

Overview of Vehicle Inspection and Maintenance (I/M) Programs

Air quality across the United States has improved over the years through advancements in vehicle technologies, cleaner fuels, and other strategies to reduce pollution from all emissions sources. Yet nearly 79.2 million Americans are still living in areas that are exceeding the national ambient air quality standards (NAAQS) for ozone.¹ The transportation sector continues to be a major source of criteria pollutants and precursors, including nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in ozone nonattainment and maintenance areas across the country. While vehicle emissions-per-mile have decreased due to advances in vehicle emission control technology, those controls can degrade over time. This can lead to excess pollution, especially now that older vehicles are staying on the road longer. Therefore, proper inspection and maintenance of passenger cars and trucks is important to ensure that vehicles are operating according to EPA's vehicle emissions standards and adequately protecting public health.

What is I/M?

Vehicle inspection and maintenance, or I/M, is the periodic inspection of the emissions control systems of motor vehicles. The goal of I/M programs across the country is the same: identify and repair high-emitting vehicles to improve air quality in areas that are not attaining the NAAQS.² EPA sets new vehicle emission standards to protect public health, but those regulations do not guarantee proper operation and maintenance of the vehicle's emission controls over its lifetime. State and local governments implement I/M programs to identify high-emitting vehicles and notify owners or operators to have their vehicles repaired. Once those vehicles are repaired, they must be retested to verify that emissions are within the proper standards. I/M ensures that tailpipe standards of cars and trucks are being met even as the fleet ages and their effectiveness to reduce emissions-per-mile degrades.

¹ U.S. EPA National Trends Report, 2020. Available at www.epa.gov/air-trends/air-quality-national-summary.

² Some areas that were once in violation of the ozone NAAQS have chosen to retain their I/M programs as a part of a maintenance plan in an effort to continue to meet the NAAQS.

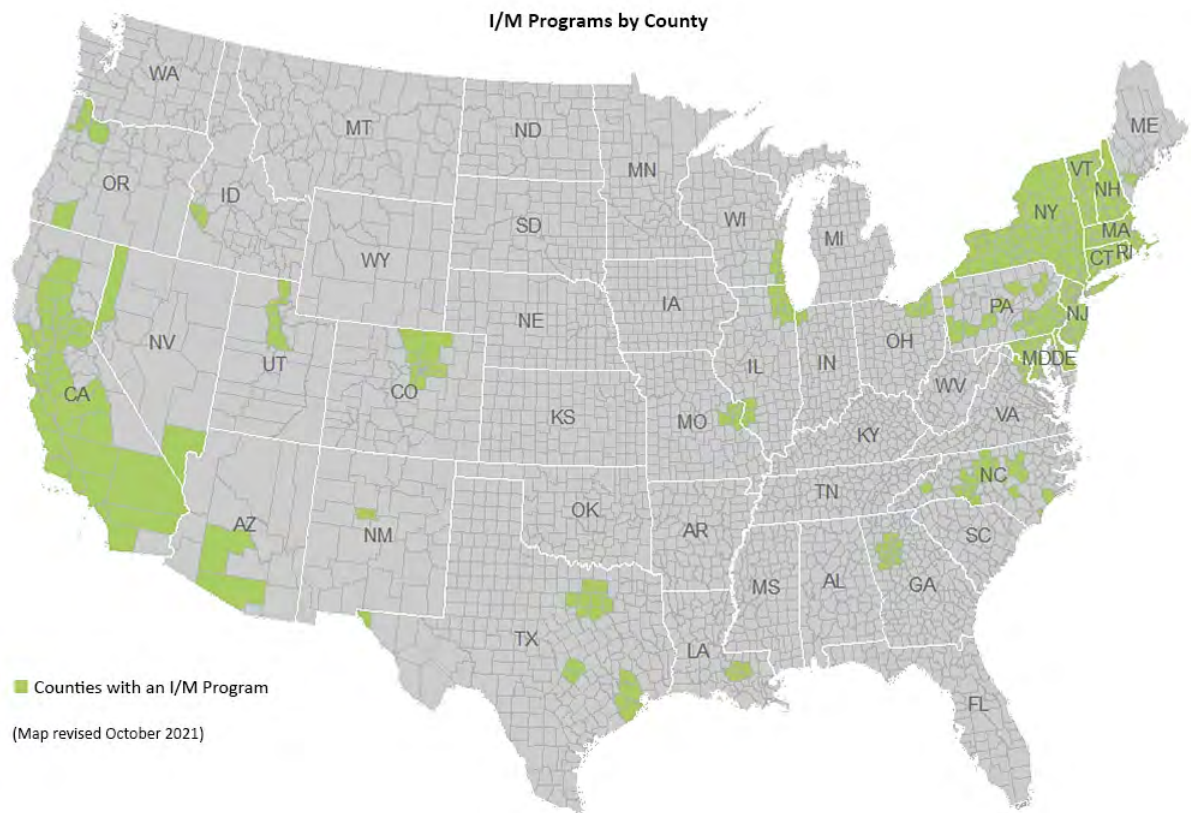
Where is I/M required?

The 1990 Amendments to the Clean Air Act (CAA) mandated I/M for ozone and carbon monoxide (CO) nonattainment areas based upon certain criteria, such as air quality status, population, and/or geographic location. Today, I/M programs are used as an emissions control strategy primarily in ozone nonattainment and maintenance areas - only a few are still in CO maintenance areas.

The CAA established two performance levels of I/M programs: “Basic” and “Enhanced” I/M.

- Basic I/M programs are for ozone nonattainment areas classified as Moderate with an urbanized population over 200,000 in 1990 and only require testing for light-duty cars.
- Enhanced I/M programs are required in areas classified as Serious, Severe, and Extreme for ozone, and with urbanized populations over 200,000 in 1980. Also, all Metropolitan Statistical Areas (MSA) in the Northeast Ozone Transport Region (OTR) with a 1980 population over 100,000 are Enhanced, regardless of its air quality classification. Both light-duty cars and trucks must be inspected in Enhanced I/M areas.

The map below highlights counties across the country with I/M programs:



States that are required to implement Basic or Enhanced I/M programs under the CAA include these programs in their state implementation plans (or SIPs). In addition, states or cities may implement I/M programs as SIP strengthening measures or outside of the SIP as a voluntary control program. Although not required, some states have included light-duty diesel vehicles as part of I/M programs, while others are beginning to conduct I/M for heavy-duty diesel vehicles as well.

Overview of I/M Testing

In general, there are three types of I/M testing: visual inspections, tailpipe testing and on-board diagnostic (OBD) checks. I/M programs may use all or a combination of these.

- Visual inspections deter tampering by checking for the presence of certain required emission control parts (e.g., catalytic converter replaced with a straight pipe).
- Tailpipe testing consists of measuring the exhaust emissions at idle or under certain engine loads primarily for vehicles that are model year 1995 and older.
- Beginning with the 1996 model year, vehicles have been equipped with OBD computerized systems. The OBD system continuously monitors the emission control systems and will activate the “Check Engine” light on the dashboard if a fault, also known as a Diagnostic Trouble Code (DTC), is detected – most commonly from the catalytic converter or an oxygen sensor.



In general, vehicles that fail inspection must be repaired and be retested. Additionally, if a vehicle owner or operator modifies their vehicles’ emission control systems, any ‘tampering’ identified during the inspection is required to be restored to the intended configuration.

States are responsible for developing their own I/M program to meet EPA’s I/M regulations (40 CFR part 51, subpart S), and vehicle testing requirements vary across the country. For example, some states do not require testing for newer vehicles because these vehicles likely still have emission control systems that are functioning properly or are covered under warranty. Additionally, certain vehicles may be exempt, like classic automobiles, motor homes, agricultural vehicles, and hybrid vehicles. Also, some states offer repair or hardship waivers based on the cost of repairs made as the result of a failing inspection.

Benefits of I/M Testing

In 2018, nearly 68 million vehicles were inspected nationally, and 3.5 million vehicles, or 5%, initially failed. However, more than 75% of those vehicles that failed were repaired to meet the federal emission standards and are operating with reduced emissions. In addition, OBD I/M programs can yield emission benefits even from vehicles that do not fail a test. For instance, many motorists, when seeing the OBD “Check Engine” light is on, will elect to repair their vehicle prior to their required inspection.

More Information

For more information about I/M in your area, please visit your state’s I/M site:

www.epa.gov/state-and-local-transportation/vehicle-emissions-inspection-and-maintenance-im-tampering-warranty

For questions concerning a particular state or program area, please contact the Mobile Source Contact at your EPA Regional Office (Section 16):

www.epa.gov/transportation-air-pollution-and-climate-change/office-transportation-and-air-quality-contacts-topic

For general information in I/M, please visit the U.S. EPA site:

www.epa.gov/state-and-local-transportation/vehicle-emissions-inspection-and-maintenance