

Annual Report Year 2021

Rhode Island Motor Vehicle Inspection & Maintenance Program “Data Analysis and Reporting”

Prepared by:



Rhode Island
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Management

OFFICE OF AIR RESOURCES

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Table of Contents

1. Executive Summary	4
2. Significant Events	4
<u>Opus Inspection, Continued Program Manager of RI's Emission & Testing Program</u>	4
<u>On-Board Diagnostic (OBD) and Visual Emission Component Only.....</u>	4
<u>The Covid-19 Pandemic</u>	5
<u>Increased Number of Authorized Inspection Repair Stations (AIRS)</u>	5
<u>Increased Visual/Video Observation Enforcement.....</u>	5
<u>Roadside Evaluation of Program Effectiveness.....</u>	5
<u>Heavy Duty Inspection Program in Development.....</u>	6
<u>Bio-metric Log-on</u>	7
3. Annual Test Data Report	7
<u>Initial Test Results</u>	7
<u>Retest Test Results.....</u>	8
<u>On-Board Diagnostics Testing.....</u>	8
<u>OBD MIL Codes</u>	12
<u>Gas Cap Test.....</u>	12
<u>OBD Vehicles with No Know Final Outcome</u>	13
4. Waivers	14
6. Training.....	16
7. Quality Assurance.....	16
<u>Audit Types</u>	16
<u>Overt Visual Audits</u>	17
<u>Covert Vehicle Audits</u>	17
<u>Covert OBD Digital Auditing.....</u>	18
<u>Digital Biometric Authentication Finger Print Reader Audits.....</u>	18
<u>Audit Activity.....</u>	18
<u>Overt Station Audits</u>	18
<u>Remote Visual Audits.....</u>	18
<u>Covert Vehicle Audits</u>	18
<u>OBD Digital Auditing.....</u>	19
<u>Digital Biometric Authentication Finger Print Reader Audits.....</u>	19
<u>Audit Results</u>	19
8. Enforcement.....	20
<u>Documentation of Formal Counseling Program</u>	20
<u>Vehicles Subject to Inspection.....</u>	21
<u>Motorist Enforcement Measures.....</u>	22
<u>Sticker Based Enforcement.....</u>	22
<u>State Police and Municipal Police Enforcement.....</u>	24
<u>Registration Denial</u>	24
<u>Enforcement Against AIRS, Program Manager and DMV Personnel.....</u>	24
<u>Program Manager</u>	24
<u>Inspection Stations and Inspectors.....</u>	24
<u>Authorized Inspection and Repair Station (AIRS)</u>	25
<u>Inspectors.....</u>	25
<u>DMV Auditors and Other Personnel</u>	25
9. Public Outreach.....	25

Appendices

Appendix A:	RI Emissions & Safety Program 2021 On-Road Vehicle Survey
Appendix B:	Opus Reporting Services/RI EPA Reports Data
Appendix C:	Detailed Test Volume by Test Type, Model Year and Vehicle Type
Appendix D:	Initial Test Volume by AIRS, Model Year and Vehicle Type
Appendix E:	Detailed Initial OBD MIL Codes by Model Year and Vehicle Type
Appendix F:	Detailed Fuel Cap Test Results by Model Year and Vehicle Type
Appendix G:	OBD Vehicles with No Known Final Outcome Summaries
Appendix H:	Initially Failed Vehicles Receiving a Waiver by Make and Model Year
Appendix I:	Audit Types
Appendix J:	Rhode Island Motor Vehicle Inspection/Maintenance Program Regulation Division of Motor Vehicles Safety and Emissions Control Regulation No. 1
Appendix K:	Vehicles Subject to Inspection
Appendix L:	Sticker Reconciliation Summary and Duplicate Sticker Report
Appendix M:	Notice and Demand Form and Activity
Appendix N:	Registration Denial/Notice of Action Form
Appendix O:	Formal Counseling Letter and Hearing Report- Station
Appendix P:	Hearing Report- Inspector
Appendix Q:	RI Emissions Safety Testing Newsletter

1. Executive Summary

The Rhode Island Motor Vehicle Inspection/Maintenance (I/M) Program was implemented in January of 2000. An annual report to the EPA is required under 40 CFR Part 51 § 51.366 "Data Analysis and Reporting". This report has been developed to comply with that requirement for the period from January 1, 2021 to December 31, 2021.

The report includes details of the I/M Program activities, including inspection data; description of the enforcement methods employed; outline of quality control and quality assurance program mechanisms used, along with a description of significant events.

The Rhode Island I/M program requires a biennial inspection of subject vehicles in a test-and-repair system. The number of Authorized Inspection Repair Stations (AIRS) has remained steady during the duration of the program. However, at the end of December 2021, 346 stations were active in the network, throughout the state, including those at the Division of Motor Vehicles (DMV) and the facility run by Opus Inspection, the Program Manager. Vehicles are tested using two methods: on-board diagnostic (OBD) testing and Visual Emission Component Checks.

DMV and the Department of Environmental Management (DEM) are jointly responsible for the administration of the Rhode Island I/M Program. DMV is responsible for the operation of the program and DEM is responsible for the environmental aspects, including the requirement to submit this report. The majority of vehicles tested during 2021 were tested using OBD. Approximately 99% of the fleet was subjected to OBD testing, whereas 1% of the fleet was subjected to a Visual Emission Component Test.

2. Significant Events

Opus Inspection, Continued Program Manager of RI's Emission & Testing Program

Opus (Program Manager) Inspection continues to serve as the Program Manager of Rhode Island's Emission & Testing Program. The contract is from January 1, 2018 through December 31, 2025.

On-Board Diagnostic (OBD) and Visual Emission Component Only

Since March 2017, Opus Inspection continues to perform only On-Board Diagnostic (OBD) testing on vehicles. In addition to the OBD, DMV continues a Visual Emission Component Check for the vehicles that are 1996 or older that are still required to be tested.

The Covid-19 Pandemic

Program years 2020 and 2021 saw significant changes and delays to the I/M testing programs across the country due to the effects of Covid-19. Rhode Island's program required changes to testing schedules and testing methods.

The pandemic impacted our program in several ways, such as not meeting the target number of audits or being unable to conduct enforcement actions in a timely manner. In 2021, the program started to normalize and the number of inspections increased from the previous year.

Increased Number of Authorized Inspection Repair Stations (AIRS)

It was decided at the beginning of the new contract that DMV would increase the number of inspection stations. Growing from 291 (2017) to up to 346 (2021). This number does not include six (6) fleet stations nor two (2) stations that are in the process of leaving the program. The stations were added to increase the availability of testing facilities throughout the state, but also to respond to the increase in inspections done due to the computer software upgrade that occurred in 2017.

Increased Visual/Video Observation Enforcement

Since 2018, the program has implemented increased Video Enforcement, thus observing the inspector performance and to make sure that inspections are being conducted in the bay. Opus Inspection continues to conduct this enforcement and check inspection videos. Roughly 25 videos were checked a month at random, prior to the pandemic. Due to the success of visual/video observations, the program manager decided to increase visual audits to five stations per day and five camera inspections per station. This increase in visual/video observations allowed for remote troubleshooting of any technical issues. These increased visual audits began after March 15th, 2020. Visual observations have remained a primary source of enforcement. In 2021, covert and overt audits resumed.

Roadside Evaluation of Program Effectiveness

During June - July of 2021, an evaluation of program effectiveness was conducted using remote sensing. This on-road study was conducted by Opus Inspection. The on-road survey data was collected on 5 days during the June 24 through July 14, 2021, using a RSD-4600 on-road remote sensing device van that measured exhaust emissions of vehicles as they drove by. Emissions were successfully measured and plates were visible on 15,424 vehicles with 75% of these having Rhode Island plates.

The RSD-4600 system measures hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NOx) and smoke. Average emissions of the on-road light-duty vehicles matched to Rhode Island registrations were 28 ppm HC, 0.05 % CO and 72 ppm NO.

The following table indicates the reductions and increases in CO, HC, and NO beginning in 1998 thru 2011, 2015 and 2021.

Table I: Roadside Evaluation

Study Valid Readings Averages of CO, HC, & NO				
Study Year	Number of Vehicles	Carbon monoxide (CO)	Hydrocarbon (HC) Parts per million (ppm)	Oxides of Nitrogen (NO) Parts per million (ppm)
1998	36,278	0.49%	166 ppm	1,020 ppm
2001	38,708	0.43%	40 ppm	332 ppm
2002	8,152	0.38%	30 ppm	232 ppm
2003	11,163	0.33%	36 ppm	206 ppm
2004	27,552	0.14%	39 ppm	209 ppm
2006	57,794	0.13%	16 ppm	222 ppm
2007	28,565	0.13%	22 ppm	227 ppm
2008	25,575	0.14%	22 ppm	188 ppm
2009	27,731	0.12%	25 ppm	176 ppm
2010	22,452	0.12%	16 ppm	131 ppm
2011	25,747	0.10%	15 ppm	138 ppm
2015	28,786	0.08%	9 ppm	86 ppm
2021	15,424	0.05%	28 ppm	72 ppm

The results of the 2021 study indicate that the average CO and NO levels have continued to decrease. The results of the study also show that older vehicles have higher emissions for HC and NO pollutants that contribute to the formation of ozone. On average, 2000 & older models were between three and six times dirtier than the 2011 and newer models. Vehicle models 2005 & older contributed only 10% of Vehicle Miles Traveled (VMT) but still accounted for 21% of on on-road HC, 25% of CO and 31% of NO. (see Appendix “A” for RI Emissions & Safety Program 2021 On-Road Vehicle Survey)

Heavy Duty Inspection Program in Development

As part of the 2017 RFP, the State required the creation of a Heavy-Duty Inspection Program. This program is still under development. The anticipated rollout date for the heavy-duty program is between 2023-2024. This includes finalization of the HD I&M Regulations, software development, equipment roll-out to the stations, training of inspectors, and public outreach.

<http://webserver.rilin.state.ri.us/Statutes/TITLE31/31-47.2/INDEX.HTM>

Bio-metric Log-on

Effective February 1st, 2019, inspectors were no longer be able to log on using a pin code and will be required to use the biometrics to log onto the analyzer to perform a vehicle inspection. This has also created a new type of digital auditing using fingerprints instead of passcodes mentioned in section 7, Quality Assurance. However, due to the pandemic, biometric login was temporarily suspended from March 15, 2020 – Spring 2021. In June 2021, the biometric login requirement was reinstated.

3. Annual Test Data Report

This section reports vehicle inspection data for January 1, 2021 to December 31, 2021. Vehicles subject to the inspection requirement include all light-duty vehicles, 25 years old and newer, up to 8,500 pounds GVWR. Vehicles over 25 years of age are required to undergo inspection but the results relating to emissions are advisory and compliance with the standards is voluntary. New vehicles, less than two years old that have not exceeded 24,000 miles, are exempt from testing.

The data for this report was submitted by the Program Manager for all the inspection tests performed during 2021. The data was then filtered using a process to eliminate inspection results related to the State's safety inspection program which is performed concurrently with the emissions program (see Appendix "B" for Opus Inspection Reporting Services/RI EPA Reports Data).

Initial Test Results

The following table provides a breakdown of initial inspections by test type.

Table II: Initial Test Results

Tests	Total	Pass	Fail	% Fail
Initial OBD Tests	402,605	381,903	20,702	5.14%
Initial OBD Diesel	1,551	1,509	42	2.71%
Visual Comp Check	5,220	5,208	12	0.23%
Total Initial Tests	409,376	388,620	20,756	5.07%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

During 2021, 346 AIRS participated in the I/M Program. There were 409,376 initial tests conducted in 2021. The number of initial test failures was 20,756. This result is an overall initial failure rate of 5.07%.

Retest Test Results

Table III: First Retest Results by Test Type

	Total	Pass	Fail	% Fail
OBD First Retests	16,488	15,009	1,479	8.97%
OBD Diesel First Retests	26	20	6	23.08%
Visual Comp Check Retests	15	15	0	0.00%
Total First Retests	16,529	15,044	1,485	8.98%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

Table IV: Subsequent Retest Results by Test Type

	Total	Pass	Fail	% Fail
OBD Subsequent Retests	1,265	996	269	21.26%
OBD Diesel Subsequent Retests	4	4	0	0.00%
Visual Comp Check Subsequent Retests	0	0	0	0.00%
Total Subsequent Retests	1,269	1,000	269	21.20%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test value by AIRS, model year and vehicle type)

The overall failure rate for Initial, First Retest, and Subsequent Retest is slightly higher this year than it was last year. This is most likely due a higher volume of inspections as well as increased compliance from previous years.

On-Board Diagnostics Testing

An on-board diagnostic system test is an inquiry of the vehicle's on-board computer. An OBD test is considered a failure when:

- Current Diagnostic Trouble Codes are indicated and the Malfunction Indicator Light (MIL) is commanded or,
- MY 2001 and newer vehicles, more than one monitor in a vehicle's on-board computer is not set as ready; or,
- MY 1996-2000 vehicles, more than two monitors in a vehicle's on-board computer are not set as ready.

Before the transient testing was phased out beginning January 2017 thru March 2017, if any OBD vehicle was not communicating with the RI analyzer, the vehicle would undergo the appropriate exhaust emission test. Beginning in April 2017, if the vehicle's On-Board Diagnostic testing (OBD) does not communicate with the RI analyzer the DMV presented the owner of the vehicle a diagnostic waiver in lieu of a tailpipe test.

The following table provides a breakdown of the initial OBD tests.

Table V: OBD Initial Test Results

Tests	OBD Total Tests	OBD Pass	OBD Fail	OBD Fail %	MIL Pass	MIL Fail	MIL Fail %	Monitor Ready Pass	Monitor Ready Fail	Monitor Ready Fail %
Passenger Vehicles	315,252	299,919	15,333	4.86%	310,219	4,720	1.50%	303,798	11,141	3.53%
Trucks	87,353	81,984	5,369	6.15%	85,551	1,713	1.96%	83,338	3,926	4.49%
Total	402,605	381,903	20,702	5.14%	395,770	6,433	1.60%	387,136	15,067	3.74%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

Table VI: OBD First Retest Test Results

Tests	OBD Total Tests	OBD Pass	OBD Fail	OBD Fail %	MIL Pass	MIL Fail	MIL Fail %	Monitor Ready Pass	Monitor Ready Fail	Monitor Ready Fail %
Passenger Vehicles	12,165	11,077	1,088	8.94%	11,886	255	2.10%	11,287	854	7.02%
Trucks	4,323	3,932	391	9.04%	4,221	99	2.29%	4,000	320	7.40%
Total	16,488	15,009	1,479	8.97%	16,107	354	2.15%	15,287	1,174	7.12%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

Table VII: OBD Subsequent Retest Test Results

Tests	OBD Total Tests	OBD Pass	OBD Fail	OBD Fail %	MIL Pass	MIL Fail	MIL Fail %	Monitor Ready Pass	Monitor Ready Fail	Monitor Ready Fail %
Passenger Vehicles	866	730	136	15.70%	831	32	3.70%	755	108	12.47%
Trucks	399	266	133	33.33%	316	82	20.55%	292	106	26.57%
Total	1,265	996	269	21.26%	1,147	114	9.01%	1,047	214	16.92%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

The following table provides a comparison of the (Non-Diesel) OBD Tests.

Table VIII: OBD (Non-Diesel) Comparison Chart

Tests	Total Tests	OBD Pass	OBD Fail	OBD Fail %	MIL Pass	MIL Fail	MIL Fail %	Monitor Ready Pass	Monitor Ready Fail	Monitor Ready Fail %
Initial Test										
Passenger	315,252	299,919	15,333	4.86%	310,219	4,720	1.50%	303,798	11,141	3.54%
Truck	87,353	81,984	5,369	6.15%	85,551	1,713	1.96%	83,338	3,926	4.50%
Total	402,605	381,903	20,702	5.14%	395,770	6,433	1.60%	387,136	15,067	3.74%
First Retest										
Passenger	12,165	11,077	1,088	8.94%	11,886	255	2.10%	11,287	854	7.03%
Truck	4,323	3,932	391	9.04%	4,221	99	2.29%	4,000	320	7.41%
Total	16,488	15,009	1,479	8.97%	16,107	354	2.15%	15,287	1,174	7.12%
Subsequent Test										
Passenger	866	730	136	15.70%	831	32	3.71%	755	108	12.51%
Truck	399	266	133	33.33%	316	82	20.60%	292	106	26.63%
Total	1,265	996	269	21.26%	1,147	114	9.01%	1,047	214	16.92%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

A total of 402,605 OBD non-diesel vehicle tests were initially conducted using OBD in 2021. This represents 98.35% of all initial vehicle tests. The overall failure rate was 5.14%. The OBD MIL produced a 1.60% failure rate and monitor readiness accounted for a 3.74% failure rate.

As the above chart indicates there were 16,488 OBD non-diesel vehicle re-tests with an overall failure rate of 8.97%. There were 1,265 OBD non-diesel vehicle subsequent tests, of which 269 were still failures, an overall failure rate of 21.26%.

Diesel OBD Testing

The following tables provide a breakdown of initial diesel OBD tests on passenger vehicles and trucks.

Table IX: Diesel OBD Initial Test Results

Tests	OBD Diesel Total Tests	OBD Diesel Pass	OBD Diesel Fail	OBD Diesel Fail %	OBD Diesel MIL Pass	OBD Diesel MIL Fail	OBD Diesel MIL Fail %	OBD Diesel Monitor Ready Pass	OBD Diesel Monitor Ready Fail	OBD Diesel Monitor Ready Fail %
Passenger Vehicles	1,253	1,220	33	2.63%	1,220	30	2.39%	1,250	0	0.00%
Trucks	298	289	9	3.02%	289	8	2.68%	297	0	0.00%
Total	1,551	1,509	42	2.71%	1,509	38	2.45%	1,547	0	0.00%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

Table X: Diesel OBD First Retest Test Results

Tests	OBD Diesel Total Tests	OBD Diesel Pass	OBD Diesel Fail	OBD Diesel Fail %	OBD Diesel MIL Pass	OBD Diesel MIL Fail	OBD Diesel MIL Fail %	OBD Diesel Monitor Ready Pass	OBD Diesel Monitor Ready Fail	OBD Diesel Monitor Ready Fail %
Passenger Vehicles	22	17	5	22.73 %	17	5	22.73%	22	0	0.00%
Trucks	4	3	1	25.00 %	3	1	25.00%	4	0	0.00%
Total	26	20	6	23.08 %	20	6	23.08%	26	0	0.00%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

Table XI: Diesel OBD Subsequent Retest Test Results

Tests	OBD Diesel Total Tests	OBD Diesel Pass	OBD Diesel Fail	OBD Diesel Fail %	OBD Diesel MIL Pass	OBD Diesel MIL Fail	OBD Diesel MIL Fail %	OBD Diesel Monitor Ready Pass	OBD Diesel Monitor Ready Fail	OBD Diesel Monitor Ready Fail %
Passenger Vehicles	3	3	0	0.00%	3	0	0.00%	3	0	0.00%
Trucks	1	1	0	0.00%	1	0	0.00%	1	0	0.00%
Total	4	4	0	0.00%	4	0	0.00%	4	0	0.00%

(see Appendix "C" for detailed test volume by test type, model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

OBD MIL Codes

Table XII: OBD MIL Codes

OBD Tests	MIL Commanded On No Codes Stored (Fail)	MIL Not Commanded On Codes Stored (Fail)	MIL Commanded On Codes Stored (Fail)	MIL Not Commanded On Codes Stored (Pass)
Passenger Vehicles	0	14,825	4,720	294,796
Trucks	0	4,793	1,713	80,529
Total	0	19,618	6,433	375,325

(see Appendix "E" for detailed initial results for OBD MIL codes by model year and vehicle type and Appendix "D" for detailed initial test volume by AIRS, model year and vehicle type)

As the above table indicates there were no OBD vehicles tested that exhibited the "MIL Commanded On" that did not have a code stored. All these vehicles tested had codes stored when the Malfunction Indicator Lamp (MIL) was commanded on. There were 19,618 vehicles tested with the "MIL not Commanded On" and codes were stored. There were 6,433 vehicles tested with the "MIL Commanded On" and the codes were stored. There were 375,325 vehicles tested with the "MIL not Commanded On", and no codes were stored, which resulted in the vehicle passing the test.

Gas Cap Test

The gas cap test is conducted on all non-OBD vehicles (Model Year 1995 and older). The following table indicates the results of the gas cap results.

Table XIII: Initial Fuel Cap Results

Fuel Cap Tests	Total	Pass	Fail	% Fail
Passenger Vehicles	4,024	4,023	1	0%
Trucks	1,334	1,332	2	0%
Total Initial Tests	5,358	5,355	3	0%

(see Appendix "F" for detailed fuel cap results by model year and vehicle type and Appendix "D" for detailed initial test volume by model year and AIRS)

OBD Vehicles with No Know Final Outcome

Table XIV: OBD Vehicles with No Known Final Outcome

OBD Initial Fail Test Results	Passenger Vehicles	Truck Vehicles	Total OBD Initial Failures
OBD Initial Fail Tests	15,333	5,369	20,702
OBD Diesel Initial Fail Test	33	9	42
OBD Total Initial Fail Tests			20,744
OBD First Retest Pass Results			Total OBD Retest Pass Results
OBD First Pass Retests	11,077	3,932	15,009
Diesel OBD First Pass Retests	17	3	20
Total OBD First Retest Pass			15,029
OBD Subsequent Pass Results			Total OBD Subsequent Pass Results
OBD Subsequent Pass Retests	730	266	996
OBD Diesel Subsequent Pass Retests	3	1	4
Total Subsequent Retest			1,000
OBD Initial Fail Test Results	Vehicles		
Totals			
OBD Total Initial Failures	20,744		
OBD First Retest Pass	-15,029		
OBD Subsequent Retest Pass	-1,000		
Vehicle Tested within Three Months of Year-End	-960		
OBD Waivers Issued during 2021	-424		
Total OBD Vehicles with No Known Final Outcome	3,331		
Percentage of Total OBD Vehicles with No Known Final Outcome	16.06%		

As the above table indicates, there were a total of 20,744 initial OBD vehicle test failures during 2021. There were 15,029 OBD vehicle tests where the vehicle passed the first retest, a total of

1,000 OBD vehicle tests that passed the subsequent test, a total of 960 vehicles tested within three months of year-end, and the DMV issued 424 OBD waivers.

In 2021, there were a total of 3,331 OBD vehicles with no known final outcome, which results in 16.06% of OBD vehicles with no known final outcome. (see Appendix "G" for OBD vehicles with no known final outcome)

These 3,331 vehicles may represent vehicles:

- Inspected during 2021, failed and still have not returned for an inspection before April 1, 2022
- have been moved out of Rhode Island, or
- have been scrapped, or are illegally operating with expired inspections

4. Waivers

In Rhode Island, four primary different types of waivers are available if a vehicle fails the emissions test and a retest. The waiver types are:

- A diagnostic waiver applies to vehicle owners whose vehicles have all emission control devices in place and operating and no additional repairs are reasonably possible, or because they are unable to get their vehicle repaired because the necessary emission parts are no longer available or no longer manufactured.
- A repair cost limit waiver is available for vehicle owners if the vehicle failed the emission test, the owner has spent a minimum of \$700 on emission-related parts and/or labor (labor must be performed by a CIRT to qualify), and the vehicle still does not pass.
- A repair time delay waiver is available for vehicle owners who can prove financial hardship.
- A "Block Island" waiver was added in 2018 because the program phased-out dynamometer testing. Due to the size of Block Island, and the speed requirements of a monitor reset, any car located there cannot have its monitors reset and no longer can have the transient test to use instead. Therefore, these vehicles are issued a waiver if the vehicle failed due exclusively to monitors being "Not Ready", the MIL is functional but not illuminated and there are no DTCs present.

In 2021, there were a total of 424 waivers issued: 104 repair cost waivers, 90 repair time-delay waivers, 175 diagnostic waivers, and 55 "Block Island" waivers were issued. The overall 2021 waiver rate is 2.04%. (see Appendix "H" for Waivers)

Table XV: Waivers - Year by Year Comparison

Year	Number of Failed Vehicles	Waivers Granted	Waiver Rate
2001	21,223	440	2.07%
2002	31,473	219	0.70%
2003	32,152	221	0.69%
2005	28,585	151	0.53%
2006	21,923	96	0.44%
2007	18,174	70	0.39%
2008	17,814	53	0.30%
2009	27,241	149	0.55%
2010	24,458	125	0.51%
2011	21,009	137	0.65%
2012	20,000	91	0.46%
2013	18,806	83	0.44%
2014	19,545	78	0.40%
2015	19,765	108	0.55%
2016	18,896	95	0.50%
2017	17,258	233	1.35%
2018	18,399	401	2.18%
2019	20,439	412	2.02%
2020	15,389	212	1.38%
2021	20,744	424	2.04%

Since 2001 the waiver rate has remained below 3%, potentially due to the continued training seminars and OBD training, resulting in improved repair effectiveness. Additionally, DMV continues to follow the strict guidelines defined in Rhode Island Motor Vehicle Safety and Emissions Control Regulation No.1, section 1.11.1 Waiver Requirements and Conditions.

Starting in 2018, the increase in the total number of waivers granted has been due to (1) the addition of the “Block Island” waivers, and (2) DMV increased compliance enforcement.

6. Training

Rhode Island has two levels of technician training in the I/M Program. The first level is the Certified Inspection Technician (CIT). The second level is the Certified Inspection Repair Technician (CIRT).

There are two steps a technician must complete to become a CIT. The first step is to complete the training provided by DMV for the safety inspection portion of the I/M Program. The second step required is a four-hour course provided by the Program Manager, training the CIT for the emissions inspection portion of the I/M Program. The CIT is required to pass an exam before being certified. CITs are certified only to perform vehicle safety and emission inspections. The CITs certification is valid for two years.

CIRTs perform both inspections and repairs for motor vehicle safety and emissions issues. Only CIRTs can perform repairs whose costs qualify for the repair cost waiver. CIRTs are required to first obtain their CIT certification, then pass the RI CIRT written exam or possess an Automotive Service Excellence (ASE) Level 1 Advanced Engine Performance license. If a CIRT does not have their ASE L1 license, they have two years to obtain it to continue certification.

At the end of December 2021, there were a total of 1,350 active technicians in the network, including CITs and CIRTs.

7. Quality Assurance

Inspection Network Participation

At the end of December 2021, 346 inspection stations representing 348 lanes were in the inspection network throughout the state. Two (2) stations have an additional lane at each facility, which includes Inskip Automall and Bald Hill Realty Dodge and Kia. The number of AIRS remained steady around 290 until 2018. Due to program updates, it was decided that more stations should be added. The decision was also made to have both public and fleet stations; anyone can visit a public station, while fleet stations are meant to be convenient for certain fleets, one example being the Providence Police Department. 348 stations are public stations, while six (6) are fleet stations. We are still adding public stations from our waitlist. The continued level of participation is an indicator of the good health of the program.

Audit Types

Every I/M program is required to have an on-going quality assurance program designed to discover, correct, and prevent improper testing, fraud, waste, and abuse of the system. In addition, the quality assurance program should help the State assess whether or not inspection procedures are being properly implemented and are adequate to address the emissions problems. Rhode Island's quality assurance program primarily

focuses on audits of the inspectors and inspection process. Overt, covert and computer auditing are employed in the Rhode Island Emissions & Safety Inspection Program. Auditing is conducted by DMV and the Program Manager.

The Program Manager performs: overt visual audits, covert visual audits, covert vehicle audits, OBD readiness monitor mismatches, and all OBD parameters. The results of these audits and any irregularities discovered are noted and reported to DMV and DEM via e-mail notifications.
(see Appendix "I" for Audit Types)

Overt Visual Audits

During overt visual audits, conducted by the DMV and Program Manager, the auditor's presence is known by the inspector and facility management/owners. The audit consists of checking the reliability of the testing equipment, observation of an inspection, the legibility of the stickers and missing and or voided stickers. The voided stickers are picked up and stored in a secure location with the Program Manager. If stickers are missing, the AIRS are required to fill out a police report and submit it to DMV. DMV personnel will follow up on the report.

Remote Visual Audits

Audits are performed with a remote review of the five (5) most recent tests at inspection stations to ensure the proper operation of the streaming camera used to record inspections. The camera which collects an image of the Inspector performing the inspection is audited to verify the required images taken by the Inspector with the handheld camera meet program requirements. This process resulted in advanced troubleshooting of technical issues by alerting the Program Manager of any stations that needed camera repairs or assistance with network issues.

Covert Vehicle Audits

The DMV and the Program Manager rigged the covert vehicle to fail emissions and safety inspections. The emissions failures were set to fail an on-board diagnostics (OBD) emissions test by covering the Malfunction Illumination Light (MIL) bulb with tape, and by cutting a wire to the Air/Fuel ratio sensor creating a Diagnostic Trouble Code (DTC).

The safety failures were set to fail by disabling the right front headlight, disabling the right rear taillight, and causing the ABS light to be on.

A baseline inspection was conducted by the DMV prior to the covert vehicle audit and compared to the results of the station inspection and a post-inspection confirmation audit.

Covert OBD Digital Auditing

The OBD covert digital auditing consists of an analysis of inspection data to uncover any irregularities and unusual testing patterns, including OBD VIN mismatches, OBD readiness monitor mismatches, and all OBD parameters. These inspection tests are scanned daily for any inconsistencies in the data. If any inconsistencies are found, a trigger is set resulting in an e-mail notification to the DEM and DMV for enforcement consideration.

Digital Biometric Authentication Finger Print Reader Audits

The digital authentication fingerprint reader audits consist of the program manager checking to see if the inspectors are logging on to the analyzer at their work stations using the digital biometric authentication fingerprint reader instead of logging on with their passwords.

Audit Activity

Overt Station Audits

The DMV and the Program Manager conducts overt visual audits to assure adherence to program procedures and regulations. The audit is a visual performance audit that consists of an observation of test procedures, observation of an inspection, inspection of the workplace, a check of AIRS signage and certificate posting, and an examination of testing records.

In 2021, the Program Manager was scheduled to complete 686 overt station audits. A total of approximately 705 overt audits were conducted by DMV and the Program Manager during 2021. The Program Manager completed 100% of the overt visual audits.

Remote Visual Audits

In 2021, video recordings captured every inspection on the local machines at all 348 AIRS. The Program Manager and DMV requested to review 6,980 video audits at stations during 2021, to see if there was fraudulent testing being performed. A total of 6,789 remote visual audits were performed. This was 97.26% of the yearly objective.

Covert Vehicle Audits

The Program Manager's yearly objective was to complete fifty (50) covert vehicle audits. During 2021, fifty (50) covert vehicle audits were conducted, which was 100% of the yearly objective.

OBD Digital Auditing

In 2021, the Program Manager reviewed 398 automated digital audits by scanning the VID (Vehicle Information Database) for any mismatches for OBD VIN (Vehicle Identification Number), OBD readiness monitor mismatches and all OBD parameters, along with one (1) data analysis audits at the request of DMV. These inspection tests are scanned daily for any inconsistencies in the data. If any inconsistencies are found, a trigger is set resulting in an e-mail notification to the DEM and DMV for enforcement consideration.

The enforcement of the I/M Program continues to increase as a result of this OBD Digital Auditing.

Digital Biometric Authentication Finger Print Reader Audits

In 2021, the Program Manager reviewed the data from the inspectors to make sure they were logging on to the analyzer at their workstation using the digital biometric authentication fingerprint reader instead of logging on with their passwords. This new requirement replaces the use of a password with a fingerprint. During 2021, the inspector compliance rate with the fingerprint readers started at 75% and increased to 97.61% by the end of the year. This was due to reinstating the mandatory use of the fingerprint reader in June.

Audit Results

No formal counseling took place during 2021 due to the covert audits happening during late Quarter 4 of 2021. The formal counseling and AIRS hearings are scheduled for 2022.

The DMV explained the rules and regulations pertaining to the violations and were reviewed by the technician and the responsible agent for the AIRS.

It was agreed that corrective action would be taken, and any future violations of this nature will be cause for administrative action against the AIRS and the CIT. The results were documented and put into their file.

The following table indicates the results of the Covert Vehicle Audits for 2021.

Table XVI: 2021 Covert Vehicle Enforcement Statistics

2021	Covert Vehicle Audits	Total Hearings AIRS	Official Warning Letter Issued to CITS	Official Warning Letter Issued to AIRS	Proper Inspection Letter Issued to CITS	Proper Inspection Letter Issued to AIRS	DMV Formal Counseling
2021	50	10	38	38	8	8	3
Total	50	10	38	38	8	8	3

The schedule of penalties calls for a first violation penalty of a minimum of ten-day suspension, a second violation requires a minimum of thirty days; the third and subsequent violations are subject to a suspension of authorization to inspect motor vehicles for a minimum of six months for each separate violation. In addition to the suspension penalties, the Administrator may, at his discretion, impose a fine of up to \$1,000.00 Reinstatement may be requested by the station owner at the end of a suspension period. The reinstatement shall be at the discretion of the hearing board or the Administrator. (see Appendix "J", DMV Safety and Emissions Control Regulation No. 1, section 1.16)

8. Enforcement

Documentation of Formal Counseling Program

The Documentation of Formal Counseling Program consists of the DMV Safety and Emission Control Office officially notifying the responsible AIRS and CIT of discrepancies identified during reviews of trigger reports generated through data analysis indicating possible fraudulent emissions inspections. Along with the notification, corrected documentation based on DMV inspection of the subject vehicle(s) is provided. The DMV Chief of Safety and Emissions and DMV officers meet with the responsible parties. The AIRS and CIT are provided the opportunity to explain why an improper vehicle inspection was performed. The Chief then explains to the responsible parties the rules and regulations pertaining to the violation, so inspection procedures can be corrected in the future.

The results are documented and signed by all parties and put into their file for the future. Any future violations will be cause for progressive administrative action against the AIRS and the CIT.

The following are the results of the Documentation of Formal Counseling Program by the DMV.

Table XVII: Documentation of Formal Counseling Program

2021 Documentation of Formal Counseling	AIRS	CIT	Violation	Documentation of Formal Counseling Results
November 8, 2021	Mw Auto Service	Miguel A. Urbaez	KOEO MIL test performed incorrectly, Rejected front brake pads for below 1/32", Rejected ball joint left front with no defect present	DMV reviewed the rules and regulations pertaining to violation. Any future violations of this nature will be cause for progressive administrative action.
November 12, 2021	RI Used Tire & Service	Robert J. Desousa	Failed to document inoperative plate and high beam lights on VIR, Failed to reject for missing lug nut, KOEO MIL test performed incorrectly, Rejected vehicle for shocks	DMV reviewed the rules and regulations pertaining to violation. Any future violations of this nature will be cause for progressive administrative action.
November 18, 2021	Zippy Auto Repair	Amr Ibrahim	Rejected brake pads for less than 1/32", Failed to reject inoperative plate lamps on VIR, Rejected front sway bar bushings, KOEO MIL test performed incorrectly	DMV reviewed the rules and regulations pertaining to violation. Any future violations of this nature will be cause for progressive administrative action.

In 2021, there were three CIT and three AIRS called into the DMV for formal counseling.

The DMV explained the rules and regulations pertaining to the violations. This information was reviewed by the technician and the responsible agent for the AIRS.

It was agreed that corrective action would be taken, and any future violations of this nature will be cause for administrative action against the AIRS and the technician. The results were documented and put into their file.

Vehicles Subject to Inspection

As of December 2021, approximately 684,491 light-duty vehicles were registered with DMV. The actual number of vehicles requiring inspection during 2021 can be estimated from the total number of vehicles registered minus the following: vehicles 25 years old and older, and vehicles two years old or newer. Reviewing the registration data as of December 2021, and assuming a 50-50 biennial split, as many as roughly 342,246 vehicles may have been required to be inspected during 2021. Based on data from the Program Manager, (MY 1996-2021) there were 409,376 vehicles inspected. Due to the pandemic, inspections were delayed by many months and the program anticipates that

more vehicle inspections occurred in 2021 than would normally occur due to those delays.

Table XVIII: Vehicles Subject to Inspection

Vehicles Subject to Inspection	2016	2017	2018	2019	2020	2021
Non-Exempt Vehicles Registered with DMV	668,724	702,916	706,000	795,228	775,442	684,491
As many vehicles as:	334,362	351,458	353,000	397,614	387,721	342,246
Vehicles Inspected (MY 1996-2021)	329,279	337,532	342,895	391,200	351,656	409,376
Vehicles possibly not in compliance	5,083	13,926	10,105	6,414	36,065	0
Total Percentage	1.5%	3.9%	2.9%	1.6%	9.3%	0.0%

As mentioned in the above paragraph these totals are estimated based on the data provided to DEM from DMV. Due to the limitations of DMV's existing data management system, it is not possible to know how many vehicles were registered. (see Appendix "K" Vehicles Subject to Inspection).

Preventing False Registration by Motorist

The I/M program in Rhode Island covers the entire state, so it is not possible for a vehicle owner to falsely register any vehicle out of the program area. Inspectors are instructed to verify that the fuel type and the gross vehicle weight (GVWR) indicated on the vehicle's registration form are accurate. The inspector will check the information on the label on the inside of the door to see if the correct information can be obtained.

Motorist Enforcement Measures

Sticker Based Enforcement

The inspection sticker has continued throughout the years to be the primary inspection enforcement tool. This highly visible means of recognition allows police agencies to quickly determine a vehicle's compliance status. DMV continues to provide information to the municipal police and the State Police regarding the features of the inspection stickers. Any law enforcement officer or an agent of DMV may demand to inspect any compliance device (sticker) or compliance document (inspection report or waiver) issued through the Rhode Island I/M Program. (see Appendix "J", DMV Safety and Emissions Control Regulation No. 1, section 1.9.5)

The following tables indicate the results of the stickers during 2021.

Table XIX: 2021 Sticker Reconciliation Summary

Printed Stickers	
Stickers Received for 2021 Program	480,000
Stickers Distributed to AIRS	464,700
Balance	15,300
Stickers not Distributed (Destroyed)	15,300
Balance	0
Distributed Stickers to AIRS	
Stickers Distributed to AIRS	464,700
Stickers Placed on Vehicles	400,384
Voided Stickers*	52,023
Unused Stickers Returned to Opus**	51,865
Stickers Stolen or Lost*** (Police Report or Affidavit)	158
Sticker Balance (Un-reconciled)	1,129

*50,756 stickers voided with new calendar year changeover.

**End-of-year (2021) stickers were collected in the first quarter of 2022.

***Accounted through DMV affidavit and, when necessary, a police report.

The above table indicates that during 2021 the Program Manager received 480,000 stickers for the I/M Program. There were 464,700 stickers distributed to the AIRS. The remaining balance was 15,300 stickers which were destroyed, leaving a final balance of 0.

There were 464,700 stickers distributed to the AIRS, out of which 400,384 were placed on vehicles. There were 52,023 voided stickers and 51,865 stickers returned to the Program Manager. This leaves a balance of 158 stickers that were lost or stolen, resulting in four (4) mandatory police reports being filed by the DMV. The process for reporting missing stickers was changed slightly from previous years. If an AIRS is missing less than ten (10) stickers, they must sign an affidavit with DMV. If they are missing ten (10) or more stickers, then the AIRS must file a police report and file a copy with the DMV. This process was implemented in August 2021 (see Appendix "L" Sticker Summary).

Duplicate Stickers Issuances

Due to color fading issues with certain stickers, the Program Manager and DMV have allowed duplicate stickers to be printed when deemed necessary. This was implemented in late 2019 and is also used in sticker-based enforcement. There are only 18 instances of duplicate stickers being printed for 2021. This report will be attached to Appendix "L" Sticker Summary and is produced by the DMV.

State Police and Municipal Police Enforcement

The State Police and municipal police continue to enforce motorists' compliance by pulling vehicles over if an inspection sticker is not valid. In 2021 approximately 978 "five-day notice and demand tags" were issued by the State Police, municipal police, and DMV. The notice and demand tags require an inspection to be completed within five days.

Approximately, 85.0% or 831 vehicle owners complied with the "five-day notice and demand tags". There were 147 or 15.03% of vehicle owners who failed to reply to the "five-day notice and demand tags". The DMV issued 320 suspension orders due to non-compliance. (see Appendix "M" Notice and Demand form)

Registration Denial

In July 2017, the DMV launched the new computer system after a decade of missed deadlines and delays.

Previously the DMV received data from the Program Manager when vehicles were inspected. Based on DMV records from previous inspections, a notice of action (notice) was mailed out to vehicle owners who have failed to obtain a vehicle inspection when due.

Since the new computer system was implemented in July 2017, the DMV has been able to automate part of this process. Letters are now sent automatically when the computer system notices a vehicle has passed when it is due to be inspected. The notice indicates the vehicle owner has 30 days to obtain an inspection before the vehicle's registration is suspended. At the end of 30 days, if the vehicle has not passed an inspection based on the daily data submission from the Program Manager, the registration is suspended in the DMV registration database. (see Appendix "N" Registration Denial/ Notice of Action Form)

In 2021, there were 133,954 failure to obtain inspection notices sent out. As of the date of this report (July 2022), there are 11,098 of these vehicles still not in compliance with these notices.

Enforcement Against AIRS, Program Manager and DMV Personnel

Program Manager

There were no enforcement actions taken against the Program Manager during 2021.

Inspection Stations and Inspectors

Authorized Inspection and Repair Station (AIRS)

In 2021, the DMV conducted 10 hearings (10 stations, 21 different counts of violations). These hearings were conducted virtually via teleconference. The DMV explained the rules and regulations pertaining to the violations. The technician and the responsible AIRS agent reviewed violations. (see Appendix "O" Formal Counseling Letter and Hearing Report- Station)

It was agreed that corrective action would be taken, and any future violations of similar nature would be cause for administrative action against the AIRS and the technician. The results were documented and put into their file.

Inspectors

In 2021, the DMV conducted 10 hearings (10 inspectors, 20 different counts of violations). These hearings were conducted virtually via teleconference. The DMV explained the rules and regulations pertaining to the violations. The technician and the responsible AIRS agent reviewed violations. (see Appendix "P" Hearing Report- Inspector")

It was agreed that corrective action would be taken, and any future violations of similar nature would be cause for administrative action against the AIRS and the technician. The results were documented and put into their files.

DMV Auditors and Other Personnel

DMV auditors must adhere to specific procedures and follow a checklist when conducting an audit. The work of DMV auditors is scrutinized by their immediate supervisor daily.

9. Public Outreach

The "RI Emissions Safety Testing" newsletter is distributed to statewide AIRS. One newsletter was distributed in 2021. The newsletter was a low priority due to changes in staffing and the program catching up on Covid-delayed enforcement inspections.

The newsletters contain information from DMV, DEM, and EPA and can be an excellent source of information for technicians. Newsletters cover a variety of topics including, but not limited to, program implementation changes, reminders of inspection regulatory procedures for both safety and emissions, articles from the technician's bench, and enforcement news. (see Appendix "Q" RI Emissions Safety Testing Newsletter)

The network computer system and station computer displays continue to be used to provide program updates for CIRT exam sessions, training seminars, and technical bulletins. The program's website at www.riinspection.org was used during this reporting year to outreach to the general public.