma
- Ground-level ozone: https://www.epa.gov/ozone-pollution.
- Ground-level ozone standards: https://www.epa.gov/ozone-pollution/2015-national-ambient-air-quality-standards-naaqs-ozone



On May 26, 2016, the ground-level ozone Air Quality Index (AQI) levels were unhealthy throughout most of Massachusetts.

Inspection Update Profile

Doug Smith, Owner
Doug Smith Automotive Repairs, Billerica, MA

Doug Smith, owner, Doug Smith Automotive Repairs

Q: What services does Doug Smith Automotive Repairs offer?

A: We provide complete automotive service and repair. This includes: standard maintenance services, engine services, heating and air conditioner repair, auto electrical services, exhaust services and more.

Q: What are your roles and responsibilities as owner?

A: As the shop owner, I do everything from greeting the customers to making sure their vehicles are properly diagnosed, to ensuring that my technicians complete authorized vehicle repairs, to paying the bills and making sure the shop is clean.

Q: How many employees do you have? What are their roles?

A: I have three full-time technicians on-site: Stevie C., Stevie D., Matt P. I also employ John M., who is part-time and teaches automotive classes at Shawsheen Valley Technical High School. Most of us have been working together for the past 13-20 years.

Q: How did you get your start in the automotive industry? What made you want to open your own business?

A: When I was a kid, my father owned Exxon stations. He started off owning one station and ended up with a total of three, so both my brother and I worked as his partners for 20 years. I ran the Burlington and Billerica locations with my father, and my brother was based at the Haverhill location. I think automotive work comes naturally to me, and so does customer relations. I graduated from Shawsheen Tech and eventually opened my own shop in 1998.

Q: Have you attended any of the ongoing training? How else do you keep up with changes in vehicle technology and emerging Industry technologies?

A: We haven't attended any of the MAC classes yet, but we do attend various classes at Shawsheen Tech, which are sponsored by some of the automotive part stores. I also do a ton of reading on the Mitchell ProDemand and Identifix websites.

Q: What are some of your most challenging vehicle repairs?

A: We don't necessarily have a lot of challenges with vehicle repairs. However, communication is huge with us and we want to make sure that we are repairing exactly what our motorists need and that the communication lines are open. Once we do that effectively, we are better equipped to take care of their vehicle maintenance.

Q: What should motorists begin to do to ready their vehicles for summer?

A: I think there is a common motorist misconception that vehicles only need to be brought in for routine oil changes. If you follow the newer oil change guidelines of every 6,000-8,000 miles, I might open a vehicle's hood only once or twice a year, which is a long time between maintenance checks. When oil change guidelines were every 2,000-3,000 miles, I would be able to check under a vehicle's hood three to four times per year. Even if the newer vehicles don't need oil changes as often, we do recommend maintenance check-ups more frequently than every 6,000-8,000 miles so we can also give our customers a heads-up as to any future vehicle repairs or maintenance they may require.

Q: How do you advertise your business?

A: Most of our business is word-of-mouth and we have a lot of generational business from families who come in to get their vehicles repaired. We also have a presence on social networks like Facebook, which is newer for us but it is well worth it and has helped bring customers in the door.

Q: What is your business motto?

A: Customers have a lot of choices of where they can spend their money on automotive repair, but they choose to come to Doug Smith Automotive, so in return we have to fix their vehicles right.

Motorist Assistance Center Repair Technician's Corner

▶ Diagnostic Skill and Persistence Equals a Successful OBDII Repair

In 2013, a 2005 Buick Rendezvous with a 3.6L V6 engine and automatic transmission failed the OBD inspection with two unset readiness monitors, the Evaporative System (EVAP) and the Oxygen (O2) Sensor.

After the failed inspection, the motorist took the vehicle to a local repair shop and a diagnostic scan was performed. From the results of the scan, the repair shop determined the vehicle needed a replacement power control module (PCM); labor and parts for diagnosis and to install a rebuilt PCM cost the motorist a little more than $800. The repair shop told the motorist to drive the Rendezvous approximately 200 miles and bring it back to re-check. A re-scan of the vehicle indicated the same two monitors were still not showing ready. At that point, the repair shop told her there was nothing more they could do and the vehicle should be taken to the dealership for further diagnosis.

The motorist brought the vehicle to a General Motors (GM) dealership. The vehicle was scanned and then determined the newly installed, rebuilt PCM was the problem and suggested they install a factory-rebuilt PCM with the understanding that more repairs may be necessary; labor and parts for the diagnosis and to install a rebuilt PCM cost the motorist over $1,000. Again, the motorist drove their SUV several hundred miles and brought it back to the inspection station for a re-test. The vehicle received a turnaway for the same two monitors that were still indicating *not ready*.

2005 Buick Rendezvous, Source: www.edmunds.com

So the motorist took the vehicle to another local repair shop. Their technician scanned the vehicle PCM, replaced the oxygen sensors and checked the sensor's wiring harness. The motorist left the vehicle with the shop for several days so the technician could perform the drive cycle to set the monitors, but the technician had no success setting the monitors. After several attempts to set the monitors, the repair shop gave up and said there was nothing more they could do. They told the motorist she should contact the local Motorist Assistance Center (MAC) for assistance.

The motorist contacted the Pocasset MAC and requested an appointment. After reviewing all her paperwork and repairs performed, the MAC L1 technician scanned the vehicle's PCM. The same two monitors continued to be not ready. However, he observed that the SUV's motor did not idle correctly when the transmission was in Park or Neutral. The engine idle speed would vary between 1,000 and 1,200 revolutions per minute (RPM), but would drop to 800 RPM when the transmission was shifted to Drive. The MAC L1 advised the motorist she should take her vehicle to a Registered Repair Facility for a diagnosis and provided her with a list of her local shops.

The motorist selected and set up an appointment with Mr. T's Auto Repair in Mashpee, MA. Terry Trottier, business owner and L1 technician, contacted the Pocasset MAC to discuss the vehicle's repair history. After scanning the vehicle, he determined that the throttle body had been replaced with a used unit; the wiring to the throttle body had been cut and spliced. So he ordered and installed a new factory-built throttle body and pinned out the wiring to be sure they were in the correct location. After he performed a drive cycle, the EVAP and O2 monitors would still not set to ready. So he removed the new throttle body and re-installed the original one. Once again, he installed new O2 sensors and checked the O2 sensor wiring harness. Same result; two monitors were *not ready*.

Terry was adamant that he was going to repair this vehicle. So he reconnected his scan tool and, using the enhanced software, not OBDII generic, went into the "Not Run Since Code Cleared" menu under the Diagnostic Trouble Codes (DTCs) menu. This menu option allowed Terry to see the DTC tests which the PCM had not yet run since the last time the codes were cleared. He noticed that several O2 sensor DTC tests had not run; this made sense since the O2 sensor monitor was stuck in not *ready* status.

Using GM service information, Terry researched what criteria must be met for the monitor codes to run. Unfortunately he could not find any enabling criteria out of specification. However, thinking back to how the vehicle's engine was idling too high, Terry decided to check the throttle position and accelerator pedal position sensor parameter identification numbers (PIDs).

To his surprise, the accelerator pedal position sensor (APPS) PID showed a reading of 1 percent with the engine at idle when it should have been reading 0 percent. This 1 percent reading was the likely cause of the elevated idle speed. This APPS value also caused the PCM to stop trying to set the O2 sensor monitor. So Terry installed a new factory-built APPS, performed a drive cycle, and within 50 miles the O2 sensor monitor set to ready. Additionally, the vehicle also idled properly. The vehicle was re-inspected and finally passed the emissions test.

This case study is an important example for vehicle repair technicians to learn from. In some cases, vehicle condition and repair history documentation will not be enough to make a proper diagnosis. You'll need to dig deep and make some educated assumptions about factors that could affect whether a PCM will run a monitor or a DTC test. Also, when presented with a vehicle that is having one type of problem, such as monitor setting, be aware of other vehicle system issues, such as high idle speeds, that you encounter that may be connected to the problem you are chasing.

Registered Repair Technician Updates

▶ Emissions Repair Success Ratings Reminder

For Registered Emissions Repair Shops that have entered repair data, the First Quarter 2016 Emissions Repair Success Ratings are now available on Vehicle Inspection Reports and on the Repair Shop Locator, found at:

http://www.massvehiclecheck.state.ma.us/find_emissions_repair.php.

Each repair shop is responsible for entering its vehicle repair information for any given month *by the tenth day of the following month*. For more information about repair data entry, visit: http://www.massvehiclecheck.state.ma.us/inspection_repair_data_entry.php

▶ 2016 Ongoing Training Courses

Ongoing Training Seminar	Locations and Dates
Summer 2016 – SAE J2534 and OBD Re-Flashing	Medford MAC - September 12 Fall River MAC - September 13 Shrewsbury MAC - September 14 West Springfield MAC - September 15
Fall 2016 – Domestic and Asian EVAP Systems	Braintree MAC - November 7 Pocasset MAC - November 8 Shrewsbury MAC - November 21 West Springfield MAC - November 22

All current Registered Emissions Repair Technicians are required to attend one four-hour ongoing training seminar each year to maintain their status in the Massachusetts Vehicle Check Program. Parsons is offering the following 2016 quarterly seminars from 6:00 PM to 10:00 PM at Motorist Assistance Centers (MACs) located across the state.

All training seminars for Registered Repair Technicians are offered free of charge. The applications for these courses are available at http://www.massvehiclecheck.state.ma.us/inspection_ongoing.html.

Should you need help registering or have any questions, please contact our Registered Repair Coordinator at (781) 794-2961. Space is limited to 35 technicians per class; please enroll as soon as possible to secure a place.

Berkshires farm in summer. Source: Massachusetts Office of Travel and Tourism via Flickr

Website Updates

This spring, the Massachusetts Vehicle Check Program expanded its content to place more information at the fingertips of inspectors and motorists. Please visit the following webpages:

- On http://www.massvehiclecheck.state.ma.us/about_whywhat.html#safetytests, added License Plate and Window Tint language, as well as two new guidance documents that can be downloaded and provided to motorists with failing vehicles. See http://www.massvehiclecheck.state.ma.us/documents/License_Plate_Guidance.pdf and http://www.massvehiclecheck.state.ma.us/documents/Aftermarket_Window_Tint_Regulation_Guidance.pdf.
- Added Federal Emissions Control Warranty information to http://www.massvehiclecheck.state.ma.us/motorist_whatiffail.html and http://www.massvehiclecheck.state.ma.us/inspection_repair_links.html.
- Added a list of Third Party Equipment for conducting safety inspections to http://www.massvehiclecheck.state.ma.us/inspection_stations.html and http://www.massvehiclecheck.state.ma.us/inspection_forms.html. See http://www.massvehiclecheck.state.ma.us/documents/Inspection_Station_Equipment.pdf.
- Added new content to http://www.massvehiclecheck.state.ma.us/motorist_recall.html for Takata Air Bag and Chrysler recall campaigns, as well as emissions recalls.

- Updated the http://www.massvehiclecheck.state.ma.us/commercial.html page with additional information about Heavy-Duty On-Board Diagnostics and Engine Rebuilding.
- Updated the http://www.massvehiclecheck.state.ma.us/motorist_motorcycles.html page with additional information about sticker expiration and motorcycle inspection fees.

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Inspection Update
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Carol Stream, IL

Automatic Emergency Braking Standard and Station License Renewal Reminders Inside!

Massachusetts Vehicle Check Program At A Glance

Program at a Glance	Count	Failure Rate
Non-Commercial Safety Inspections	1,023,254	4.8%
Commercial Safety Inspections	40,777	4.4%
7D Safety Inspections	5,871	1.5%
OBD Emissions Inspections	800,463	6.0%
Opacity Emissions Inspections	21,388	1.6%
Emissions Waivers Issued	0	
Repair Hardship Extensions Issued	6	

Enforcement Statistics	Count
Violations Issued to Inspectors	105
Violations Issued to Stations	131
Inspector Privileges Revoked	0
Inspector Required to Retrain	1
Inspectors Suspended	16
Stations Suspended	23
Penalties Assessed	$0

Hotline and Training Statistics	Count
Motorist Calls Received	2,225
Inspection Station Calls Received	5,530
Initial Non-Comm. Inspectors Trained	282
Initial Commercial Inspectors Trained	47
Initial 7D Inspectors Trained	24
Initial Motorcycle Inspectors Trained	28

Licensed Stations	Count
Class A Stations	1,169
Class B Stations	192
Class C Stations	29
Class D Stations	310
Class E Stations	9
Reg. Emissions Repair Shops	181

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