STATE OF NEW HAMPSHIRE
2019
Annual Motor Vehicle Inspection Program Report
July 31, 2020

Prepared by
New Hampshire Department of Environmental Services
and
New Hampshire Department of Safety, Division of Motor Vehicles
with the assistance of Gordon-Darby, Inc.

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1. INTRODUCTION

This is the 2019 Annual Motor Vehicle Inspection Program Report to the United States Environmental Protection Agency (EPA) on the New Hampshire motor vehicle inspection and maintenance (I/M) program for Calendar Year (CY) 2019 (January 1 to December 31, 2019). This report is compiled by the New Hampshire Department of Environmental Services (NHDES) with the assistance of the New Hampshire Department of Safety's Division of Motor Vehicles (DMV) and the state's On-Board Diagnostic inspection program (OBD) vendor, Gordon-Darby, Inc. The report includes a narrative description of New Hampshire's OBD program, a summary of program data, and a discussion of goals for program improvements in the coming year.

This report is required by Title 40 Code of Federal Regulations Part 51.366 and provides information on the following:

- Emissions test data.
- Quality assurance.
- Quality control.
- Compliance and enforcement.

2. EXECUTIVE SUMMARY

In 2019, the OBD portion of New Hampshire I/M program is applicable to Model Year (MY) 2000 and newer light-duty gasoline and diesel vehicles. Inspections are conducted by a decentralized network of licensed inspection stations and are required annually statewide. At the end of 2019, there were approximately 1.8 million vehicles registered in New Hampshire; 1,355,016 were MY 2000 or newer light-duty vehicles subject to both the safety and OBD test for inspection. Of those, 1,081,397 light-duty motor vehicles that were 2000 and newer model years received an OBD inspection. Inspection results are reported to the state electronically through the State vendor's OBD test stations utilized by licensed inspection stations.

A summary of the CY 2019 motor vehicle I/M program results is as follows:

- OBD tests were conducted on 1,081,397 unique MY 2000 and newer light-duty vehicles.
- A total of 177 visual tests were conducted.
- 6.30% of vehicles subjected to the OBD test failed the initial test.
- The overall OBD failure rate[1] was 6.89% for all MY 2000 to MY 2020 vehicles. This failure rate can be broken down as follows:
    - 14.00% overall failure rate for MY 2000 through MY 2010 vehicles.
    - 3.1% overall failure rate for MY 2011 and newer vehicles.
- An overall malfunction indicator lamp (MIL) "On" with DTCs stored rate of 2.01% was recorded.
- 55 economic hardship time extensions were issued in CY 2019 and 47 were used.

[1] Including all initial test and re-tests.

- No "Electronic Administrator's Certificate" were issued in 2019.

3. PROGRAM OVERVIEW

3.1 APPLICABILITY OF I/M TO NEW HAMPSHIRE

New Hampshire is subject to federal I/M requirements due to previously elevated ozone levels in the southern and Seacoast portions of the state that resulted in a nonattainment designation. On January 31, 2013, EPA formally approved NHDES' State Implementation Plan (SIP) request for re-designation to attainment for the 1997 8-hour ozone National Ambient Air Quality Standards (NAAQS). In that same approval, EPA approved a 10-year maintenance plan for the former non-attainment areas. New Hampshire is also located in the Ozone Transport Region designated under Sections 176A and 184 of the Clean Air Act.

Under strict interpretation of Clean Air Act requirements, New Hampshire is required to implement a Low-Enhanced I/M program in Hillsborough, Rockingham, Merrimack and Strafford counties. However, due to the low volume of vehicles in the state and the high cost of conducting a full tailpipe testing program, New Hampshire submitted an Alternative Motor Vehicle I/M SIP amendment in 1998.

The Alternative I/M SIP demonstrated superior environmental benefits through implementation of an Enhanced Safety Inspection (ESI) program that provided: a) visual anti-tampering inspection for MY 1980 and newer light-duty gasoline and diesel vehicles; b) implementation of an On-Board Diagnostics (OBD) inspection program for MY 1996 and newer light-duty gasoline and MY 1997 and newer diesel vehicles throughout the entire state upon finalization of federal OBD program rules; c) implementation of a roadside diesel opacity testing program for heavy-duty diesel vehicles; and d) permanent emission reductions from a large in-state power plant. The I/M program provisions were codified in state statute RSA 266:59-b by House Bill 1513 in June 1998. In December 1998, the Environmental Protection Agency published a notice to approve New Hampshire's Alternative I/M SIP in the Federal Register. Final approval occurred in January 2001.

A legislative revision to the program in 2005 changed the vehicles subject to either the anti-tampering or OBD inspection to those vehicles less than 20-model-years old. Therefore, vehicles previously subject to the anti-tampering inspection are no longer required to pass an emissions-related inspection. They must still undergo a safety inspection.

Since June 2004, Gordon-Darby, Inc. has supplied all participating licensed New Hampshire inspection stations with OBD testing hardware, software, technical support and training on the computerized testing/reporting system known as the New Hampshire OBD and Safety Testing program, or "NHOST." Gordon-Darby, Inc. was awarded the contract via a competitive bid process in 2004, 2012, and again in 2019. The current contract will run from January 2020 through December 2025.

3.2 NEW HAMPSHIRE'S VEHICLE FLEET

In 2019, New Hampshire had 1,821,436 total vehicles registered. Of those, 1,355,016 are MY 2000 or newer light-duty vehicles subject to both the safety and OBD test for inspection. The registration inventory represents a snapshot of the vehicles registered as of the end of calendar year 2019 and therefore does not represent the precise number of vehicles that were registered over the course of the year as some vehicles may have been registered and then sold within the calendar year.

3.3 NEW HAMPSHIRE'S I/M PROGRAM

New Hampshire's vehicle inspection program is administered by the DMV pursuant to Revised Statutes Annotated (RSA) Title XXI, Chapter 266, Section 266:59-b. The prime responsibility for air quality issues and policies falls on NHDES. The two agencies work cooperatively to establish the rules to implement the program, conduct outreach and education activities, and prepare the annual and biennial reports.

The New Hampshire vehicle inspection network is decentralized. As of December 31, 2019, there were 1,781 full-time inspection stations operating 1,953 NHOST units (Some of the larger inspection stations have multiple units). All privately-owned motor vehicles are subject to an annual safety inspection within the birth month of the primary registered owner. Corporate and fleet vehicles are inspected in specified months; government vehicles are inspected no later than September. The annual light-duty OBD inspections are conducted at the same time as the safety inspection.

Light-duty motor vehicles that are more than 20-years old are not subject to an emissions inspection. Per RSA 266:59-B IV, vehicle age is determined by subtracting the model year from the calendar year in which the inspection is taking place. Therefore, vehicles subject to the OBD test in 2019 include MY 2000 and newer light-duty vehicles.

New Hampshire's vehicle inspection program is enforced by use of a highly visible windshield sticker. The sticker program consists of a colored sticker with a highly visible expiration date. Failure to pass an annual inspection as evidenced by having a current inspection sticker is a violation that can be enforced by all local and state law enforcement officers. The fine for failing to comply with inspection requirements is $60 (NH RSA 266:5). DMV may suspend or revoke the registration of an un-inspected vehicle, or may refuse to register it.

New Hampshire law (NH RSA 266:59b) allows motorists 60 days for repairs for OBD failures. Motor vehicles that pass the state's safety inspection, but fail the OBD test receive a temporary permit consisting of an inspection sticker dated with the expiration date 60 days from the date of failure. A vehicle is eligible for only one 60-day temporary permit during each inspection cycle. If a motorist happens to be pulled over they are required to present a copy of their OBD test report that shows they are within their 60-day grace period to avoid a citation. Motorists that exceed the grace period are subject to the fines and consequences noted above.

Pursuant to DMV Administrative Rule Saf-C 3222.08, New Hampshire offers economic hardship time extensions on a case-by-case basis as determined by the DMV. Such extensions are for a single inspection cycle and cannot be re-issued for a given vehicle. The hardship extensions were initiated in CY 2007. A total of 55 time extensions were provided in CY 2019, 47 of the time extensions were used. In 2019, there were no "Electronic Administrator's Certificates" issued per DMV Administrative Rule Saf-C 3222.07 for motor vehicles that were determined by the DMV to have either OBD failures or communications issues for which no definable solution was available.

These DMV Administrative Rules Saf-C 3200 were updated and went into effect on November 27, 2019.

4. PROGRAM DATA

Title 40 Code of Federal Regulations, Subpart S, Section 51.365 contains the data collection requirements and Section 51.366 contains the data analysis and reporting requirements for motor vehicle I/M programs. A summary of New Hampshire's program is provided below. Supporting data is included in Appendices A & B of this report.

SECTION 51.366 - DATA ANALYSIS AND REPORTING

This report includes data from the entire CY 2019.

51.366(a) TEST DATA REPORT

Complete test data is provided in Appendices A & B.

(a)(1) The number of vehicles tested by model year and vehicle type.

In CY 2019, New Hampshire motor vehicle inspection stations inspected 1,081,397 light-duty vehicles (≤8500 pounds) that were unique MY 2000 and newer vehicles and subject to an OBD inspection. There were 177 vehicles visually inspected, the majority of which were for model years 2016 through 2019 vehicles. This uptick in visual inspections for more recent model year vehicles is likely due to inspector error when entering a fuel for battery electric vehicles, instead of using the "none" option. At the end of 2019, there were over 1,900 battery electric vehicles registered in the state. These vehicles do not require an OBD test. A VIN decoder was included in the Gordon-Darby software in 2016. The VIN decoder uses the information provided by the VIN to auto populate certain fields including the fuel type. Under the new contract with Gordon-Darby, the VIN decoder data will be updated annually and this should reduce the occurrence of these errors.

(a)(2)(i)-(iv) The number and percentage of vehicles passing and failing initial tests and retests by model year and vehicle type.

The passing and failing numbers and rates for initial tests and retests, and overall results on light-duty vehicles, based on MY 2000 and newer vehicles, are summarized in the table below. Also see Appendix A (a)(2) "Calendar Year 2019 – OBD Emissions Test Results."

Calendar Year 2019 - OBD Emissions Test Results Model Years 2000 to 2020			
Test		Number	Percent
Initial Test	Pass	1,013,259	93.70%
	Fail	68,138	6.30%
	Total	1,081,397	
First Retest	Pass	43,098	80.22%
	Fail	10,625	19.78%
	Total	53,723	
Overall	Pass	1,064,390	93.11%
	Fail	78,763	6.89%
	Total	1,143,153	

(a)(2)(v) The number and percentage of vehicles receiving a waiver that initially failed.

The NH I/M Program does not allow for traditional waivers. Pursuant to DMV Administrative Rule Saf-C 3222.08, New Hampshire offers economic hardship one-year time extensions on a case-by-case basis as determined by the DMV. EPA guidance defines the I/M Waiver Rates as: *"percentage of vehicles failing initial I/M test that do not have to pass a retest."* On an annual basis, economic hardship extensions meet the EPA definition of a waiver.

The I/M waiver rate is expressed as the percentage of the vehicles that fail the I/M program, not as a percentage of the entire fleet. Therefore, for 2019, the NH I/M waiver rate is:

Number of economic hardship extensions (waivers) divided by the number of vehicles failing initial OBD test: 47/68,138 = 0.069 %.

Changes to the how waivers are issued pursuant to new rules that went into effect on November 27, 2019 are discussed in section 5.4 below.

(a)(2)(vi) The number and percentage of vehicles with no known final outcome (regardless of reason).

No final outcome (NFO) totals include: 1) vehicles that were initially tested, but not re-tested; and 2) vehicles failing initial tests and all re-tests. Re-tests that occur in different calendar years

also affect the NFO totals. See Appendix A (a)(2)(vi) "Calendar Year 2019 – No Final Outcome Vehicles."

Of the 1,081,397 vehicles that underwent OBD testing, 17,108 or 1.58% were vehicles for which no final outcome (NFO) is known. Nearly 80% of these unknown outcomes were MY 2000 through 2010 vehicles. It is likely that many of these vehicles were sold to residents of other states, sold for scrap, or indefinitely stored, awaiting repairs or final disposition. EPA calculates the NFO percentage by comparing the number of NFO vehicles not receiving waivers (17,108-47 = 17,061) and the number of vehicles that initially failed the OBD test (68,138). This would yield a NFO percentage of 25.11%. Research into the increase in NFOs from last year revealed that the NFO data from the vendor is based on test series and not individual vehicles. A new test series is created when the inspector resets the system or when the vehicle is under new ownership. An increase in the number of NFOs this year is likely due to inspector error with the new sticker on-demand system. For reference, last year's NFO percentage was 26.12%.

EPA is concerned with NFO percentages exceeding the national average of 12%, however, it should be noted that New Hampshire issues a low number of waivers in comparison with other states, which would contribute to a higher NFO percentage when compared to the national average. Some of the NFO vehicles are likely sold for scrap and, while the state obtains data from the scrap yards, the DMV does not currently have the resources to correlate that with the OBD testing database.

(a)(2)(xi)-(xii) The number and percentage of vehicles passing and failing the on-board diagnostic check.

For calendar year 2019, a total of 1,143,153 OBD inspections, consisting of initial tests and subsequent retests, were conducted on 1,081,397 vehicles. A total of 1,013,259 vehicles, or 93.70%, passed an OBD initial test and 68,130 vehicles, or 6.30%, failed. After initial re-test and subsequent retests, a total of 1,064,390 vehicles, or 93.11%, passed and 78,763, or 6.89%, failed. Test counts may be somewhat higher than the total number of cars tested due to some vehicles undergoing multiple inspection cycles during the calendar year 2019.

See Appendix A (a)(2) "Calendar Year 2019 - OBD Emissions Test Results."

These numbers include the initial and all subsequent re-tests.

(a)(2)(xiii)-(xviii) The number and percentage of vehicles passing or failing the on-board diagnostic check and/or passing or failing the on-board diagnostic check and passing the tailpipe test.

These rules are not applicable to the New Hampshire program.

(a)(2)(xix)-(xxiii) The number and percentage of vehicles with MIL commanded on (or not) and diagnostic codes stored (or not) and readiness status.

(xix) 27 vehicles tested had the malfunction indicator lamp (MIL) commanded on with no codes stored, or less than 0.00%**.**

(xx) 46,597 vehicles tested had the MIL not commanded on, and diagnostic trouble codes (DTC) stored, or 4.31%**.**

(xxi) 21,723 vehicles tested had the MIL commanded on and DTCs stored, or 2.01%.

(xxii) 973,518 vehicles tested had the MIL not commanded on and no DTCs stored, or 90.02%.

(xxiii) 47,106 vehicles tested indicated one or more modules supported by the vehicle's OBD system were not ready for evaluation, or 4.36% of those tested.

See also Appendix A (a)(2) "2019 OBD Test Results – Light-duty Vehicles – All Test Sequences (Initial Tests and Retests)"

(a)(3)-(4) Initial Test Volume and Failure Rate by Model Year and Test Station.

The complete data set of test volume and failure rates by station and model year is included with this report as an electronic addendum labeled Appendix B.

51.366(b) QUALITY ASSURANCE REPORT

(b)(1)(i) The number of inspection stations and lanes operating throughout the year, and; (ii) for only part of the year.

New Hampshire had 1,781 stations operating throughout the year with a total of 1,953 testing (NHOST) units.

(b)(2) The number of inspection stations and lanes operating throughout the year that;
(i) Received overt performance audits in the year:

Beginning in 2012, DMV trained Automotive Equipment Inspectors (AEIs) authorized under the Department of Safety to serve as full-time OBD station inspectors. In 2019 there were eight AEIs who overtly audited all 1,781 inspection stations at least once during CY 2019.

(ii) Did not receive overt performance audits in the year:

There were no NHOST-equipped inspection stations that were not audited at least once in 2019.

(iii) Received covert performance audits in the year:

No covert audits were performed. The NHOST system uses sophisticated analyses of all OBD data and various "triggers" (discussed below) to identify anomalies and irregularities that might

indicate fraud. This Quality Assurance system allows the DMV to monitor a statewide decentralized system more effectively and efficiently.[2]

(ii) Did not receive covert performance audits in the year:

None of the 1,781 stations and 1,953 NHOST units received traditional covert audits in CY 2019.

(v) That have been shut down as a result of overt performance audits:

A total of 32 stations and 30 mechanics were investigated because of the Trigger Analysis data and overt auditing. Of those investigations, 43 hearings were held in CY 2019. As a result, two stations had their license revoked,2 were fined, 25 were shut down/suspended for 30 days to 1 year, 23 mechanics were suspended 3 months to 1 year and 5 mechanics were revoked.

(b)(3) Covert audits:

Straight review of station-specific OBD test data is a relatively inefficient approach to identifying anomalous stations. Instead, DMV worked with Gordon-Darby, Inc. to develop and use sophisticated electronic analysis "triggers" to evaluate the performance of the decentralized inspection stations and inspectors that comprise the New Hampshire I/M program network.

The triggers-based analytical reports are produced on an on-demand basis by DMV staff to monitor inspections on an ongoing basis and to assist in investigations of specific stations or to search for particular patterns of potential violations or anomalies. For the system-wide reports, those stations flagged for review are submitted to State Police Troop G for follow-up by AEIs or troopers. Reports are also run for specific stations when requested by Troopers or AEIs as part of their audits of an inspection station. These individual reports are kept with the case files only in the event of successful disciplinary action and are not summarized annually. As a result of this system, copies of *periodic* reports are not available for submittal to EPA, since they were not produced by the data system. However, data regarding the failure rate by station for CY 2019 is available in Appendix B.

OBD triggers analysis was applied to the existing data to conduct remote overt audits of inspection stations to monitor fraud within the decentralized network of inspection stations. The use of trigger analysis maximizes the efficacy of available DMV staff resources in overseeing station/inspector performance. Easy identification of stations and inspectors that appear to have inconsistent test results enables DMV to quickly focus further investigative activities directly on these problem performers. This approach is much more efficient than spending

[2] The NH DMV considers the triggers analysis to be a form of overt auditing because station owners submit their inspection data to the DMV electronically with no expectation of privacy.

large amounts of time analyzing data from the complete set of 1,781 decentralized inspection stations operating in the New Hampshire I/M program.

The concept of using analysis triggers for identifying questionable station/inspector performance, particularly in decentralized inspection networks, is fairly well known in the I/M industry and to EPA. In fact, personnel now working for New Hampshire's I/M contactor, Gordon-Darby, Inc. previously developed a comprehensive triggers best practices report[3] for EPA while working for the air quality consulting firm of Sierra Research. A key element of the triggers analysis method is to compare the performance of each station or inspector in an inspection network against the performance of the other stations/inspectors. By comparing relative performance, these computational methods minimize the impact of possible biases in the test data. Another important element is to ensure that analysis datasets are of sufficient size to ensure statistically significant results; *i.e.*, that station and inspector anomalies are not just occurring because of the small number of tests involved with these stations/inspectors.

The New Hampshire analysis triggers essentially follow the basic approaches and computational methods discussed in the referenced Sierra Research report. Key elements include:

- Use of computational methodologies based on the referenced best practices document. For example, low volume stations or inspectors and those with low subgroup volumes (*i.e.*, for certain model years) are excluded from analysis to ensure statistically valid results.
- Comparison of individual inspection station/inspector performance relative to the rest of the inspection network in order to identify poorly performing outliers.
- Use of certain triggers (*e.g.*, OBD fingerprinting) to compare inspection results to Gordon-Darby, Inc. developed truth tables to identify likely instances of fraudulent testing.[4]
- Standardization of triggers to obtain a standard scale of performance. Lower scores indicate better performance and higher scores reflect poorer performance. This enables comparison of all results on an equal basis as well as meaningful graphical presentations.
- Development of selectable analysis periods, including capability to perform before-and-after analysis of station/inspector performance relative to audits and other enforcement visits.
- Automated functionality that enables quick drill-down and root pattern analysis of inspections conducted by identified poor performers.

[3] "QA/QC Procedures Based on Program Data and Statistical Process Control Methods for I/M Programs," prepared for U.S. Environmental Protection Agency, Certification and Compliance Division, by Sierra Research, Inc., Report No. SR01-10-02, October 2001.

[4] For this analysis, the NH inspection results are run against the Gordon-Darby truth tables and are compared by the software.

Specific triggers programmed into New Hampshire's automated I/M data system include the following:

- OBD Test Rejection Rate (Failure Rate).
- OBD Communication Protocol.
- OBD Readiness Monitors.
- eVIN Mismatch.
- Time Between Tests.
- Safety Defect; No Voltage.
- Station/Inspector Overview.
- Weighted Trigger Score (WTS).

The listed Safety Defect trigger applies to New Hampshire's vehicle safety inspection and is therefore not relevant to this discussion of OBD performance triggers. The remaining triggers are applicable. The first of these, OBD Failure Rate, achieves the same objective, but in a much more efficient manner as would a comprehensive analysis of station-specific test results from the entire New Hampshire I/M network, by flagging stations that have either an abnormally high, or abnormally low failure rate.

The OBD Communication Protocol and Readiness Monitors triggers are powerful tools designed to identify suspected instances of clean scanning, in which a clean vehicle is fraudulently tested in place of the vehicle actually subject to OBD inspection. They compare OBD test results collected from all of the stations to those contained in truth tables developed by Gordon-Darby, Inc. Such "OBD fingerprinting" has been found to be an excellent method for quickly identifying problem OBD test performers.

Trigger analysis results available to New Hampshire DMV from the I/M data system enable DMV staff to efficiently and effectively pursue follow-up investigations and enforcement actions against problem stations and inspectors. All stations are reviewed during trigger audits. Anomalies and outliers are further scrutinized and enforcement action is taken when necessary. Gordon Darby, Inc. continuously develops new triggers as fraudulent motorists and inspectors develop new ways to "beat the system."

These were: readiness mismatch, protocol mismatch, electronic vehicle identification number mismatch, sticker gap and time between tests.

(b)(3)(i)-(iv) The number of covert audits conducted with the vehicle set to fail and resulting in a false failing.

None of the 1,781 NHOST-equipped inspection stations received a covert performance audit.

(b)(4)(i)-(ii) The number of inspectors and stations that were suspended, fired, or otherwise prohibited from testing.

A total of 32 stations and 30 mechanics were investigated because of the Trigger Analysis data auditing. Of those investigations, 43 hearings were held in CY 2019. As a result, two stations had their license revoked, 2 were fined, 25 were shut down/suspended for 30 days to 1 year, 23 mechanics were suspended 3 months to 1 year and 5 mechanics were revoked.

It is the inspection station's responsibility to inform the DMV when an inspector leaves the employ of the station. Upon receiving written notice from an inspection station that an inspector no longer works at the station, that inspector's ability to access the NHOST system is removed by the DMV. The DMV also maintains a "sticker denial" list that prevents inspection stations from purchasing state inspection stickers if they refused to participate in the electronic reporting program or in the event they are suspended as a result of an administrative hearing. This approach is extremely successful in gaining compliance. While specific numbers are not available because the list changes from day-to-day, the average number of stations on the list throughout the year is approximately 50 stations.

(b)(4)(iii) The number of inspectors and stations that received fines.

The DMV evaluates circumstances on a case-by-case basis and normally seeks suspensions rather than imposing fines for violations of I/M rules. Two inspection stations received a fine as a result of administrative hearings in 2019. No mechanics received fines as a result of administrative hearings in 2019.

(b)(5) The number of inspectors licensed or certified to conduct testing.

In CY 2019, there were 5,275 licensed inspectors performing inspections in New Hampshire.

(b)(6)(i)-(ii) The number of hearings held to consider adverse actions against inspectors and stations and resulting in adverse actions against inspectors and stations

In CY 2019, there were a total of 43 hearings, of which, the majority were held for emissions-related rules/infractions.

(b)(7) The total amount collected in fines from inspectors and stations by type of violation.

In CY 2019, fines totaling $500.00 were imposed for minor violations resulting from overt audits. It is DMV policy to seek suspensions rather than impose fines for violations of I/M rules in most cases.

(b)(8) - (9) The total number of covert vehicles and covert auditors available for undercover audits over the year.

None. As previously discussed, in section (b)(3), the NHOST system analyses of OBD data provides for easy and cost effective identification of stations and inspectors that appear to have

inconsistent test results. This enables DMV to quickly focus further investigative activities on these problem performers more efficiently than covert auditing.

51.366(c) QUALITY CONTROL REPORT

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

New Hampshire's OBD-based inspection program does not utilize emissions testing equipment subject to equipment quality control audits, such as those specified in sections 51.359(a), (b), (c), and (d). The NHOST system does comply with the performance features and functional characteristics of computerized emission test systems as outlined in 51.538(a) and (b), respectively. The NHOST system also meets the requirements of the following regulations:

§ 85.2207 On-board diagnostics test standards.
§ 85.2222 On-board diagnostic test procedures.
§ 85.2223 On-board diagnostic test report.
§ 85.2231 On-board diagnostic test equipment requirements.

The NHOST system continually monitors both individual unit/component performance and overall system operations. Issues with equipment, such as failures and malfunctions, are often dealt with directly by Gordon-Darby, Inc. and the station operators. In 2019, Gordon-Darby, Inc. managed a variety of equipment issues, most of which were resolved by merely replacing parts/supplies due to normal wear/usage. All equipment issues were resolved and there were no shut downs as a result of equipment audits. Of the 4,061 issues, 93 were fixed on-site, 988 were managed by shipping replacement parts/supplies to the station and 2,980 were fixed by telephone-based troubleshooting. These numbers are higher than in 2018, likely due to the fact that Gordon-Darby, Inc. began rolling out all new equipment and there was an unfamiliarity on the part of the stations.

Accuracy of the vendor's equipment has not been an issue. Because the NHOST system continually monitors individual unit/component performance as well as overall system operations, there were no "failures," but rather, requests for technical support and/or parts replacement. The vendor is responsible for maintaining and supporting the testing equipment and there were no issues with incompatible testing equipment.

The document security required by paragraph (e) of this section is satisfied by New Hampshire's program. The majority of inspection stations are using on-demand sticker printing. The stations pre-order sticker backers directly from the vendor. A unique number is created during the inspection, which is printed out during the inspection process. This unique number is adhered to the backer when it is attached to the vehicle. The stations that do not use on-demand sticker printing, for example stations that do window replacement where a replacement sticker is needed without running a new test, use the old sticker system. The inspection stickers issued

during the annual inspection are each identified with a unique serial number and DMV distributes the stickers in a manner in which all stickers can, and are, easily accounted for. Inspection Stations are required to keep unused stickers in a secure area.

51.366(d) ENFORCEMENT REPORT

(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 CY 2019, all MY 2000 and newer light-duty cars and light-duty trucks are subject to OBD inspection. An analysis of the registration database indicates that there were 1,355,016 light-duty cars and trucks registered at the end of 2019. This included more than 1,900 battery electric vehicles. The actual number of vehicles that received an OBD and visual inspection was 1,081,574.

(1)(ii) The percentage of motorist compliance based upon a comparison of the number of valid final tests with the number of subject vehicles.

A total of 1,081,397 subject vehicles (MY 2000 00 and newer; < 8,500 lbs.) were tested for OBD during 2019 and 177 received visual inspections. NHDMV records indicate that 1,355,016 subject vehicles were registered at the end of 2019 in NH resulting in an apparent compliance rate for vehicle OBD tests of 79.8%.

This compliance rate is significantly lower than in 2018, where the compliance rate was just over 92%. However, this change is partly an artifact of how the number of tests and registrations were calculated. The 1,081,397 vehicles that underwent OBD tests and visual inspections represents *unique* vehicles; in prior years, the value reported included total tests. This still leaves a gap between the number of vehicles requiring an OBD inspection and the number of vehicles receiving one. For the 2020 report New Hampshire will work with our vendor to better reconcile these numbers.

(d)(1)(iii) The total number of compliance documents issued to inspection stations;
(d)(1)(iv) The number of missing compliance documents;

See: *(d)(4)(i)* below.

(d)(1)(v) The number of time extensions and other exemptions granted to motorists

There were 55 time extensions granted to motorists in 2019, according to the NHOST system and 47 of the waivers were used. The other nine waivers were not used either because the car was never inspected again or passed without using it.

(d) (1)(vi) The number of compliance surveys conducted, number of vehicles surveyed in each, and the compliance rates found.

No compliance surveys were conducted.

(d)(2) Registration denial based enforcement programs.

New Hampshire does not have a registration denial based enforcement program.

(d)(3) Computer-matching based enforcement programs.

New Hampshire does not have a computer-matching based enforcement program.

(d)(4)(i) - (ii) Sticker-based enforcement systems shall provide the following additional information on enforcement: (regarding sticker security and vehicle classification fraud)

New Hampshire's I/M program is enforced via clearly visible inspection stickers on the windshield of each registered vehicle, of which, as of October 1, 2018, is now administratively in the lower left of the windshield. The majority of inspection stations are using on-demand sticker printing. The stations pre-order sticker backers directly from the vendor. A unique number is created during the inspection which is printed out during the inspection process. This unique number is adhered to the backer when it is attached to the vehicle. During 2019, changes to the design of the inspection stickers were completed, including introduction of a rotating color scheme.

The on-demand system requires a vehicle to pass inspection on the NHOST prior to being issued a number. The sticker will not print until the vehicle has passed a full safety and emissions test and is matched with the backer provided by the vendor before being attached to the vehicle. These stickers can be easily tracked and therefore is a major deterrent for fraud.

The DMV sells inspection stickers to those inspection stations that are not required to submit the information electronically, such as those for municipal/government fleets, motorcycles, and some fleets, as well as replacement glass companies. The inspection stickers issued during the annual inspection are each identified with a unique serial number and DMV distributes the stickers in a manner in which all stickers can, and are, easily accounted for.

Administrative rules require all inspection stations to keep inspection sticker booklets/backers secured at all times. The rules also require every inspection station to immediately notify the local police and the DMV in the event that they discover or suspect that any inspection stickers may have been lost or stolen. The serial numbers of any stickers/backers that have been reported lost or stolen are entered into the DMV's database and State Police representatives are assigned to investigate all such incidents. All safety inspection stickers/backers contain a variety of security features, which are specifically designed to prevent counterfeiting. The serial number of each inspection sticker/backer, which is affixed to a vehicle after it has passed the annual safety inspection, is reported to the DMV by the inspection station issuing the sticker/backer. Inspection sticker data for all OBD-required inspections are automatically

reported electronically and entered into the Vehicle Inspection Database (VID). This facilitates system wide compliance, quality assurance, and reduces the time and resources necessary to investigate and prosecute inspection sticker fraud and counterfeiting.

The old stickers are accounted for either as sold to an inspection station or as returned to the DMV. The Department of Safety's mainframe IDMS database codes sticker inventory records as sold, returned-used, returned-unused, or reported stolen, damaged or lost. The old sticker inventory and distribution is controlled and monitored by the DMV, and the NHOST system vehicle inspection database provided by the current vendor, Gordon-Darby.
For CY 2019, the inspection sticker database showed the following:

Total Stickers issued by DMV:	87,269
Motorcycles:	54,120
Automobiles:	33,149

(d)(4)(iii) Sticker-based enforcement systems shall provide the following additional information regarding parking lot surveys.

In CY 2019, State Police representatives did not conduct any parking lot sticker surveys. In New Hampshire, uninspected vehicles are not illegal unless they are being operated on a public way. The windshield compliance sticker used to identify vehicles with a valid safety and OBD inspection is routinely looked for by both State and local law enforcement officials. Therefore, routine traffic enforcement detects the majority of un-inspected vehicles if they are being driven on the state's roadways.

Although New Hampshire does not conduct parking lot sticker surveys, the New Hampshire State Police uses data from the Gordon-Darby, Inc. NHOST system's VID (Vehicle Inspection Database) to closely monitor compliance by both inspection stations and individual motorists. A secure Internet portal to the NHOST system's VID is accessible to only authorized personnel. Custom software, included as part of Gordon-Darby's service to the State of New Hampshire, analyzes all inspection data on all vehicles and all inspection stations to identify anomalies and inconsistencies that might indicate fraud. By employing a sophisticated system of triggers and trends analysis, the NHOST system is able to flag individual tests, inspection stations, or even individual mechanics as being worthy of further scrutiny. DMV staff is also able to run ad hoc queries against the VID to analyze data from any desired perspective and to scrutinize individual tests, inspection stations, mechanics, or vehicles.

In addition to the visual enforcement program discussed above, New Hampshire's program effectively prevents motorists from changing the fuel type or the weight class on the vehicle registration or from falsely registering a vehicle out of the program area as the program is statewide. The proprietary software that is used throughout the New Hampshire OBD program is designed to recognize the OBD "fingerprint" of every vehicle tested. This is accomplished by decoding the VIN, analyzing the various engine system readiness monitors and other factors, and then comparing these results to the expected profile of the vehicle being tested. In CY

2019, New Hampshire State Police representatives utilized this and other high-tech applications for monitoring and enforcement of the State's I/M program.

51.366(e) ADDITIONAL REPORTING REQUIREMENTS

A Biennial Report will be submitted in 2021.

5. GOALS FOR 2020 AND 2021

5.1 OVERARCHING

A new contract with Gordon-Darby, Inc. started in January 2020 and will run through 2025, with an option for a two-year extension. NHDES, DMV and Gordon-Darby, Inc. will work together to implement the new contractual requirements.

5.2 DATA AND REPORTING 1

NHDES and NH DMV will revisit the narrative language for the 2020 Annual Report and the 2019-2020 Biennial Report to assure it is consistent with the newly updated DMV Administrative Rules Saf-C 3200.

5.3 DATA AND REPORTING 2

NHDES, DMV and Gordon-Darby, Inc. will revisit the EPA's reporting requirements for the 2020 Annual Report and the 2019-2020 Biennial Report in detail to better understand the data concerning the NFOs. A potential approach is to evaluate the VINs of our NFO vehicles as compared to current registrations to determine if the vehicles are still on the road.

5.4 DATA AND REPORTING 3

NHDES, DMV, and Gordon-Darby, Inc. will evaluate the available data to determine the cause of the wide disparity between the number of vehicles subject to the OBD inspection versus those actually receiving inspections (see Section 51.366(d)(1)(iii)).

5.5 DATA AND REPORTING 4

NHDES, DMV and Gordon-Darby, Inc. will review procedures and data management, and provide appropriate education and outreach, to ensure that battery electric vehicles are being properly managed.

5.6 EDUCATION AND OUTREACH

New DMV Administrative Rules Saf-C 3200, were updated and went into effect on November 26, 2019. Appropriate education and outreach with inspection stations and licensed inspectors will be undertaken to ensure the new rules are understood and appropriately applied.

Education and outreach remain an ongoing goal of the program. DMV, Gordon-Darby, Inc. and NHDES conducted public listening sessions in the fall of 2019. Additional sessions will be scheduled as required for the program.

5.7 STATE IMPLEMENTATION PLAN UPDATE

NHDES will update its SIP to account for the new DMV Administrative Rule 3200 once the new rules have been certified.

5.8 MEDIUM-DUTY VEHICLE AND DIESEL OBD TESTING

The EPA revised the NAAQS for ozone in 2015, reducing the 8-hr level from 0.075 ppm to 0.07 ppm. Preliminary data from 12 monitoring locations throughout the state indicate that New Hampshire is meeting the design value for 2013-2015. However, should any portion of the state fail to attain the NAAQS, NHDES will be required to submit a new ozone SIP detailing actions the State will take to achieve the necessary emissions reductions to achieve attainment. Although strategies affecting all major emissions sources will be addressed, transportation emissions reductions, if needed, could be accomplished through the addition of medium-duty vehicles or heavy-duty diesel vehicles into the OBD testing program. These strategies will continue to be explored in 2020 and beyond.

Appendices

Appendix A: Anti Tampering and OBD Inspection Data Report Tables (attached)

Appendix B: Initial Test Volume and Failure Rate by Model Year and Test Station (attached)