



EVALUATION OF CONNECTICUT'S INSPECTION/MAINTENANCE PROGRAM

2022 ANNUAL REPORT

Prepared For

Connecticut Department of Energy and Environmental Protection
Connecticut Department of Motor Vehicles

Prepared By

dKC – de la Torre Klausmeier Consulting
1401 Foxtail Cove
Austin, TX 78704
(512) 447-3077

E-mail: delaklaus@aol.com

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1. Introduction

1.1. Executive Summary

As required by the Clean Air Act Amendments of 1990, the Connecticut Department of Energy and Environmental Protection (DEEP) in partnership with the Connecticut Department of Motor Vehicles (DMV) conducts periodic evaluations of its enhanced Motor Vehicle Inspection and Maintenance (I/M) Program. This report is written and submitted in fulfillment of the requirement to provide annual I/M reports per 40 CFR 51.366 to the U.S. Environmental Protection Agency (EPA). This report addresses data collected from January 1, 2022, through December 31, 2022. As evidenced by the high compliance rate, limited fraud and low waiver rate, this report demonstrates that Connecticut's I/M program effectively achieves the expected air quality benefits. The I/M statistics provided in this report comply with EPA's 2020 guidance on reporting inspection results.

The EPA provided a checklist, which identified the data elements to be included in this report. Required data and reports for 2021 and earlier years have been submitted to EPA. The 2022 data elements are compiled in the main body and Appendix A of this report and correspond to the indexing system used in EPA's checklist. The requirements of EPA's checklist that are not applicable due to the structure of Connecticut's I/M program are addressed at the end of each applicable section of this report.

1.2. Major Findings

This report focuses on the current effectiveness of Connecticut's I/M program. Key program highlights include:

- In 2021 Connecticut tendered a procurement for a new I/M contract. The contract was awarded to Opus. Since Opus contract started November 1, 2021, Opus continues to implement improvements.
- Connecticut's I/M program correctly fails non-complying vehicles and strictly enforces I/M requirements:
 - Approximately 8.3% of vehicles failed their initial emissions test and 5.8% of these vehicles also failed their first retest in 2022. These are similar to failure rates in centralized, test-only programs, which EPA considers a benchmark.
 - DMV and its contractor, Opus, perform extensive quality assurance checks on the program. Evaluation of these quality assurance data demonstrates that the program performs accurate inspections.
- Connecticut's anti-fraud efforts are models for other I/M programs. Connecticut audits all stations as part of an extensive anti-fraud program. For example, Connecticut conducted 915 video surveillance audits and 291 covert audits during 2022. Covert and video audits address On-Board Diagnostics (OBDII), Pre-Conditioned Two Speed Idle (PCTSI) and diesel opacity inspection performance. In addition, DMV and Opus run extensive trigger reports. Less than 0.02% of the inspections in Connecticut are suspect, which is far lower than the "suspect test" rate in most other states' I/M programs where suspect inspection rates can be 1% or higher.
- In 2015, Connecticut implemented a new registration system – Connecticut Integrated Vehicle and Licensing System (CIVLS). CIVLS automated checking for I/M compliance makes it impossible for motorists to renew their registration via US Mail, in person or on the DMV website without

first complying with I/M requirements. The DMV also checks each registration request for compliance with I/M requirements. DMV provided data on registration renewal requests mailed to the Department – 98% of the registration requests were in compliance with I/M requirements when mail renewals were processed. Ultimately, 100% of the vehicles renewed are in compliance with I/M requirements.

Connecticut's ongoing analysis of inspection and enforcement data continues to demonstrate the program effectively produces air pollutant reductions. DEEP and DMV will continue to evaluate opportunities to improve the program and increase cost effective air quality benefits.

2. Program Overview

2.1. Introduction

The I/M program is an important part of Connecticut's overall clean air strategy to ensure the state is positioned to attain and maintain the National Ambient Air Quality Standard (NAAQS) for Ozone (i.e., smog). Ozone is formed by photochemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NOx). Connecticut's I/M program, which dates back to 1983, has a long history of effectively reducing vehicle VOC and NOx emissions.

Connecticut's I/M program utilizes an on-board diagnostics test to identify vehicles' emissions related components, identify vehicles with faulty emissions control systems and require such vehicles to be repaired in a timely manner to comply with emission standards. DMV oversees the I/M program operated by a private contractor; DEEP advises DMV on I/M standards and ensures that the program achieves the air quality benefits as outlined in Connecticut's State Implementation Plan (SIP) for Air Quality.

The emission reductions from the I/M program are an essential element of Connecticut's clean air strategy. On June 3, 2016, having determined that both the Greater Connecticut and the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment areas failed to attain the 2008 ozone standards by the July 20, 2015, attainment date, EPA reclassified those areas from marginal nonattainment to moderate nonattainment. This reclassification required the two areas to attain the 2008 standard by July 20, 2018. Neither area measured attainment as of that date and, as such, Connecticut was reclassified by EPA as serious nonattainment for 2008 standard as of September 2019. Thus, EPA changed the attainment date for the 2008 standard to July 21, 2021. Additionally, on October 1, 2015, EPA strengthened the 2015 Ozone NAAQS to 70 parts per billion (ppb) from 75 ppb. Effective August 3, 2018, the Greater Connecticut nonattainment area is classified as marginal nonattainment (attainment date August 3, 2021) and the New York-Northern New Jersey-Long Island (NY-NJ-CT) nonattainment area is classified as moderate nonattainment (attainment date August 3, 2024). Effective November 7, 2022, the Greater Connecticut nonattainment area was reclassified as moderate nonattainment so now the entire state of Connecticut is classified as moderate nonattainment for the 2015 Ozone NAAQS with an attainment date of August 3, 2024. Also effective November 7, 2022, EPA reclassified the Connecticut portion of the NY-NJ-CT nonattainment area from serious to severe nonattainment (attainment date July 20, 2027) and found Greater Connecticut in attainment for the 2008 Ozone NAAQS. Given the moderate classification under the 2015 standard and the severe classification under the 2008 standard, Connecticut will need to achieve even greater emission reductions from motor vehicles.

As part of the next ozone attainment demonstration, DEEP will need to evaluate additional measures to reduce emissions from the transportation sector as this sector accounts for about 67% of NOx emissions in Connecticut. These strategies may include, but are not limited to: adopting new tailpipe emission standards for light, medium and heavy-duty vehicles pursuant to section 177 of the federal Clean Air Act, adopting the California aftermarket catalytic converter rule, promoting electric and alternative fueled vehicles by expanding the availability of electric vehicle charging stations and alternative fuel refueling stations, adopting programs that encourage the replacement of older diesel on and off road equipment with equipment that complies with the newest emission standards, and expanding the I/M program to include more medium and heavy duty trucks. Failing to effectively reduce transportation emissions to meet federal air quality standards in a timely manner may result in the need for additional control measures in the future. Therefore, the existing I/M program should be viewed against the backdrop of potential additional control programs necessary to achieve Connecticut's short term and long-term air quality goals.

2.2. Emissions Tests Administered

Vehicles that are between 5 and 24 years old with a gross vehicle weight of 10,000 pounds or less are inspected in Connecticut by the following procedures on a biennial basis.

Gasoline Powered Vehicles (Including CNG, Propane and Hybrid Vehicles)

Below is a brief description of the criteria used to determine if a gasoline powered vehicle passes or fails inspection.

Pass/Fail Criteria

Pre-Conditioned Two-Speed Idle (PCTSI) Inspection (1997 to 2007 vehicles > 8500 pounds gross vehicle weight): Vehicles fail if they exceed Connecticut's cut points or emissions standards. For the PCTSI test, HC and CO emissions are evaluated. Connecticut uses EPA's recommended cut points for the PCTSI¹ tests.

OBDII Inspection: 1996 and newer MY light-duty vehicles (< 8500 pounds gross vehicle weight) and 2008 and newer medium-duty vehicles with a GVWR between 8,501 LBS to 10,000 lbs. are subject to an OBDII inspection. The emissions test system is plugged into the OBDII connector and information on the status of the vehicle's OBDII system is downloaded. Vehicles fail the OBDII inspection if they have any of the following problems:

- Malfunction Indicator Lamp (MIL²) is commanded-on;
- MIL not working (Termed Key-On Engine-Off, KOEO, failure³);
- The number of readiness monitors that are not ready exceed EPA's limit⁴:

¹ *Two speed idle test—EPA 81, 40 CFR 85.2214*

² MIL is a term used for the light on the instrument panel, which notifies the vehicle operator of an emission-related problem. The MIL is required to display the phrase "check engine" or "service engine soon" or the ISO engine symbol. The MIL is required to illuminate when a problem has been identified that could cause emissions to exceed a specific multiple of the standards the vehicle was certified to meet.

³ The Key-On Engine-Off (KOEO) determines if the MIL bulb is working. The bulb should illuminate when the vehicle is in the ON/RUN position but not started.

⁴ OBDII systems have up to 11 diagnostic monitors, which run periodic tests on specific systems and components

- 1996-2000 MY light-duty vehicles: Two monitors are allowed to be not ready.
- 2001 and later MY light-duty vehicles: One monitor is allowed to be not ready.
- OBDII Diagnostic Link Connector (DLC) damaged; or
- Vehicle could not communicate with the Connecticut inspection system.

Diesel Powered Vehicles

Diesel-powered vehicles with a GVWR of 10,000 lbs. or less are also tested in Connecticut’s I/M program. Vehicles equipped with OBDII systems receive OBDII tests. Otherwise, the vehicle receives a test designed to identify excessive exhaust smoke opacity. EPA regulations do not require the testing and reporting of diesel-powered vehicles.

Below is a brief description of the criteria used to determine if a vehicle passes or fails inspection.

Pass/Fail Criteria

Modified Snap Acceleration (MSA) Test (2007 and older medium-duty vehicles): With this test, the throttle is “snapped” (i.e., accelerator is quickly pressed and then released) and exhaust smoke opacity is measured. This test is performed with the vehicle being in “neutral”. The average of three snaps is calculated and compared to the standard recommended by the Society of Automotive Engineers (SAE).

OBDII Inspection: 1997 and newer model year diesel vehicles with a GVWR of 8,500 lbs. or less and 2007 and newer medium-duty vehicles with a GVWR between 8,501 LBS to 10,000 lbs. are subject to OBDII inspection. The emissions test system is plugged into the OBDII connector and information on the status of the vehicle’s OBDII system is downloaded. Diesel-powered vehicles will fail the OBDII inspection if they have any of the following problems:

- Malfunction Indicator Lamp (MIL) is commanded-on;
- MIL not working (Termed Key-On Engine-Off, KOEO, failure);
- The number of readiness monitors that are not ready exceed EPA’s limit:
 - 1997-2000 MY light-duty vehicles: Two monitors are allowed to be not ready.
 - 2001 and later MY light-duty vehicles: One monitor is allowed to be not ready.
- OBDII Diagnostic Link Connector (DLC) damaged; or
- Vehicle could not communicate with the Connecticut inspection system.

3. Test Data Report

3.1. Vehicles Tested

40 CFR 51.366 (a)(1): The number of vehicles tested by model year and vehicle type

Table 1 and Figure 1 present the number of passenger cars and trucks that were inspected at public and fleet stations. Overall, Connecticut has 2,721,555 registered vehicles, which are tested every two years, with a four-year exemption for new vehicles. In 2022, 934,553 vehicles were inspected; the total

to ensure that they are performing within their prescribed range. OBDII systems must indicate whether the onboard diagnostic system has monitored each component. Components that have been diagnosed are termed “ready”, meaning they were tested by the OBDII system.

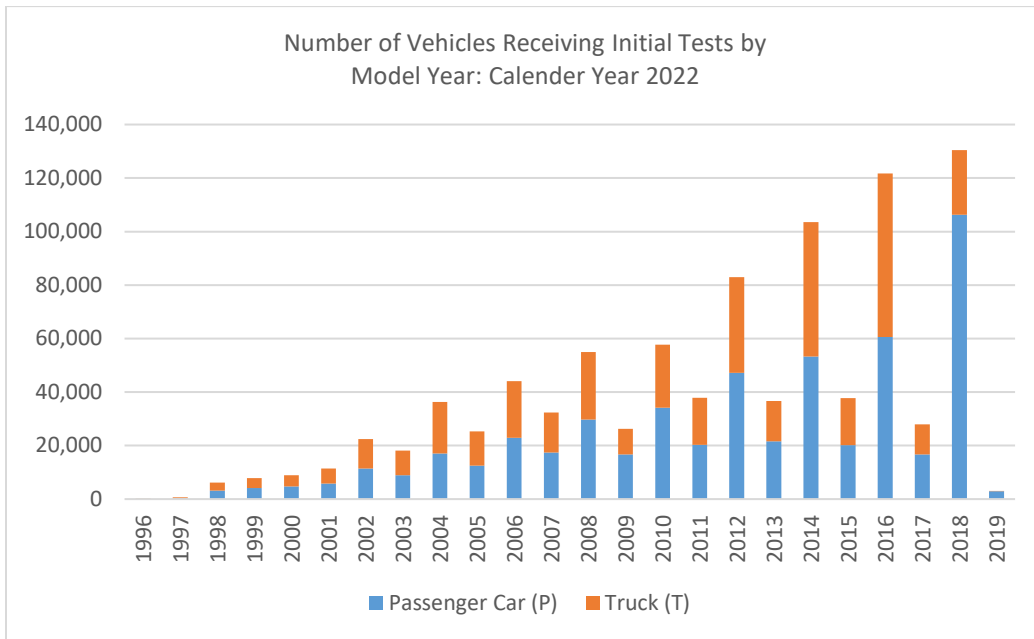
number of vehicles inspected **represents approximately 34 percent of the registered fleet.** In 2022, there were more vehicles tested with even model years than odd model years due to the two year testing schedule in Connecticut.

TABLE 1 - (A)(1) NUMBER OF VEHICLES TESTED BY MODEL YEAR AND VEHICLE TYPE

INCLUDES INITIAL TESTS AND RETESTS

Model Year	Passenger Car (P)	Truck (T)	Total
1996	47	30	77
1997	338	358	696
1998	3,226	2,929	6,155
1999	4,162	3,735	7,897
2000	4,693	4,238	8,931
2001	5,797	5,612	11,409
2002	11,430	11,065	22,495
2003	8,958	9,115	18,073
2004	17,032	19,272	36,304
2005	12,559	12,798	25,357
2006	22,956	21,187	44,143
2007	17,447	14,871	32,318
2008	29,723	25,224	54,947
2009	16,726	9,524	26,250
2010	34,207	23,454	57,661
2011	20,269	17,610	37,879
2012	47,184	35,770	82,954
2013	21,570	15,138	36,708
2014	53,321	50,183	103,504
2015	20,204	17,495	37,699
2016	60,591	61,085	121,676
2017	16,660	11,238	27,898
2018	106,331	24,131	130,462
2019	2,917	143	3,060
Grand Total	538,348	396,205	934,553

FIGURE 1 – NUMBER OF INITIAL TESTS BY VEHICLE TYPE AND MODEL YEAR (NETWORK TESTS)



3.2. Test Results

40 CFR 51.366 (a)(2): By model year and vehicle type, the number and percentage of vehicles:

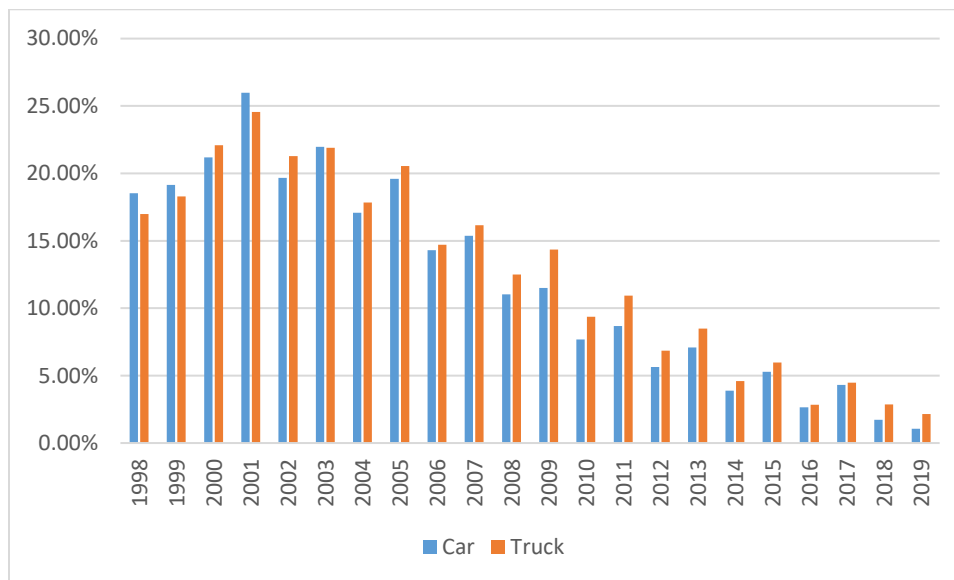
- (i) Failing initially, per test type;
- (ii) Failing the first retest per test type;
- (iii) Passing the first retest per test type
- (iv) Initially failed vehicles passing the second or subsequent retest per test type
- (v) Initially failed vehicles receiving a waiver
- (vi) Vehicles with no known final outcome (regardless of reason)

Table 2 presents the failure rate by test type and vehicle type. The failure rates in 2022 are very similar to the rates in 2021 and earlier years. As shown on Figure 2, due to more stringent pass/fail criteria for the OBD test, failure rates jump up in 2001. Appendix A presents details on failure rate trends by model year, test type, and vehicle type.

TABLE 2 - (A)(2)(i) INITIAL TEST FAIL RATE BY TEST TYPE AND MODEL YEAR

Test Type	Cars			Trucks		
	Pass	Fail	% Fail	Pass	Fail	% Fail
OBD Gasoline	472,397	38,166	7.48%	332,926	34,760	9.45%
OBD Diesel	2,346	374	13.75%	3,199	886	21.69%
OBD Hybrid	15,693	876	5.29%	2,810	147	4.97%
PCTSI	83	12	12.63%	8,017	658	7.59%
MSA	19	1	5.00%	2,391	301	11.18%
Grand Total	490,538	39,429	7.44%	349,343	36,752	9.52%

FIGURE 2 - OVERALL INITIAL TEST FAIL RATE BY VEHICLE TYPE AND MODEL YEAR



Failure rates for the first retest and second and later retests are shown in Tables 3 and 4.

TABLE 3 - (A)(2)(II,III) FIRST RETEST FAIL RATE BY TEST TYPE

Test Type	Cars			Trucks		
	Pass	Fail	% Fail	Pass	Fail	% Fail
OBD Gasoline	24,632	1,475	5.65%	23,289	1,414	5.72%
OBD Diesel	260	10	3.70%	516	23	4.27%
OBD Hybrid	604	41	6.36%	103	11	9.65%
PCTSI	6	0	0.00%	482	52	9.74%
MSA	0	0	0.00%	141	71	33.49%
Grand Total	25,502	1,526	5.65%	24,531	1,571	6.02%

TABLE 4 - (A)(2)(IV) SECOND AND LATER RETEST FAIL RATE BY TEST TYPE

Test Type	Cars			Trucks		
	Pass	Fail	% Fail	Pass	Fail	% Fail
OBD Gasoline	797	51	6.01%	792	55	6.49%
OBD Diesel	8	0	0.00%	13	0	0.00%
OBD Hybrid	24	1	4.00%	9	0	0.00%
PCTSI	0	0	0.00%	26	5	16.13%
MSA	0	0	0.00%	32	12	27.27%
Grand Total	829	52	5.90%	872	72	7.63%

The number and percent of vehicles receiving waivers are shown on Table 5. The overall waiver rate is very low; 0.20% of the failed vehicles receive waivers.

TABLE 5 - (A)(2)(V). WAIVERS ISSUED

Model Year	Passenger Car (P)	Truck (T)	Total # of Waivers	# of Failed Vehicles	% of Failed Vehicles Receiving Waivers
1998	3	1	4	1,039	0.38%
1999	0	0	0	1,412	0.00%
2000	1	4	5	1,810	0.28%
2001	8	1	9	2,634	0.34%
2002	7	8	15	4,405	0.34%
2003	7	6	13	3,719	0.35%
2004	6	11	17	6,118	0.28%
2005	5	6	11	4,805	0.23%
2006	6	10	16	6,215	0.26%
2007	5	8	13	4,869	0.27%
2008	6	5	11	6,302	0.17%
2009	4	2	6	3,180	0.19%
2010	3	1	4	4,761	0.08%
2011	2	3	5	3,589	0.14%
2012	5	5	10	5,074	0.20%
2013	0	1	1	2,746	0.04%
2014	3	0	3	4,354	0.07%
2015	1	0	1	2,074	0.05%
2016	1	2	3	3,330	0.09%
2017	0	0	0	1,204	0.00%
2018	2	0	2	2,507	0.08%
2019	0	0	0	34	0.00%
Grand Total	75	74	149	76181	0.20%

Table 6 presents the estimated percent of vehicles without a passing result. This table presents the total number of initial failing tests and passing retests. The number of passing retests include waivers. Overall, 32% of initially failing vehicles do not have a passing result or waiver. Per EPA guidance, these

results are through the first four months of 2022. DMV is investigating vehicles that had no known final outcome (NKFO). In 2021, DMV found that almost all of the vehicles with NKFO had expired registrations. The only vehicles that never had a passing result but were registered appear to be those that received waivers.

TABLE 6 - (A)(2)(VI) VEHICLES WITH NO FINAL PASS

Model Year	Cars			Light Trucks			ALL
	# Fail Initial Tests	# Pass Retests (Includes Waivers)	% of Initially Failed Vehicles with No Final Pass	# Fail Initial Tests	# Pass Retests (Includes Waivers)	% of Initially Failed Vehicles with No Final Pass	% of Initially Failed Vehicles with No Final Pass
1998	571	282	50.6%	468	217	53.6%	51.97%
1999	763	419	45.1%	649	378	41.8%	43.56%
2000	934	499	46.6%	876	538	38.6%	42.71%
2001	1,383	771	44.3%	1,251	775	38.0%	41.31%
2002	2,155	1,323	38.6%	2,250	1,486	34.0%	36.23%
2003	1,853	1,075	42.0%	1,866	1,169	37.4%	39.66%
2004	2,813	1,826	35.1%	3,305	2,203	33.3%	34.15%
2005	2,330	1,432	38.5%	2,475	1,556	37.1%	37.81%
2006	3,201	2,108	34.1%	3,014	2,083	30.9%	32.57%
2007	2,580	1,577	38.9%	2,289	1,498	34.6%	36.85%
2008	3,220	2,149	33.3%	3,082	2,107	31.6%	32.47%
2009	1,866	1,224	34.4%	1,314	894	32.0%	33.40%
2010	2,601	1,831	29.6%	2,160	1,561	27.7%	28.75%
2011	1,719	1,176	31.6%	1,870	1,269	32.1%	31.88%
2012	2,645	1,969	25.6%	2,429	1,838	24.3%	24.97%
2013	1,500	1,015	32.3%	1,246	873	29.9%	31.25%
2014	2,066	1,556	24.7%	2,288	1,833	19.9%	22.16%
2015	1,052	737	29.9%	1,022	760	25.6%	27.82%
2016	1,599	1,292	19.2%	1,731	1,454	16.0%	17.54%
2017	712	542	23.9%	492	381	22.6%	23.34%
2018	1,835	1,573	14.3%	672	603	10.3%	13.20%
2019	31	30	3.2%	3	1	66.7%	8.82%
ALL	39,429	26,406	33.0%	36,752	25,477	30.7%	31.90%

40 CFR 51.366 (a)(2): By model year and vehicle type, the number and percentage of vehicles:

(xi) Passing the on-board diagnostic check

(xii) Failing the on-board diagnostic check

Table 7 presents the percent of vehicles that that continue to fail the on-board diagnostic (OBD) test. Testing data shows 2.5% of passenger vehicles and 3.0% of light trucks continue to fail the OBD test through the first four months of 2022. These vehicles cannot be registered until they pass. Please reference Appendix A, (a) (2) (xi, xii) for specific data.

TABLE 7 - (A)(2)(xi, xii) PERCENT CONTINUING TO FAIL OBD TESTS ALL FUELS

Model Year	% Fail Cars	% Fail Light Trucks
1998	9.5%	9.4%
1999	8.6%	8.2%
2000	9.9%	9.7%
2001	11.7%	10.4%
2002	7.7%	8.2%
2003	9.3%	9.1%
2004	6.0%	6.6%
2005	7.6%	8.3%
2006	4.9%	4.9%
2007	6.0%	6.0%
2008	3.7%	4.0%
2009	4.0%	4.6%
2010	2.3%	2.6%
2011	2.7%	3.5%
2012	1.5%	1.7%
2013	2.3%	2.5%
2014	1.0%	0.9%
2015	1.6%	1.5%
2016	0.5%	0.5%
2017	1.0%	1.0%
2018	0.2%	0.3%
2019	0.0%	1.4%
ALL	2.5%	3.0%

40 CFR 51.366 (a)(2): By model year and vehicle type, the number and percentage of vehicles:
(xix) MIL is commanded on and no codes are stored
(xxi) MIL is commanded on and codes are stored
(xxii) MIL is not commanded on and codes are not stored
(xxiii) Readiness status indicates that the evaluation is not complete for any module supported by on-board diagnostic systems

MIL light illumination, or lack of readiness, results in an automatic failure of the I/M test. As such MIL "command on" and "not ready" status is reported. In 2022, 3.5% of the vehicles had MILs commanded-on with DTCs and 0.00% had MILs commanded on with no codes stored. In 0.32% of the tests, the test system could not communicate with the OBD system. Specific data can be found in Appendix A, 40 CFR 51.366 (a) (2) (xix, xxi, xxii).

Overall, 5.0% of the vehicles had diagnostic monitors that were not ready on their initial test. Model year vehicles from 1996 to 2000 are allowed to have two monitors not ready; 2001 and newer models

are allowed to have one monitor not ready. Due to the more stringent readiness requirement starting with 2001 model year vehicles (one monitor vs two allowed to be not ready), the percent of vehicles that are not ready increases for that model year. Specific data can be found in Appendix A, (a) (2) (xxiii).

40 CFR 51.366 (a)(3): The initial test volume by model year and test station
(a)(4): The initial test failure rate by model year and test station

Appendix A, 40 CFR 51.366 (a)(3&4) contains a breakdown of initial test volume and fail rate by model year and test station.

3.3. Inapplicable Requirements

The following requirements from 40 CFR 51.366 (a) regarding test data reports are not applicable to Connecticut’s I/M program:

- 40 CFR 51.366 (a)(2)(xiii-xv)
- 40 CFR 51.366 (a)(2)(xvi-xviii)
- 40 CFR 51.366 (a)(2)(xx)
- 40 CFR 51.366 (a)(5)

4. Quality Assurance Report

4.1. Inspection Stations

40 CFR 51.366 (b)(1): The number of inspection stations and lanes:
 (i) Operating throughout the year
 (ii) Operating for only part of the year

Table 8 presents the number of inspection stations that operated in 2022.

TABLE 8 - (B)(1) QUALITY ASSURANCE 2022 – NUMBER OF INSPECTION STATIONS

	Beginning of Year	Left Program	Added to Program
No. of Inspection stations/lanes operating throughout 2022	243	0	17

4.2. Inspectors

40 CFR 51.366 (b)(5): The number of inspectors licensed or certified to conduct testing

Table 9 presents the number of certified test inspectors (CTIs) that were active in 2022.

TABLE 9 – (B)(5) QUALITY ASSURANCE – NUMBER OF CERTIFIED TEST INSPECTORS (CTIs) 2022

Total CTIs Testing	1486
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4.3. Overt performance audits

40 CFR 51.366 (b)(2): The number of inspection stations and lanes operating throughout the year:
 (i) Receiving overt performance audits in the year
 (ii) Not receiving overt performance audits in the year

EPA requires that overt audits be performed twice per year per station. DMV meets these requirements through use of the Emission Test Monitoring Report (ETMR). Connecticut prepares ETMRs more frequently than required by EPA. Every three months, at least one ETMR is performed on each station. In addition, Opus also performs overt audits. Connecticut also checks more items than required by EPA, such as the operational status of test equipment and peripherals (e.g., cameras). Connecticut is continuing to evaluate the auditing process to build upon the program’s success. Table 10 summarizes the results of overt performance audits.

TABLE 10 - (B)(2) QUALITY ASSURANCE – OVERT AUDITS – 2022

Parameter	Left Program/Joined Program
Receiving overt performance audits in 2022	246
Not Receiving overt performance audits in 2022 (243 Stations - 0 left + 17 added - 260 Stations total)	14
2022 Overt Audits - Emissions Test Monitoring Report (ETMR)	
Parameter	2022 Value
Total Overt Audits Performed	514
No. of Stations Audited	246
No. of Times Each Station Was Audited (range)	1 thru 6
No. of Stations That Had No Violations for the Entire Year	
Total Number of Audits for which One or More Violations Were Reported	234
No. of stations at which violations were reported	17
No. of stations at which one (1) violation was reported	12
No. of stations at which two (2) violations were reported	11
Motor Vehicle Agents	2022 Value
No. of Agents That Performed Overt Audits During the Course of the Year	6
No. of Overt Audits per Agent (range)	1 thru 269
No. of Station Issues Reported per Agent (range)	1 to 6

4.4. Digital Checks / Trigger audits / Camera / Video

Based on the results of trigger audits, Connecticut is a model for other states in how to enforce proper I/M test procedures. Connecticut actively looks for cases where inspectors may be performing improper inspections and passing vehicles that otherwise should fail. The following is a summary of how Connecticut ensures that stations perform proper inspections.

Trigger Audits

DMV and Opus run extensive trigger audits to assure that inspection stations follow proper test procedures. DMV requires Opus to maintain quality assurance measures, which they meet by conducting additional audits. Specifically, Opus performs such audits and QA reviews on a daily, weekly, and monthly basis. Many of the reports are automated by the Opus vehicle inspection database (VID), and distributed, via email, to DMV and Opus QA staff. In addition, the reports are available on the program dashboard for review at any time, and they are available for any time frame.

Trigger audits look for anomalies in data recorded during inspection. Reporting the outcome of these audits help DMV to identify if stations are performing fraudulent or inaccurate inspections. Trigger audits focus on finding the following types of fraud:

- Clean Scanning: Performing an OBDII test on a fault-free vehicle instead of the vehicle that should be tested;
- Clean Piping: Performing a tailpipe test on a passing vehicle instead of the vehicle that should be tested.

These reports are generated frequently to identify stations performing improper inspections. Connecticut promptly investigates all significant cases of possible inspection fraud. Following is a list of some of the trigger reports:

- OBDII Testing Triggers:
 - PID/PCM Mismatch;
 - Monitor Mismatch;
 - All OBDII Monitors Unsupported;
 - A/C Monitor Ready or Not Ready;
 - OBDII Short Time Test, less than 30 minutes;
 - OBDII VIN Mismatch;
- Other Triggers:
 - VIN Entry Type;
 - Inspector ID Entry;
 - Offline Percentage;
 - RPM Bypass;
 - No Saturday/Holiday Testing; and
 - Missing Video/Test Image.

Opus' VID also generates the following automated alerts:

- Weather (temperature, humidity, pressure);
- EDBMS Offline;
- CDAS Offline;
- Test Center Not Testing; and
- Failed/Expired Calibrations Report.

Camera Audits

There are three video cameras connected to the emissions analyzer. If anyone of them fail or are unplugged, the emissions analyzer will set a lockout to prevent the use of the workstation. In addition, the Opus VID will generate a non-compliance report for any emissions test transmitted with a missing test and video file. However, during the normal operations at the test centers, cameras may become misaligned or obstructed. Using the program dashboard, Opus and DMV perform camera audits of all three cameras, at each test center. Each camera is turned on to ensure it operates as it should, the viewing angle is verified with no obstructions and a test video is recorded. If an issue is identified that requires an onsite visit at the test center, a service ticket is generated and dispatched to the Opus field service.

Fraudulent Test Rate

A key parameter that's recorded during an OBD test is the OBD VIN – the vehicle identification number (VIN) that's part of the OBD test record. The percent of tests in Connecticut where the OBD VIN did not match the DMV VIN for the vehicle under test was calculated to be 0.01%. This is the lowest VIN mismatch rate in the last decade of the program. The analysis restricted mismatches to cases when **both** the 1st 2 digits and last 3 digits mismatch. Connecticut has historically had low VIN mismatch rates and no individual stations in Connecticut had high OBD VIN mismatch rates.

Not all vehicles provide OBD VINs as part of the test record, so mismatches between expected and recorded communication protocol were also analyzed. OBD systems can use one of seven protocols; tests where the recorded protocol mismatches expected protocol are considered suspect. Only 0.02% of the tests⁵ are suspect in Connecticut. No stations had high protocol mismatch rates.

This analysis indicates that inspection fraud is not a serious problem in Connecticut.

4.5. Covert audit process overview

EPA requires that covert audits be performed at least once per year per station. The requirements and frequency for covert audits are detailed in 40 CFR 51.363(a)(4) and include remote visual observation of inspector performance, site visits using covert vehicles, and documentation of the audits. DMV performs video surveillance audits on a periodic and random basis. It's easier to perform video audits clandestinely, since the inspector usually does not know an audit is being performed. During 2022, DMV performed 364 covert audits and 784 video surveillance audits.

Warnings are routinely issued for false passes if DMV finds that the CTI did not intentionally or negligently falsely pass a vehicle. Suspensions are usually associated with violations found from trigger reports and data audits. Most false passes are for minor procedural errors, such as failing to perform the visual MIL check correctly. Unless the station repeats these errors, they are issued warnings rather than being suspended.

As stated in the Opus contract, and in the Opus Station Agreement, a CTI is suspended (pending an investigation) when it is determined that the false pass was the result of "Intentionally improperly passing a failing vehicle." Most errors identified by covert and video surveillance audits were determined to be unintentional and due to poor attention to detail. However, a second occurrence of an unintentional error, such as missing or incorrectly answering the MIL question, results in an automatic suspension.

⁵ These fraudulent test statistics are based on an analysis dKC performed on the 2021 dataset. Evaluation of Connecticut's Inspection/Maintenance Program
2022 Annual Report

4.6. Covert audit results

40 CFR 51.366 (b)(8): The total number of covert vehicles available for undercover audits over the year;
(b)(9): The number of covert auditors available for undercover audits.

40 CFR 51.366 (b)(2): The number of inspection stations and lanes operating throughout the year:
(iii) Receiving covert performance audits in the year;
(iv) Not receiving covert performance audits in the year;

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

Table 11 summarizes the results of covert performance. Table 12 presents the results of video audits.

TABLE 11 - (B)(2)(III, IV) & (3,8,9) QUALITY ASSURANCE – COVERT AUDITS – 2022

No of Inspection stations/lanes operating throughout 2022: (219 stations)*	OBD and PCTSI	OBD Tests	Idle Tests
Stations receiving Covert Audits (204)	291*	180	111
Not Receiving Covert Audits (38)	150 Stations	58 Stations	92 Stations
Total number of Covert vehicles available for undercover audits in 2022	6	0	0
Total number of Covert auditors available for undercover audits in 2022	6	0	0

*(51) of the recorded Covert visits did not result in generating a Pass/Fail test result for the vehicle presented.

TABLE 12 - 2022 VIDEO SURVEILLANCE RESULTS

# of Video Audits	Passing audit	Failing Audit
915	784	131

4.7. Inspector and Station Disciplinary Actions

40 CFR 51.366 (b) (4): The number of inspectors and stations:
(i) That were suspended, fired, or otherwise prohibited from testing as a result of covert audits
(ii) That were suspended, fired, or otherwise prohibited from testing for other causes

40 CFR 51.366 (b) (2): The number of inspection stations and lanes operating throughout the year
(v) That have been shut down as a result of overt performance audits

One station was permanently suspended; seven stations received suspensions. Most of these enforcement actions were due to refusing to inspect vehicles, not failure of overt or covert audits

4.8. Hearings

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

The Compliance Action Plan was revised in 2021. When necessary, Opus administers hearings to resolve disputes regarding actions against inspection stations. Monetary assessments are based on substantive evidence, which Opus provides with the inspector's and test center's leaders. All stations receiving rejected disputes, defined as disputes without merit and that did not require corrective actions, are advised that they may seek external binding arbitration, at the test center's expense. In 2022, no hearings were held under the Compliance Action Plan.

4.9. Fines collected

40 CFR 51.366 (b)(4)(iii): The number of inspectors and stations... that received fines;

40 CFR 51.366 (b)(7): The total amount collected in fines from inspectors and stations by type of violation
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Table 13 presents a summary of compliance actions that were assessed against inspectors and stations in 2022.

TABLE 13 - (B)(4), (7) COMPLIANCE ACTION ASSESSED AGAINST TESTING INSPECTOR OR STATIONS IN 2022

Inspector Infractions	
Issue	# of Infractions
Constant use of personal cell phone	1
CTI seen using personal cell phone to capture images (multiple instances); OBD cable connected and removed from running vehicle (multiple instances); no visual cat check; incorrect info entered; no valid KOEO performed	1
Failure to perform require test procedures and/or follow CDAS prompts OBD cable removed from running vehicle Starting test before vehicle placed in bay NO KOEO performed Improper procedures - taking images in advance; starting next vehicle test while previous vehicle still in the bay	1
False passing; made no attempts to connect opacity meter to the vehicle, which resulted in passing MSA tests with readings of zero	2
Images not readable (multiple instances) OBD cable connected and removed from running vehicle (multiple instances) Incorrect information entered (multiple instances)	1
Incorrect information entered (multiple instances)	2
Incorrect information entered (multiple instances) No visual CAT inspection OBD cable connected and removed from running vehicle	1
Incorrect information entered (multiple instances), OBD cable plugged/unplugged from running vehicle	1
Incorrect information entered for test performed; false pass results; not following proper test procedures or CDAS prompts; did not make 3 attempts at obtaining RPM	1
MSA Inspection - failed to follow proper procedure	2
No valid KOEO performed (multiple instances)	1
No visual CAT inspection, OBD removed from running vehicle	1
Not following required test procedures Testing and passing a vehicle that should have been turned away with the abort document; should have directed motorist to DMV. MSA test on a modified tail pipe	1
OBD cable already connected at start of test Failure to perform require test procedures and/or follow CDAS prompts OBD cable removed from running vehicle No valid KOEO performed Incorrect information entered for test performed No VIN image uploaded	1

Inspector Infractions	
Issue	# of Infractions
OBD cable connected and removed from running vehicle (multiple instances), Images not readable (multiple instances) Incorrect information entered, incorrect info entered	1
OBD cable connected and removed from running vehicle (multiple instances), incorrect info entered	1
Personal cell phone use; OBD cable connected and removed while vehicle was running; no valid KOEO performed	1
Vehicle should have received a turnaway due to modified exhaust stacks	1
VIN mismatch	23
VIN mismatch/data not verified	119
VIN mismatch/data not verified; Incorrect information entered (multiple instances) OBD cable connected and removed from running vehicle (multiple instances) CTI seen vaping in the test bay (multiple instances) False passing MSA test using TSI probe (multiple instances)	1
Total Number of Infractions	164
Total Liquidated Damages Inspectors	\$3,600

Station Infractions	
Issue	# of Infractions
Failure to administer Required test procedure	1
Performing Improper Inspection	1
Failure to administer Required test procedure	1
Failure to comply with DMV direction concerning test procedures	1
Failure to enter correct test data	1
Failure to follow required test procedures and CDAS prompts	2
Incorrect information entered (multiple instances)	2
No KOEO performed	1
No valid KOEO performed	1
No VIN image captured	1
No visual CAT inspection	1
No visual CAT inspection (multiple instances)	1
OBD cable connected and removed from running vehicle	1
One ghost test	1
Performing Improper Inspection	1
Start of test shows OBD cable already connected to vehicle	1

Station Infractions	
Issue	# of Infractions
Test conducted by Uncertified Personnel	1
Test started before vehicle present in test bay	1
Total Number of Infractions	20
Total Liquidated Damages Stations	\$2,000

4.10. Inapplicable Requirements

The following requirements from 40 CFR 51.366 (b) regarding data analysis and reporting are not applicable to Connecticut’s I/M program:

- 40 CFR 51.366 (b)(3)(ii)
- 40 CFR 51.366 (b)(3)(iv)
- 40 CFR 51.366 (b)(4)(iii)
- 40 CFR 51.366 (b)(6)
- 40 CFR 51.366 (b)(7)

5. Quality Control Report

5.1. Equipment Audits

40 CFR 51.366 (c): The program shall submit to EPA by July of each year a report providing basic statistics on the quality control program for January through December of the previous year, including:

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

Equipment Audits Performed by Connecticut DMV

EPA requires that equipment audits be performed twice per year per station. DMV meets these requirements through the QA Audits. In addition, Opus also performs equipment audits. Connecticut checks more equipment items than required by EPA. While an audit may require a station to discontinue tailpipe testing, it can continue OBDII testing. Therefore, no stations were totally shut down due to a failed gas equipment audit. Results are presented in Table 14. In 2011, 67% of the stations failed equipment (gas) audits, while in 2022 this percentage dropped to 14%.

TABLE 14 – (C)(1,2,3,4) RESULTS OF EQUIPMENT AUDITS*

Parameter	2022 Result
No. of Inspection stations/lanes operating throughout 2022	223
Total Equipment Audits**	473
Total Stations that Failed Equipment Audit ***	34
Percentage of stations that failed an equipment (gas) audit	7%
Number of stations totally shut down as a result of a failed equipment (gas) audit	0
Percentage of stations shut down as a result of failed equipment (gas) audit	0.00%

* Every time an analyzer gas bench is changed, it is audited and is counted as an initial audit

** Initial gas audits only, not reinspections of failed audits

*** Failures of initial gas audits only

Final Technical Guidance (EPA 420-B-04-011, July 2004) provides that high-volume stations are required to be audited monthly. High volume stations are those that perform 4,000 or more emissions tests per year. The Connecticut Vehicle Inspection Program, by Federal guidance, does not have any emissions testing stations that perform the number of emissions tests necessary to be classified as high volume.

Equipment Audits Performed by Opus

DMV’s contractor, Opus, performs comprehensive overt and equipment audits biennially, at each facility that participates in the inspection program. These unannounced audits include:

- The visual inspection and physical condition of the testing equipment;
- Equipment integrity checks using traceable/certified audit equipment; and
- Observation of the proficiency of at least one inspector.

The contractor’s auditor evaluates the physical condition, functionality, and inventory of all the required emissions components and any ancillary safety items (restraining straps, wheel chocks, dynamometer tie down hooks, etc.). The emissions analyzer must pass calibrations (leak check, gas bench, dynamometer, gas cap, OBDII, and opacity, if equipped).

In addition, there are several system components that are audited using National Institute of Standards and Technology (NIST) certified and traceable audit equipment:

- Gas Bench(s) Audit – NIST traceable audit gas
- Opacity Audit - Reference filters (20%, 35%, 50%, and 75%)
- OBDII System Audit – EASE OBDII Verification Tester

In accordance with the Quality Assurance and Quality Control Plan, the contractor’s auditor uses a pre-printed checklist to inventory and record the physical condition of the test equipment. All non-conforming items are addressed immediately; the auditor’s van is equipped to replace missing station inventory at the time of the audit. If an issue is identified that cannot be addressed by the auditor, he or she will create a service ticket for Opus field service.

6. Enforcement Report

6.1. Overview of I/M Enforcement in Connecticut

The Connecticut Integrated Vehicle and Licensing System (CIVLS), which has been in use since August 2015, checks for emissions compliance during every registration renewal transaction. This means that if the renewal is attempted by mail, website, or in person, the transaction cannot go forward unless the vehicle is in compliance with the emissions program. Compliance is confirmed during every renewal transaction via a real time data transfer from DMV CIVLS to the Opus Electronic Database system (EDBMS). Details of web, mail-in, and over the counter actions are presented below:

Mail in renewals: When a mail-in renewal is denied because of an emissions compliance issue, the registration fees are put into an escrow account. The motorist is mailed a letter stating that the payment has been received, but the transaction cannot be processed until the vehicle is emissions compliant. Once the vehicle has an emissions test and is in compliance, the funds are automatically taken out of escrow and the registration is renewed.

Web renewals: If the vehicle is not in compliance when a renewal is attempted online, the transaction is stopped and the motorist receives a screen message stating the vehicle is not emissions compliant.

In-Person renewals: Renewals are not allowed if, during the automatic compliance check, the status of the vehicle is that it is “not in emissions compliance.” Registration renewal is rejected and the customer is instructed to return after the vehicle is in compliance.

Before implementation of CIVLS the DMV examiner physically reviewed electronic records or paperwork provided by the motorist to confirm compliance.

6.2. Vehicles subject to inspection

40 CFR 51.366(d)(1)(i): An estimate of the number of vehicles subject to the inspection program, including the results of an analysis of the registration data base

Based on an analysis by DMV on the registration database, 1,070,913 vehicles were subject to I/M tests in 2022. This number includes vehicles that may no longer be operating in Connecticut.

6.3. Overall compliance with testing requirements

40 CFR 51.366 (d)(1)(ii): The percentage of motorist compliance based upon a comparison of the number of valid final tests with the number of subject vehicles

Percent of Vehicles Receiving Notifications That Were Tested

Table 15 presents the number of vehicles that received test notifications and the number of vehicles that were tested. Overall, 91% of the vehicles that received notifications were tested in 2022. A vehicle must pass inspection (or receive a waiver) before it can be registered in the state. This parameter is different than the program compliance rate which is based on outcomes of vehicles that have been tested.

TABLE 15 - (D)(1)(ii) ESTIMATED NUMBER OF VEHICLES SUBJECT TO I/M THAT WERE TESTED

Parameter	2022 Value
# of Notification Letters	1,017,058
# of Vehicles Tested	922,563
% of Vehicles Tested	91%

Waivers Issued

Another aspect related to enforcement is the number of waivers issued. Program effectiveness is inversely proportional to the waiver rate. As Table 6 in Section 3 showed, only 0.20% of the vehicles that failed received waivers, indicating that the waiver program is not being abused. Connecticut’s I/M SIP committed to a waiver rate of 1% or less.

6.4. Registration File Audits and Compliance with Deadlines

40 CFR 51.366 (d)(2)(ii): The number of registration file audits, number of registrations reviewed, and compliance rates found in such audits.

Connecticut’s SIP commits the State to achieve a 96% compliance rate for the vehicles subject to I/M requirements. Registration audits indicate that over 99% of the vehicles being registered comply with I/M requirements.

Registration Audits

Connecticut audits each registration for I/M compliance. Table 16 presents the number of registration applications that were mailed to DMV that were denied for failure to meet the requirement of the I/M program. In 2022, 273,058 renewal applications were sent to DMV and 5,575 were denied due to I/M compliance status. The result is a 98% compliance rate for vehicles that are in the process of being registered. Ultimately, 100% of the vehicles registered comply with I/M requirements.

TABLE 16 - (D)(2)(ii) REGISTRATION AUDITS – 2022

Registrations Checked	Denied Registration Renewal Count	Percent of Mail In Registrations that Comply
273,058	5,575	98.0%

6.5. Motorist Time extensions

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

Table 17 presents the number of time extensions and late fee assessments in 2022. Table 18 presents a breakdown of tests relative to testing deadlines.

TABLE 17 - (D)(1)(v) TIME EXTENSIONS AND LATE FEES

Parameter	Annual Total
Time Extension and Other Exemptions	2,008
# of Late Fees Assessed	121,519
Late Fees (\$)	2,430,380

TABLE 18 - (D)(3)(i). # AND % OF SUBJECT VEHICLES THAT WERE TESTED BY THE INITIAL DEADLINE

Deadline	# of Vehicles	% of Vehicles
On Due date	143,721	16.01%
0-120 Days Early	463,714	51.67%
1-30 days late	79,203	8.83%
31-60 days late	56,395	6.28%
61-90 days late	19,371	2.16%
91-120 days late	10,155	1.13%
> 120 days late	124,859	13.91%

6.6. Station Compliance Documents

40 CFR 51.366 (d) (1) (iii): The total number of compliance documents issued to inspection stations
(iv) The number of missing compliance documents

As mentioned In Section 4.8, In 2021, the Compliance Action Plan (CAP) was updated and issued to all active inspection stations.

6.7. False registrations

40 CFR 51.366 (d)(2) Registration denial based enforcement programs shall provide the following additional information:
(i): Registration denial based enforcement programs shall provide a report of the program's efforts and actions to prevent motorists from falsely registering vehicles out of the program area or falsely changing fuel type or weight class on the vehicle registration, and the results of special studies to investigate the frequency of such activity
(ii): The number of registration file audits, number of registrations reviewed, and compliance rates found in such audits

Preventing Circumvention of Connecticut's I/M Requirement

EPA requires states to implement measures that prevent motorists from avoiding I/M requirements by falsely registering vehicles out of the program area, or falsely changing fuel type or weight class on the vehicle registration. EPA also requires states to report on results of special studies to investigate the frequency of such activity. As shown below, it's very difficult for vehicle owners to circumvent Connecticut's I/M requirements.

- **Circumventing I/M Tests in Connecticut** – Circumventing I/M tests in Connecticut is nearly impossible. First, Connecticut implements the I/M program on a statewide basis. Second, Connecticut tests all fuel types, including hybrids, so motorists cannot avoid inspection by

changing fuel type, unless the fuel type of the vehicle is inadvertently categorized as “electric”. It may also be possible to avoid inspection by registering the vehicle with a GVWR greater than 10,000 lbs. The majority of vehicles registered with an incorrect GVWR are those where the vehicle owner registers the vehicle at a lower weight to avoid the added registration expense and would not be emission eligible (>10,000 lbs.) with their corrected weight.

- **Detection and enforcement against motorists that falsely change vehicle classifications to circumvent program requirements** – Historically, 99% of the vehicles subject to emissions testing in Connecticut are in the Passenger, Commercial or Combination classifications. Incidents of motorists falsely modifying a vehicle’s registration classification to an emissions-exempt class are rare, most likely because of the added expense, documentation and inspection requirements.
- **Vehicles registered in Connecticut that are operated out-of-state** – DMV does not allow blanket extensions for vehicles registered in Connecticut that are operated out-of-state. Vehicles that are out-of-state at the time they are due for their emissions testing are allowed to apply for an extension. Applicants need to provide evidence that the vehicle is physically not present in Connecticut. This is done by means of a VIN verification form (CT form #AE-81) being completed by a law enforcement authority in the state where the vehicle is physically located. This completed VIN verification form along with a written request by the motorist is submitted to our office for processing for the appropriate time extension. Additionally, DMV accepts passing emission test results from states that operate an I/M program using the same pass/fail criteria.

As noted above in Section 6.4, Connecticut reviews every registration application for evidence that the motorist complies with inspection requirements. In 2022, 273,058 renewal applications were sent to DMV and 5,575 were denied due to I/M compliance status. This means that 98% of the registration requests complied with I/M requirements when mail renewals were processed. These compliance rates are similar to those reported in previous year’s reports.

6.8. Inapplicable Requirements

The following requirements from 40 CFR 51.366 (d) regarding enforcement reports are not applicable to Connecticut’s I/M program:

- 40 CFR 51.366 (d)(1)(vi)
- 40 CFR 51.366 (d)(3)
- 40 CFR 51.366 (d)(4)

7. Program Improvements in 2022

In 2022, the following improvements were made to Connecticut’s I/M program:

1. Improvements to Certified Testing Inspector training
 - In 2021, online CTI Computer Based Training was implemented. In 2022, an online exam was made available.

- Planning began to train students in the Automotive Program at CT Vocational Schools to become CTIs. Providing training in schools should improve the number of available inspectors and make the emissions inspection program more successful in future years.
 - 475 inspectors received online exams/certifications/training sessions.
 - On December 8, 2022, Opus, DMV, and CT Technical Education and Careers met and identified key components and obstacles that needed to be addressed to ensure the program would be a success for all parties. Issues addressed include:
 - Minimum age requirement of 18 years old.
 - VIN Verification – Tech schools would prefer not having to do this
 - Tech schools not able to have a dedicated inspection bay
 - Tech schools not able to have a dedicated waiting room
 - Inspection days – Tech schools will only be able to test 180 days of the school year
 - Tech schools do not want to post any external signs
 - Inspections will only take place by appointment
 - No wait time requirement
 - Test Authorization purchases by PO from Opus
 - Tech schools current Insurance policies must be sufficient (They have workers comp for the teachers and Garage Keepers)
2. Opus began training DMV staff how to use Amazon Quicksight to query the emissions database, but training was suspended. In 2023, Opus plans to train DMV how to use another tool called DOMO.
 3. When the program began in November 2021, all station automatic lockouts were turned off while stations learned how to use the new equipment. In January 2022, station lockouts were turned on. In 2022, 60 stations received a temporary lock. No stations were permanently locked out, i.e., terminated from the program.
 4. Higher than normal oversight and monitoring of the new to Connecticut Opus program was done. Weekly meetings were held to discuss issues and solutions. Weekly program status reports were prepared by Opus for DMV.EPA Comments

The following addresses EPA’s comments in a letter dated June 23, 2023 on Connecticut’s 2020-2021 Biennial I/M Program Evaluation Report.

- 1) EPA encourages states to improve I/M program performance by reducing the number of vehicles with no known final outcome.

On page 12 of the annual report, Connecticut illustrates that over 36% of initially failed vehicles have no known final outcome. This is a significant increase from past years where Connecticut exhibits that approximately 23% of initially failed vehicles have no known final outcome. EPA continues to be concerned with I/M programs where the percentage of initially failed vehicles with no known final outcome exceeds the national average of approximately 18%.

EPA recommends that states with I/M programs consider developing a Vehicle Identification Number (VIN)-based database for vehicles that fail an I/M test and do not receive a final pass. This data may possibly already be collected and would just need to be filtered from the inspection database when the time comes. Furthermore, we suggest Connecticut explore sharing this data with other states. Potential reciprocity agreements that allow sharing data among states may further reduce the number of vehicles with no known outcome.

Response: The increase in the no known final outcome is due to the guidance changes. Previously (2020 and prior) the “Initial” and “Retests” reported were a count of tests. So, if a vehicle had multiple tests in the reporting period it would have been counted multiple times. Also, the retest count included retests on vehicles that had no initial test within the reporting period but had retests on a prior year initial test. Counting multiple passing retests or retests with no initial test within the reporting period reduces the number of vehicles with no known final outcome because the passing retest count would have been overstated.

The new guidance states that “Vehicles tested multiple times can be counted no more than once per test type”. From 2021 forward, a vehicle is only counted once from the first initial failing inspections to determine if the vehicle ever passed or was waived. So, if a vehicle had multiple initial and/or retests, it is only counted once in the initial failed and passing retests.

Example of the difference with the new guidance on the 2020 EPA Reporting:

- Original report: 58,836 Passing Retests
- New report: 50,380 Passing Retests

The difference between the original report and the new report are from counting multiple passing retests or retests that had no initial test within the reporting period but had a retest on a prior year’s initial test. Of the 26,121 vehicles with no known final outcome (NKFO), 24,334 of them had an initial inspection with no retest and 1,787 had retests which failed.

Connecticut DEEP and DMV have been working with the new program contractor Opus Inc. to identify measures to reduce the instances of NKFO. These include enhanced messaging for individuals who fail their initial test. The new program provides sticker reminders for retests, new text messaging reminder options and improved email reminders.

Together these changes along with performing an analysis of failure outcomes for the first four months of the following year following EPA’s guidance and has improved efforts to educate drivers who fail their first test.

As for vehicles that may leave the state, Connecticut lacks the resources to identify vehicles that are registered out-of-state due to emissions non-compliance or for any other reason. Connecticut looks forward to EPA’s leadership in developing partnerships with other jurisdictions to improve the program by addressing regional I/M non-compliance.

- 2) For future biennial reports, EPA recommends Connecticut include a summary of the testing results exhibited by Connecticut’s implementation of its on-road testing program to meet the on-road testing requirements of 40 CFR 51.371. In addition, future biennial

reports should also include a summary of how Connecticut is meeting the program evaluation requirements of 40 CFR 51.353(c).

Guidance documents related to both of these biennial reporting requirements can be found at EPA's website at:

<https://www.epa.gov/state-and-local-transportation/vehicle-emissions-inspection-and-maintenance-im-policy-and-technical>

Response: Opus will be performing the 0.5% testing program in 2023 as required by 40 CFR 51.353(c). The 2022-23 Biennial Report will include a summary of these tests.

- 3) Historically, Connecticut's annual I/M report included as "Appendix B" a spreadsheet with more detailed QA/QC data to support the annual I/M report. The 2021 program data report (i.e. the submittal due July 2022) did not include the more detailed QA/QC spreadsheet as an Appendix. EPA recommends Connecticut continue to include the additional details to assist with appropriately meeting the reporting requirements of 40 CFR 51.366(c).

Response: A summary of QA/QC data is included on the last worksheet of Appendix A.

- 4) Connecticut should ensure the datasets referenced in future annual I/M reports are accurate and consistent. For example, Page 7 of the Annual I/M report lists that in 2021, there were a total of 1,057,677 vehicles inspected by the Connecticut I/M program; however, Appendix A Table "a1" reports this number as 1,057,682 and Appendix A Table "a2i" reports this number as 1,036,874.

Response: The 2022 report has been checked for inconsistencies. The difference between the 1,057,677 and the 1,057,682 are the 5 vehicles on the "a1" report that have an unknown vehicle type. In addition, the "a1" is not a test count but a vehicle count. This count per the guidance should include any vehicle that attempted an inspection, which includes attempted tests that were not completed.

8. Conclusions

Following are the key conclusions from this annual review of Connecticut's I/M program:

- Connecticut's I/M program correctly fails non-complying vehicles and strictly enforces I/M requirements:
 - Approximately 8.3% of vehicles failed their initial emissions test and 5.8% of these vehicles also failed their first retest in 2022. This is similar to failure rates in 2021.
 - DMV and Opus perform extensive quality assurance checks on the program. Evaluation of these quality assurance data demonstrates that the program performs accurate inspections.
 - Connecticut's anti-fraud efforts are models for other I/M programs. Connecticut conducted audits at all stations as part of an extensive anti-fraud program. For example, Connecticut conducted 915 video surveillance audits and 291 covert audits during 2022. Covert audits addressed On-Board Diagnostics (OBDII), Pre-Conditioned Two Speed Idle (PCTSI) and diesel opacity inspection performance. In addition, DMV and Opus run extensive trigger reports.
- In 2021 Connecticut tendered a procurement for new I/M contract. The contract was awarded to Opus. Since Opus contract started November 1, 2021, Opus continues to implement improvements.