Eastern Research Group, Inc.

VEHICLE EMISSIONS INSPECTION PROGRAM TEST FEE ANALYSIS FOR AIRCHECKTEXAS PROGRAM

Prepared for:
Texas Commission on Environmental Quality
Air Quality Division

Prepared by:
Eastern Research Group, Inc.

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EXECUTIVE SUMMARY

A. BACKGROUND

This study assesses the adequacy of the vehicle emissions inspection fee in the AirCheckTexas program areas: i.e., whether revenue from emissions inspections covers the associated costs. It evaluates the adequacy of the fee from the perspective of the station owners (survey respondents) and investors (prospective shop owners considering entry into the emissions inspection market), and through analytical cost models developed from both survey and non-survey data. Based on the data collected, this study also recommends a fee range for consideration by the Texas Commission on Environmental Quality (TCEQ) to apply to the entire AirCheckTexas program to charge across all program areas.

This study evaluates the AirCheckTexas motor vehicle emissions inspection fee in four program areas of the state:

- **Houston-Galveston-Brazoria (HGB):** Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties.
- **Dallas–Fort Worth (DFW):** Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties.
- **El Paso:** El Paso County.
- **Austin–Round Rock (ARR):** Travis and Williamson Counties.

All vehicle emissions inspection stations in these program areas must offer both safety-only inspections and safety and emissions inspections; however, this study only evaluates the emissions inspection portion of the fee and the incremental costs associated with performing emissions inspections. Currently, under 30 Texas Administrative Code (TAC) §114.53 and §114.87, the motor vehicle emissions inspection fee charged by inspection stations is capped at $18.50 for on-board diagnostic (OBD) inspections and $24.50 for accelerated simulation mode (ASM) inspections in the HGB and DFW program areas, $11.50 in the El Paso program area, and $11.50 in the ARR program area. Table ES-1 shows the total inspection-related fees charged to customers, broken down into the safety inspection cost ($7.00) and emissions inspection costs.

Table ES-1. Safety and Emissions Testing Fees

Program Area	Safety Inspection Test Fee	Emissions Inspection Test Fee (Maximum)	Total Inspection Fee (Paid by Customer to Inspection Station) (Maximum)	Emissions Inspection Administration Fee (Paid by Customer to State at Registration Renewal)
HGB/DFW (OBD test)	$7.00	$18.50	$25.50	$2.50
HGB/DFW (ASM test)	$7.00	$24.50	$31.50	$2.50
El Paso	$7.00	$11.50	$18.50	$2.50
ARR	$7.00	$11.50	$18.50	$2.50

In 2001, the 77th Texas Legislature required the TCEQ to review the fees established for the motor vehicle emissions inspection program at least biennially. This review was performed by

Eastern Research Group, Inc. (ERG) in 2005, 2007, 2012, 2014, 2016, and 2018 (ERG, 2005, 2007, 2012, 2014, 2016, 2018) and by E.H. Pechan & Associates, Inc., in 2009 (Pechan, 2009). For consistency, the surveys for this study were very similar to those in past years, as were the structures of the cost models developed.

B. SURVEY ADMINISTRATION AND ANALYSIS METHODS

In March 2020, a web-based survey was made available to every vehicle emissions inspection station in the four AirCheckTexas program areas. This survey was electronic, with branching and conditional logic (i.e., certain questions differed or were skipped based on program area and whether the station performed repairs); in content, it was similar to the 2018 survey. For stations that requested paper copies, ERG also developed two hard copy variations of the survey to accommodate the differences in fees and testing types across program areas (see Appendix A). ERG received 885 electronic survey responses and 14 paper survey responses.

Most communications about the survey were sent by the TCEQ directly to the vehicle emissions inspection stations in the form of analyzer notification bulletins. The TCEQ provided advance notice of the survey's launch by sending an initial notification bulletin to the inspection stations on February 26, 2020, a week before the survey start date. The TCEQ sent an invitation bulletin containing the survey's URL (www.tceqsurvey.com) on March 4, 2020, and ERG sent a mass email on the same day to station owners with email addresses. Additionally, over the duration of the survey period, the TCEQ sent three bulletins to remind stations to complete their surveys and to contact ERG's phone or email hotline if they had questions or preferred a paper survey. ERG also sent one reminder email to stations that had not submitted responses as of March 27, 2020. Survey responses were accepted until April 16, 2020.

As mentioned above, ERG provided an email and telephone hotline to survey respondents to help administer requests for paper surveys and answer other questions. ERG offered hotline support in English and Spanish. ERG also accepted surveys by fax and email, though no requests were made.

As of March 1, 2020, the TCEQ emissions inspection database identified 5,630 active vehicle emissions inspection stations (excluding fleet and government stations) in the four program areas under study. Table ES-2 shows the distribution of the 5,630 vehicle emissions inspection stations in the TCEQ emissions inspection database by program area and station type.[1] ERG received 899 total survey responses during the survey period, of which 889 were in-scope (i.e., public stations that indicated they offer motor vehicle emissions inspections); 10 respondents stated that they did not offer vehicle emissions inspections. Table ES-3 shows the distribution of these 899 surveys by program area and station type.[2]

[1] Station type for frequency table (ES-2) and response rate calculations (ES-4) in the TCEQ emissions inspection database provided to ERG in March 2020 (TEST_REPAIR_FL).
[2] Station type for in-scope facilities was determined by responses to question 9, which asked respondents to choose the best description of other services they offer. Stations reporting "No other services" or "Non-repair services" were classified as test-only facilities; those reporting "Repair services only" and "Repair services and non-repair services" were classed as T&R facilities. For out-of-scope responses, station type was inferred from the TCEQ emissions inspection database.

Table ES-2. Number of Texas Emissions Inspection Stations in the TCEQ Database by Program Area and Station Type (March 2020)

Program Area	Test-Only	Test-and-Repair	Total Stations
HGB/DFW	1,967	3,019	**4,986**
El Paso	81	144	**225**
ARR	141	278	**419**
Total	**2,189**	**3,441**	**5,630**

Table ES-3. Survey Responses by Program Area and Station Type

Program Area	Test-Only	Test-and-Repair	All Responses	In-Scope* Responses
HGB/DFW	178	591	769	759
El Paso	17	33	50	50
ARR	20	60	80	80
Total	**215**	**684**	**899**	**889**

* In-scope responses are public stations that offer motor vehicle emissions inspections.

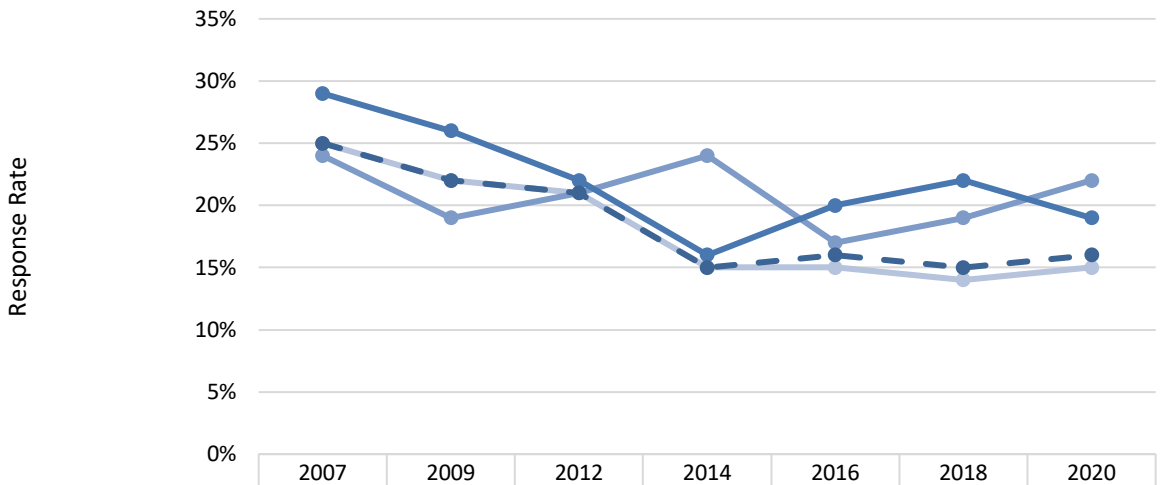
ERG included all surveys received—either electronically or in paper format—in the response rate calculation, but only in-scope responses are included in the analysis and tabulations. Table ES-5 shows the response rate by program area and station type, and Figure ES-1 shows the historical response rate by program area. The overall response rate was 16%, compared to 15% in the 2018 TCEQ inspection and maintenance fee analysis.

Table ES-4. Survey Response Rate by Program Area and Station Type

Program Area	Test-Only	Test-and-Repair	Total*
HGB/DFW	10%	24%	15%
El Paso	13%	38%	22%
ARR	10%	36%	19%
Total	**10%**	**25%**	**16%**

* Response rates were calculated as: (surveys received) ÷ (total active stations).

Figure ES-1. Historical Response Rates by Area

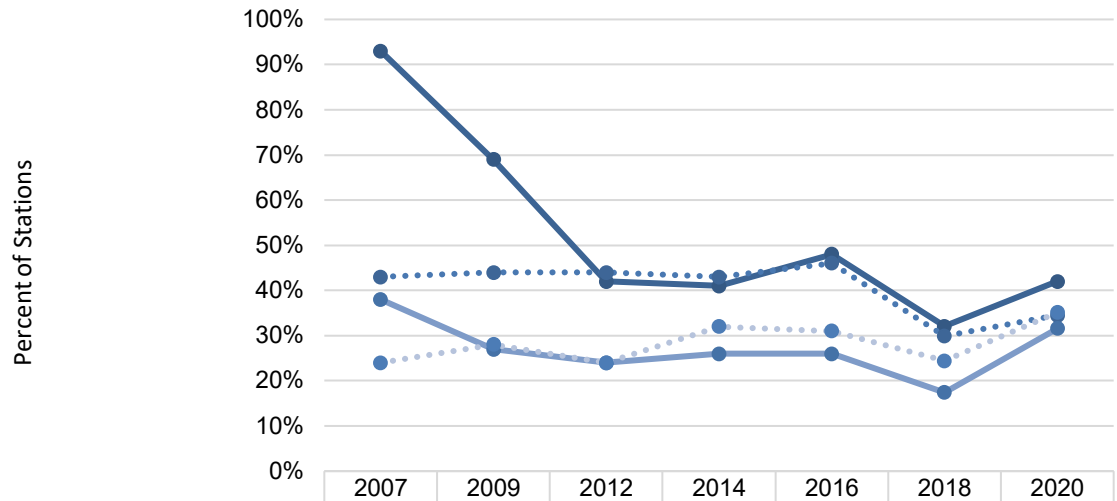


	2007	2009	2012	2014	2016	2018	2020
HGB/DFW Total	25%	22%	21%	15%	15%	14%	15%
El Paso Total	24%	19%	21%	24%	17%	19%	22%
ARR Total	29%	26%	22%	16%	20%	22%	19%
Total	25%	22%	21%	15%	16%	15%	16%

C. FINDINGS

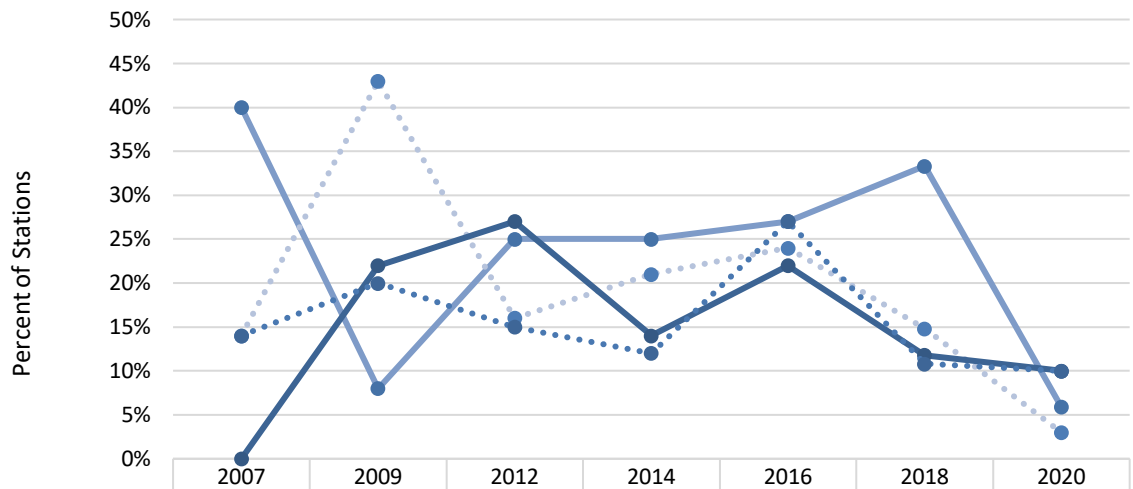
As shown in Figure ES-2, in the HGB/DFW program areas, 42% of OBD-only test-only stations and 35% of OBD-only test-and-repair (T&R) stations reported the emissions inspection fee covered their costs. In the HGB/DFW program areas, 32% of full-service (ASM and OBD testing) test-only stations and 35% of full-service T&R stations reported the emissions inspection fee covered their costs. As shown in Figure ES-3, among test-only and T&R respondents in El Paso and ARR, between 3% and 10% of stations reported the fee covers their costs. These figures represent a substantial decrease in El Paso test-only and T&R stations (27% and 12%, respectively), but only a moderate decrease for ARR test-only and T&R stations (2% and 1%, respectively), from 2018 to 2020.

Figure ES-2. Respondents Reporting Test Fees Cover Their Costs: HGB/DFW



	2007	2009	2012	2014	2016	2018	2020
HGB/DFW OBD-Only Test-Only	93%	69%	42%	41%	48%	32%	42%
HGB/DFW OBD-Only T&R	43%	44%	44%	43%	46%	30%	35%
HGB/DFW ASM-OBD Test-Only	38%	27%	24%	26%	26%	17%	32%
HGB/DFW ASM-OBD T&R	24%	28%	24%	32%	31%	24%	35%

Figure ES-3. Respondents Reporting Test Fees Cover Their Costs: El Paso and ARR

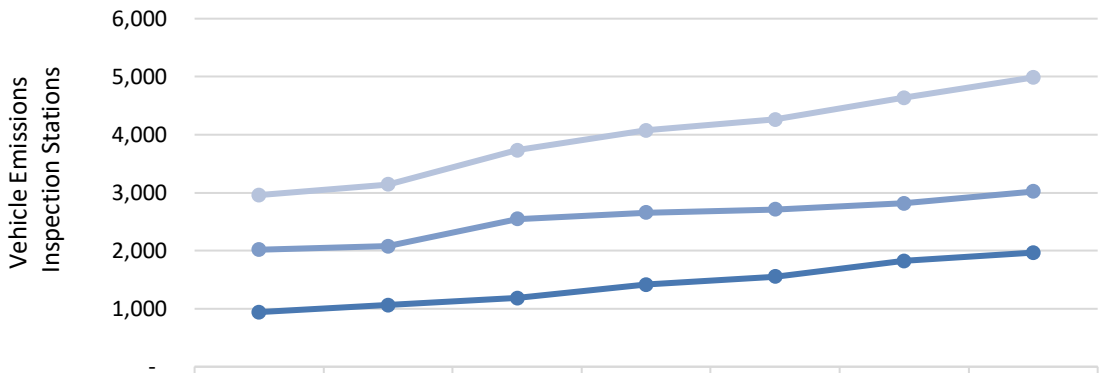


	2007	2009	2012	2014	2016	2018	2020
El Paso Test-Only	40%	8%	25%	25%	27%	33%	6%
El Paso T&R	14%	43%	16%	21%	24%	15%	3%
ARR Test-Only	0%	22%	27%	14%	22%	12%	10%
ARR T&R	14%	20%	15%	12%	27%	11%	10%

Figure ES-4, Figure ES-5, and Figure ES-6 summarize the station counts for HGB/DFW, El Paso, and ARR, respectively, based on data from the TCEQ Vehicle Identification Database for 2007, 2009, 2012, 2014, 2016, 2018, and 2020. The number of stations increased by 349 (8%) in HGB/DFW, by 17 (8%) in El Paso, and by seven (2%) in ARR from 2018 to 2020. An increase in

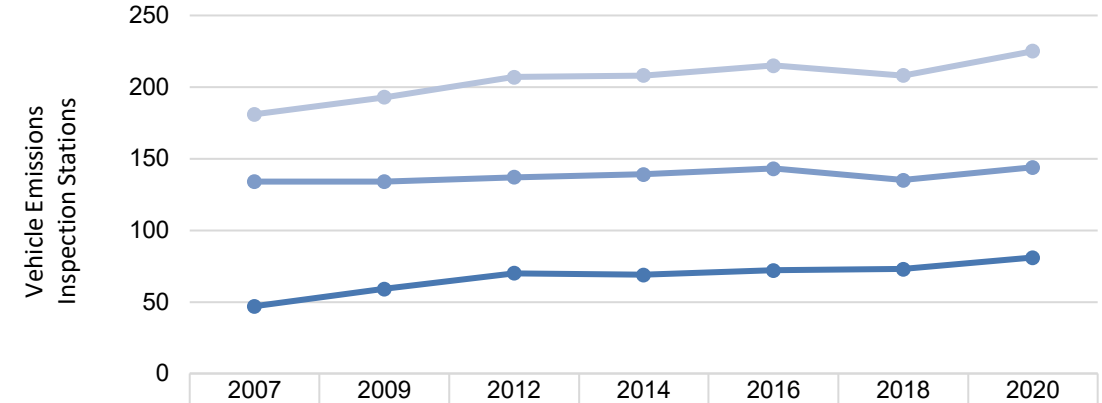
station count is typically one indicator that investors are making the conscious decision to stay in or enter the market based on a fee they consider adequate.

Figure ES-4. Number of Inspection Stations in HGB/DFW Program Areas, 2007 to 2020



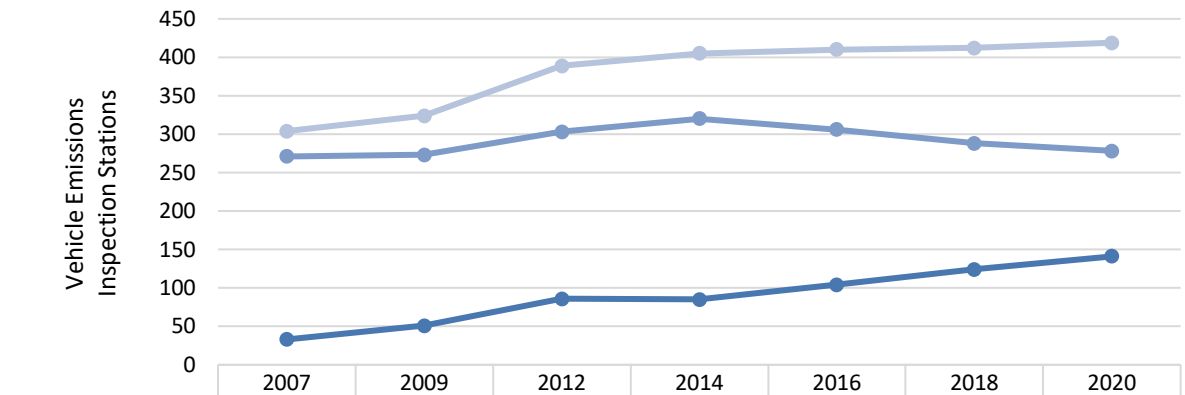
	2007	2009	2012	2014	2016	2018	2020
HGB/DFW Test-Only	942	1,063	1,183	1,415	1,553	1,823	1,967
HGB/DFW T&R	2,017	2,076	2,548	2,658	2,710	2,814	3,019
HGB/DFW Total	2,959	3,139	3,731	4,073	4,263	4,637	4,986

Figure ES-5. Number of Inspection Stations in El Paso Program Area, 2007 to 2020



	2007	2009	2012	2014	2016	2018	2020
El Paso Test-Only	47	59	70	69	72	73	81
El Paso T&R	134	134	137	139	143	135	144
El Paso Total	181	193	207	208	215	208	225

Figure ES-6. Number of Inspection Stations in ARR Program Area, 2007 to 2020



	2007	2009	2012	2014	2016	2018	2020
ARR Test-Only	33	51	86	85	104	124	141
ARR T&R	271	273	303	320	306	288	278
ARR Total	304	324	389	405	410	412	419

In the break-even cost model summarized in Table ES-5, 89% to 96% of stations (excluding building costs) in HGB/DFW (both test types) are shown to have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs. In El Paso and ARR, 69% to 78% of stations (excluding building costs) have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs. Some stations did not incur incremental building costs in order to offer testing, such as adding or purchasing additional building space, so the analyses are done with and without building costs included.

Table ES-5. Stations At/Above Break-Even Number of Inspections

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Monthly break-even number of tests including equipment costs	28	56	80	99
Monthly break-even number of tests including equipment and building costs	54	90	153	195
Percent of stations above break-even number including equipment costs	89%	96%	78%	69%
Percent of stations above break-even number including equipment and building costs	73%	92%	52%	42%

The summary of the percent of stations breaking even since 2012, shown below in Table ES-6, compares 2020 percentages to past years' percentages. In the HGB/DFW program area, OBD-only stations had a break-even number of tests consistent with prior years (26 to 28), but full-service stations did not. The large drop in break-even tests for ASM-OBD stations is driven largely by the median test times for both OBD and ASM tests decreasing (15 to 10 minutes for OBD tests; 25 to 20 minutes for ASM). The additional time spent for tests also dropped from 10 to 5 minutes. Likewise, the El Paso program area had a shift in the number of break-even tests (70 to 80) and a drop in the percent of stations (84% to 78%) breaking even from 2018 to 2020. This is because the median times spent for two-speed idle (TSI) tests and OBD tests increased

(from 15 to 20 minutes and from 10 to 15 minutes, respectively). The ARR program area had a similar development to El Paso, with break-even tests increasing (82 to 93) and the percent of break-even stations decreasing (77% to 69%). This change is due to increased wages ($1.00 per hour), increased time spent for TSI tests (15 to 20 minutes), and more time spent for all tests (7.5 to 10 minutes).

Table ES-6. Summary of Break-Even Number of Inspections from 2012 to 2020 in All Program Areas, Excluding Building Costs

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Break-even tests (2012)	27	94	70	80
Break-even tests (2014)	26	89	73	76
Break-even tests (2016)	26	89	70	79
Break-even tests (2018)	26	97	70	82
Break-even tests (2020)	28	56	80	99
Percent of stations breaking even (2012)	86%	84%	80%	74%
Percent of stations breaking even (2014)	87%	85%	81%	73%
Percent of stations breaking even (2016)	87%	87%	80%	74%
Percent of stations breaking even (2018)	89%	93%	84%	77%
Percent of stations breaking even (2020)	89%	96%	78%	69%

The model station analysis reveals similar findings. This analysis created area-specific small-, medium-, and large-throughput stations representative of stations in the 25th, 50th (median), and 75th percentiles, respectively, based on emissions inspection throughput. Table ES-7 shows the monthly costs and net revenues at three model stations: small, medium, and large. Similar to 2018, a few station types have revenues that do not exceed total costs. These cases occur in small model stations in HGB/DFW program areas conducting OBD-only inspections, small model stations in the El Paso program area, and small and medium model stations in the ARR program area. All other model station types across the four program areas had net revenues that exceeded costs.

Table ES-7. Monthly Costs and Net Revenues at Model Stations

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Small station net revenue	$944	$3,332	$955	$966
Small station total costs	$982	$2,036	$1,423	$1,535
Small stations net revenue – total cost	**($39)**	**$1,296**	**($469)**	**($569)**
Medium station net revenue	$1,684	$5,332	$1,852	$1,829
Medium station total costs	$1,249	$2,478	$1,800	$2,012
Medium station net revenue – total cost	**$434**	**$2,854**	**$51**	**($183)**
Large station net revenue	$2,387	$8,146	$3,554	$3,542
Large station total costs	$1,503	$3,099	$2,516	$2,959
Large station net revenue – total cost	**$884**	**$5,047**	**$1,037**	**$583**

D. FEE RECOMMENDATION

On January 1, 2020, all model year 1995 and older vehicles became exempt from the vehicle emissions inspection requirements in Texas and OBD became the only type of emissions inspection performed across AirCheckTexas program areas. Currently, the El Paso and ARR program areas offer OBD vehicle emissions inspections for a maximum of $11.50, while the HGB and DFW program areas offer OBD inspections for a maximum of $18.50. Therefore, the TCEQ is considering setting a single fee for OBD emissions inspections across all program areas.

To help inform the fee recommendation, ERG reviewed all OBD vehicle emissions inspection programs and associated fees across the country. Table ES-8 shows the average, 25th percentile, median, and 75th percentile cost for OBD inspection fees across 22 states that require emissions inspections. This includes the per-inspection fee and average annual OBD inspection fee to the public, calculated by dividing the fee by the number of years the inspection covers (always either one or two years). The interquartile range of $11.63 to $32.50 and median value of $20 per OBD inspection provide useful context for a fee recommendation. Program-specific data are provided below.

Table ES-8. Summary Statistics of State Vehicle Emissions Inspection Fees

	Average Fee per Inspection	Average Annual OBD Fee to Public
Average	$24.44	$20.91
25th percentile	$11.63	$8.50
50th percentile (median)	$20.00	$16.40
75th percentile	$32.50	$28.00

To get station owners' perspectives on a reasonable OBD inspection fee, ERG asked survey respondents for their opinion on the fee amount they think their customers would be willing to pay and, separately, the fee that would allow revenue from emissions inspections to cover their costs. Table ES-9 and Table ES-10 summarize the responses to these questions. Across all program areas, the median reported value was $25 for what inspection stations thought customers would be willing to pay and $25.50 for a fee that would allow revenue to cover the costs of performing OBD emissions inspections.

Table ES-9. What Are Customers Willing to Pay?

	HGB/DFW	El Paso	ARR	All Areas
Count	688	49	73	810
25th percentile	$20.00	$20.00	$18.50	$20.00
50th percentile (median)	$25.00	$25.00	$20.00	$25.00
75th percentile	$35.00	$30.00	$25.00	$33.00
Average	$28.18	$23.52	$22.81	$27.42

Table ES-10. What Revenue Covers Costs?

	HGB/DFW	El Paso	ARR	All Areas
Count	662	49	70	781
25th percentile	$20.00	$20.00	$18.00	$20.00
50th percentile (median)	$27.50	$26.00	$24.98	$25.50
75th percentile	$35.00	$30.00	$28.50	$35.00
Average	$29.86	$25.68	$24.79	$29.15

ERG also performed an independent assessment to determine a recommended reasonable fee. Using data from analyses in 2012, 2014, 2016, 2018, and 2020, ERG assessed the correlation between stations that break even and the net number of emissions inspection stations entering the market (ERG, 2012, 2014, 2016, 2018). A fee that is too high could lead to many stations entering the market and a major decrease in average station throughput. A fee that is too low could lead to many stations losing money and leaving the market. Based on the models it ran between 2012 and 2020, ERG found that when the number of stations breaking even (without considering building costs) ranged from about 85% to 89% there was small but not extensive growth in the number of stations in the inspections industry across all the four program areas. Table ES-11 shows the fee ranges that achieve these break-even rates.

Table ES-11. Fee Recommendation Analysis

Variable	HGB/DFW	El Paso	ARR
Fee for about 85% of stations to break even based on equipment costs only	$15.00	$12.00	$12.50
Fee for about 89% of stations to break even based on equipment costs only	$17.00	$14.00	$14.50
Average building cost per test	$5.00	$6.00	$6.00
Fee for about 85% of stations to break even based on equipment and building costs	$20.00	$18.00	$18.50
Fee for about 89% of stations to break even based on equipment and building costs	$22.00	$20.00	$20.50

Based on these results, ERG recommends that a single fee covering all program areas be between $18.00 and $22.00 per OBD emissions inspection. This fee would represent the price that customers would pay for the emissions inspection only; it would be separate from the $7.00 safety inspection required in all program areas. The $18.00–$22.00 range includes the median cost paid for an OBD emissions inspection across 22 other states ($20), but it is under the median fee ($25.50) that surveyed emissions inspection stations indicated would cover their costs.

I. INTRODUCTION

A. BACKGROUND

This analysis evaluates the adequacy of the AirCheckTexas motor vehicle emissions inspection fee (i.e., whether revenue covers costs) in four program areas:

- **Houston-Galveston-Brazoria (HGB):** Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties.
- **Dallas–Fort Worth (DFW):** Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties.
- **El Paso:** El Paso County.
- **Austin–Round Rock (ARR):** Travis and Williamson Counties.

Historically, the State of Texas issued inspection stickers to vehicles that successfully passed inspection. However, in accordance with House Bill (HB) 2305, passed by the 83rd Texas Legislature in 2013, the state stopped issuing inspection stickers on March 1, 2015, and implemented a new system, known as the "Two Steps, One Sticker" program, to issue a single registration sticker for vehicles that pass emissions inspection and are permitted to renew registration. As part of this change, inspection stations no longer collect the state's portion of the fee for remittance to the Texas Department of Public Safety, but there is no change to the net emissions inspection fees they keep. The state's portion, i.e., the emissions inspection administration fee, is now paid to the state at registration renewal.

Inspection stations in these program areas must offer both safety-only inspections and safety and emissions inspections; however, this study evaluates only the emissions inspection portion of the fee and the incremental costs associated with performing emissions inspections. Currently, under 30 TAC §114.53 and §114.87, the motor vehicle emissions inspection fee charged by inspection stations is capped at $18.50 per OBD inspection and $24.50 per ASM inspection in both the HGB and DFW program areas, $11.50 in the El Paso program area, and $11.50 in the ARR program area. Table I-1 shows the total inspection-related fees charged to customers, broken down into the safety inspection cost ($7.00) and the emissions inspection costs.

Table I-1. Safety and Emissions Testing Fees

Program Area	Safety Inspection Test Fee	Emissions Inspection Test Fee (Maximum)	Total Inspection Fee (Paid by Customer to Inspection Station) (Maximum)	Emissions Inspection Administration Fee (Paid by Customer to State at Registration Renewal)
HGB/DFW (OBD test)	$7.00	$18.50	$25.50	$2.50
HGB/DFW (ASM test)	$7.00	$24.50	$31.50	$2.50
El Paso	$7.00	$11.50	$18.50	$2.50
ARR	$7.00	$11.50	$18.50	$2.50

In 2001, the 77th Texas Legislature required the TCEQ to review the fee established for the motor vehicle emissions inspection program at least biennially. Additionally, the TCEQ was authorized to implement ASM and OBD inspection technologies in the HGB and DFW program areas (Texas Health and Safety Code, §382.202(f)(1)).

Within the HGB and DFW program areas, inspection stations choose to be OBD-only (offering only OBD inspections) or full-service (offering ASM and OBD inspections). Before January 1, 2020, OBD-only stations were limited to 1,800 inspections per year (150 per month). This study aggregates the data collected from the HGB and DFW program areas in assessing the fee; however, within the HGB/DFW program areas, this study assesses the fee for OBD-only stations as well as full-service stations. As summarized in Table I-2, OBD-only and ASM-OBD inspections in these counties began on either May 1, 2002 (Collin, Dallas, Denton, Harris, and Tarrant Counties) or May 1, 2003 (Brazoria, Ellis, Fort Bend, Galveston, Johnson, Kaufman, Montgomery, Parker, and Rockwall Counties).

Vehicle emissions inspections began in the El Paso program area on January 1, 2007, using two-speed idle (TSI) and OBD inspection technologies. Inspection stations in this area must offer both the TSI and OBD inspections: TSI inspections are performed on model-year 1995 and older vehicles, and OBD inspections are performed on model-year 1996 and newer vehicles.

Vehicle emissions inspections began in the ARR program area on September 1, 2005, using TSI and OBD inspection technologies. Inspection stations in ARR must offer both TSI and OBD inspections: TSI inspections are performed on model-year 1995 and older vehicles, and OBD inspections are performed on model-year 1996 and newer vehicles.

Table I-2. Tests Performed and Program Start Dates by Program Area

Program Area	Tests Performed	I/M Program Start Date
HGB	OBD and ASM	May 1, 2002, and May 1, 2003 (varies by county)
DFW	OBD and ASM	May 1, 2002, and May 1, 2003 (varies by county)
El Paso	OBD and TSI	January 1, 2007
ARR	OBD and TSI	September 1, 2005

The TCEQ performs a vehicle emissions inspection program test fee analysis every two years. The analysis was carried out by ERG in 2005, 2007, 2012, 2014, 2016, and 2018 (ERG, 2005, 2007, 2012, 2014, 2016, 2018) and by E.H. Pechan & Associates, Inc., in 2009 (Pechan, 2009). For consistency, this year's survey was very similar to those implemented in past years, and the structure of the cost models was also similar to that of previous models.

Beginning on January 1, 2020, stations in all program areas perform only OBD inspections, as all model year 1995 and older vehicles previously subject to ASM/TSI inspections became exempt from the vehicle emissions inspection requirements. Due to the timing of this year's analysis and survey, this report primarily assesses the adequacy of the emissions inspection fee based on the inspections throughput for calendar year 2019 (which includes TSI and ASM inspections) and survey respondents' 2019 operational costs. However, the fee recommendation analysis (see Section VIII.G) is forward-looking and based on stations performing only OBD inspections.

B. REPORT ORGANIZATION

Chapter II of this report summarizes the analytical methods used in this project. It introduces the business models used to evaluate the revenue and cost streams for stations that are AirCheckTexas inspection and maintenance (I/M) program participants. It also explains the sample survey design and implementation.

Chapter III (HGB/DFW), Chapter IV (El Paso), and Chapter V (ARR) present the survey findings by program area. The HGB and DFW program areas are analyzed together because they have the same emissions inspection fee cap and have similar cost and revenue structures. Within each program area, findings are broken down by test-only and T&R stations. Within the HGB/DFW program areas, the findings are broken down further by OBD-only stations and ASM-OBD stations. As mentioned in the section above, OBD-only stations were limited to 1,800 inspections per year (150 per month) before January 1, 2020, whereas ASM-OBD stations were not capped. Chapter VI presents the cost model analyses for four program areas and test type groupings:

- **HGB/DFW:** OBD-only
- **HGB/DFW:** OBD and ASM
- **El Paso:** OBD and TSI
- **ARR:** OBD and TSI

This section includes "model station" analyses of representative small, medium, and large stations based on testing throughput, as well as "break-even" analyses to calculate the number of emissions inspections a station must perform per month for revenue to equal costs. While these cost models aggregate data from test-only and T&R stations to better represent the whole industry, the report includes further discussion about how the business models for these station types differ.

Chapter VII summarizes the comments from the survey respondents. Chapter VIII presents the conclusions and findings from this study, including recommendations for future survey efforts. The survey instruments are provided in Appendix A.

C. REPORT TERMINOLOGY

The analyses presented in Chapters III, IV, V, and VI of this report use the statistical terminology "median," "average," "percentile," and "quartile":

- A median is the number separating the higher half of a sample from the lower half. The median of a list of numbers can be found by arranging all the observations from the lowest to the highest value and picking the middle one (or the average of the two middle values).
- The average is the sum of the observations divided by the number of observations. In the cost model's analyses, the median is typically preferred to the average because the average is often heavily influenced by a few extreme values or outliers.
- The 25th percentile (also known as the 1st quartile) is the value below which 25% of the observations fall (i.e., 25% of values are below this value).

- The 50th percentile (also known as the median [see above] or 2nd quartile) is the value below which 50% of the observations fall.
- The 75th percentile (also known as the 3rd quartile) is the value below which 75% of the observations fall (i.e., 25% of values are above this value).
- The interquartile range is the 25th percentile value to 75th percentile value. In short, it is the range of the middle half (50%) of the data where 25% of data are higher than the upper end of the range and 25% of the data are lower than the lower end of the range.

In some cases, the average in a given table may be greater than the median. This is due to one or more very large values significantly affecting the average. For this analysis, the cost models use median values to prevent those large values from affecting the results.

II. ANALYSIS METHODS SUMMARY

Beginning in March 2020, ERG conducted a six-week survey of motor vehicle emissions inspection stations in the four AirCheckTexas program areas (HGB, DFW, El Paso, and ARR). As in previous years, the primary goal of the survey was to collect data for use in analytical cost models that assess the adequacy of the vehicle emissions inspection fee in these areas. The data collection was implemented as a web-based survey fielded to all active inspection stations in the four program areas. The survey development, sample design, data collection methods, and response rate are detailed below.

A. SURVEY DEVELOPMENT

To allow for time-trend comparisons, ERG developed a draft questionnaire designed to elicit data largely analogous to those from previous survey years. Unlike the 2018 survey, which underwent considerable revisions to questions on emissions testing equipment, building, and other costs, this year's survey did not involve significant changes. The most noteworthy addition to the survey was a two-part question gathering inspection stations' perspective on a reasonable emissions inspection fee. Specifically, respondents were asked what fee they felt customers would be willing to pay, as well as what fee would allow station revenue to cover the cost of performing emissions inspections. One other new question asked respondents if more than one station ID was in use at their locations. Minor revisions to the 2020 survey included slight wording modifications, minimal question reordering to improve survey flow, and converting the question on training costs from an open-ended response to itemized categorical estimates of training costs.

As in previous years, the survey asked a few questions specifically aimed at categorizing stations by the type of services offered. More specifically, respondents whose stations perform emissions inspections and who reported providing either "no other services" or "non-repair services" were considered to be test-only stations. These stations do not have an additional revenue stream from repairing vehicles. In contrast, T&R stations were defined as those that reported performing "repair services only" or "repair services and non-repair services" in addition to emissions inspections. This distinction is used throughout the analysis to make comparisons between station types.

The survey instrument was coded as a web-based survey using Qualtrics™ survey software, as well as a paper survey[3] for stations requesting one. The electronic instrument's design relied on conditional branching, or skip logic, to alter respondents' pathways based on their program area or answers to particular questions. This allowed stations from all four program areas to access the same survey interface and made the online experience straightforward and seamless. For example, only stations in HGB/DFW were asked if they offer OBD-only or full service (ASM and OBD testing). Data validation checks (such as range limits and number-only fields) were also coded into the electronic survey, where applicable, to help ensure that responses were formatted appropriately.

[3] Two versions of the paper survey were designed (one covering the HGB and DFW program areas and one covering El Paso and ARR) to accommodate differences between program areas in the types of emissions tests offered and fee amounts charged for those tests.

B. TARGET SURVEY POPULATION

The target population for this survey was active vehicle emissions inspection stations in the four AirCheckTexas program areas. The TCEQ provided ERG with information for 5,630 active public stations,[4] and all of them were invited to participate in the survey.

C. DATA COLLECTION METHODS

Like the 2018 survey, the 2020 initiative was electronic, with paper surveys mailed to respondents by request only. Most communications about the survey were sent directly to the vehicle emissions inspection stations via the TCEQ as analyzer notification bulletins. These bulletins are transmitted to the station analyzer (i.e., testing equipment) during regular electronic communications with the TCEQ Vehicle Identification Database (VID); they can be displayed onscreen and printed and given to the station manager. The timing of a notification's arrival at any specific inspection station was dependent on when the TCEQ transmitted its bulletin and whether the analyzer had a successful communication with the VID.

The TCEQ provided advance notice of the survey's launch with a pre-notification bulletin to inform station personnel of the upcoming survey and explain its importance. This bulletin was sent on February 26, 2020, one week before the survey launch. A formal invitation containing the survey's URL (www.tceqsurvey.com) was also sent via TCEQ analyzer bulletin on March 4, 2020. That same day, ERG sent an email invitation to all active stations with email addresses. The TCEQ sent three reminder bulletins over the survey period, requesting that stations complete the survey online or contact ERG's telephone or email hotline to obtain a paper survey.

As in the 2018 survey effort, ERG also sent a single email reminder on March 30, 2020 (in the fourth week of the survey) to stations that had not yet submitted responses. While survey responses were requested by April 1, 2020, ERG accepted responses until April 16, 2020, to accommodate any paper surveys postmarked by the survey deadline.

Before implementation, ERG established an email address and toll-free hotline to field technical questions, concerns, and requests for paper surveys from survey respondents. While the survey was active, ERG fielded 26 calls and seven emails. Among these hotline inquiries, seven requested paper versions of the survey and 10 expressed difficulties accessing the survey (typically a result of typing the survey URL into a search engine). ERG also accepted surveys by email and fax. ERG received 12 surveys via email and none by fax. ERG administered two surveys over the phone, one of which was conducted in Spanish.

Online survey responses, captured directly in a database, eliminate the need for additional coding and data entry. ERG staff manually entered data from completed paper surveys (returned via email or U.S. mail) into the online survey. The database of responses was later exported as a comma-separated values (.csv) file for import and analysis in MS Excel and Stata.®

[4] These 5,630 stations do not include facilities that service government vehicles or facilities that service their own fleets. Examples of the former include the U.S. Postal Service; examples of the latter include Verizon, Federal Express, and UPS. These facilities test emissions as part of their cost of business (i.e., to maintain their fleet of vehicles), and the operators do not offer these services to the public.

D. RESPONSE RATE

The first completed surveys were received on March 4, 2020, and the final response was recorded on April 16, 2020. During this period, 899 responses were received, only 14 of which were submitted as paper surveys. Of the 899 responses, 10 were deemed ineligible (i.e., out of scope) for not offering motor vehicle emissions inspections.[5] The remaining 889 responses were in-scope (i.e., public stations that offer vehicle emissions inspections).

Table II-1 shows the breakdown of the 5,630 vehicle emissions inspection stations (excluding fleet and government stations) identified in the TCEQ vehicle emissions inspection database by program area and station type.[6] Table II-2 shows the breakdown of the 899 survey responses by program area and station type.[7]

Table II-1. Texas Emissions Inspection Stations in the TCEQ Database by Program Area/Station Type (March 1, 2020)

Program Area	Test-Only	Test-and-Repair	Total
HGB/DFW	1,967	3,019	**4,986**
El Paso	81	144	**225**
ARR	141	278	**419**
Total	**2,189**	**3,441**	**5,630**

Table II-2. Survey Responses by Program Area and Station Type

Program Area	Test-Only	Test-and-Repair	All Responses	In-Scope* Responses
HGB/DFW	178	591	769	759
El Paso	17	33	50	50
ARR	20	60	80	80
Total	**215**	**684**	**899**	**889**

* In-scope responses include public stations that offer vehicle emissions inspections.

The overall response rate of 16% is similar to the previous TCEQ I/M fee survey studies. This response rate assumes that all stations in the VID are currently operating and received the analyzer notification bulletins regarding the survey. Table II-3 shows the response rate by program area and station type (see footnote 6). All surveys received, either electronically or in paper format, are included in the response rate calculation, but only in-scope responses are included in the analysis and tabulations.

[5] As determined by a "No" response to the first survey question. These respondents were screened out of the survey.
[6] Station type for response rate is determined by the station's categorization in the TCEQ emissions inspection database provided to ERG in March 2020 (TEST_REPAIR_FL).
[7] Station type for in-scope facilities was determined by responses to question 9, which asked respondents to choose the best description of other services they offer. Stations reporting "No other services" or "Non-repair services" were classified as test-only facilities; those reporting "Repair services only" and "Repair services and non-repair services" were classed as T&R facilities. For out-of-scope responses, station type was inferred from the TCEQ emissions inspection database.

Table II-3. Survey Response Rate* by Area/Station Type

Program Area	Test-Only	Test-and-Repair	Total
HGB/DFW	10%	24%	15%
El Paso	13%	38%	22%
ARR	10%	36%	19%
Total	10%	25%	16%

* Response rates were calculated as: (surveys received) ÷ (total active stations).

ERG did not follow up with individual stations to discuss any inconsistent or unreasonable responses. Extreme values were removed in three cases. Two instances were equipment maintenance costs that were four to five times higher than the next highest reported values. The third was a value of 999, which was interpreted as a question non-response rather than a true estimate of typical number of repair jobs in a given month. Otherwise, high values were left in the dataset because the median, which is used in the cost model, is not directly influenced by outliers.

Of note this year, ERG undertook a data cleaning action necessitated by atypically low estimates of approximate equipment cost (including installation), resulting from stations not having an appropriate response option to indicate a straight monthly rental of equipment (a relatively new lease option for stations in the AirCheckTexas program). The low estimates created concerns about data consistency with prior years' survey results. To address these concerns, ERG discarded values under $500 for cash purchases and under $1,000 for lease and loan purchases. (ERG set the $500 and $1,000 thresholds after reviewing historical distributions of responses to this question in previous surveys.)

ERG also cleaned data to change blank or "missing" survey fields to zero when accurate due to survey skip logic. Some zeros were changed to missing values when interpreted to be non-responses, such as estimates of the time to perform an emissions inspection.

Other data changes were minor.[8]

Except as described above and in footnote 8, data in the following sections are displayed as submitted by the respondent. Sometimes, very high or very low data points heavily influence the "average" (i.e., mean) value shown in the tables. Therefore, the median values are likely most representative of a typical station. As mentioned above, one or two extreme values in a dataset have no direct impact on the median, although removing them may slightly affect the median depending on the spread of the data.

[8] For example, eight nonzero wage values below $7.25 were recoded to $7.25 for consistency with Texas' minimum wage. Two wage values and one per-test value of $0.01 were recoded to missing. Station square footage estimates below the average square footage of an inspection bay were also excluded from the analysis. Eleven units were inferred for maintenance costs based on best professional judgement using other stations' reported cost per unit. Units were not inferred where missing for equipment costs due to lack of information to rely on for inference. Additional recoding was also needed on inconsistent responses regarding decommissioned equipment and reduced-fee emissions test prices.

III. HGB/DFW SURVEY RESULTS

This chapter describes the survey responses for test-only and T&R stations in the HGB/DFW program areas (the survey instrument itself can be found in Appendix A). Any survey fields that were left blank are reported as "missing." Due to rounding, the percentages in some of the tables do not total exactly 100%. Results are not provided for some basic questions that are not highly relevant to the analysis of the emissions inspection fee.

In some instances, this section separately analyzes responses from stations that performed OBD inspections only and full-service stations that performed both ASM and OBD inspections.[9] Before January 1, 2020, OBD-only stations were limited to 150 emissions inspections per month (1,800 per year) in the HGB/DFW program areas.

A. GENERAL STATION INFORMATION

Table III-1 summarizes the typical hours of operation of stations in the HGB/DFW program areas, the number of hours these stations spend open per day, and the number of stations closed on each day of the week. This information is not directly input into the cost model, but it does provide some insight into labor usage between station types, as test-only stations are required to pay inspectors for their entire shifts regardless of whether they are conducting inspections and they may not be able to deploy the labor elsewhere. Overall, test-only and T&R stations have similar operating hours, although a higher percentage of T&R stations are closed on the weekends.

[9] Due to the timing of this survey, just a few months after the discontinuation of ASM testing, some stations may have identified as OBD-only despite having been full-service stations offering ASM testing in calendar year 2019. A comparison of stations' self-reported testing type (20% of HGB/DFW identified as full-service stations) with the testing type recorded in the active stations list provided by the TCEQ (22% of HGB/DFW active stations conduct ASM tests) suggests that most stations appropriately identified for the year of data being collected.

Table III-1. Hours of Operation—HGB/DFW

Day	Median Open Time	Median Close Time	Median Hours Open	Number Open	Number Closed
Test-Only					
OBD-Only					
Monday	8:30am	6:00pm	9	116	3
Tuesday	8:30am	6:00pm	9	119	0
Wednesday	8:30am	6:00pm	9	119	0
Thursday	8:30am	6:00pm	9	119	0
Friday	8:30am	6:00pm	9	118	1
Saturday	9:00am	5:00pm	9	106	13
Sunday	10:00am	5:00pm	7	25	94
ASM-OBD					
Monday	8:00am	6:00pm	9.5	57	0
Tuesday	8:00am	6:00pm	9.5	57	0
Wednesday	8:00am	6:00pm	9.5	57	0
Thursday	8:00am	6:00pm	9.5	57	0
Friday	8:00am	6:00pm	9.5	57	0
Saturday	8:00am	5:30pm	9	54	3
Sunday	9:00am	4:00pm	7	16	41
Test-and-Repair					
OBD-Only					
Monday	8:00am	6:00pm	10	484	2
Tuesday	8:00am	6:00pm	10	485	1
Wednesday	8:00am	6:00pm	10	480	6
Thursday	8:00am	6:00pm	10	482	4
Friday	8:00am	6:00pm	10	483	3
Saturday	8:00am	5:00pm	8	362	124
Sunday	9:00am	5:00pm	8	72	414
ASM-OBD					
Monday	8:00am	6:00pm	10	96	1
Tuesday	8:00am	6:00pm	10	96	1
Wednesday	8:00am	6:00pm	10	96	1
Thursday	8:00am	6:00pm	10	96	1
Friday	8:00am	6:00pm	10	96	1
Saturday	8:00am	5:00pm	9	86	11
Sunday	11:00am	5:00pm	6	20	77

Table III-2 and Table III-3 summarize the number of emissions inspection bays at each station and the uses for those bays. Table III-2 shows how many bays are used exclusively for emissions testing, while Table III-3 counts the bays used for emissions testing and other work. The majority of stations in the HGB/DFW program areas, both OBD-only and ASM-OBD (full-service) stations, have one bay used exclusively for emissions testing.

Table III-2. Number of Bays Used Exclusively for Testing—HGB/DFW

Station Type and Test Type	Number of Bays	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	0	25	21.0%
	1	77	64.7%
	2	11	9.2%
	3	2	1.7%
	4	2	1.7%
	5	2	1.7%
	Total	**119**	**100.0%**
ASM/OBD	0	10	17.5%
	1	34	59.6%
	2	12	21.1%
	3	1	1.8%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	0	91	18.7%
	1	363	74.7%
	2	29	6.0%
	3	3	0.6%
	Total	**486**	**100.0%**
ASM/OBD	0	26	26.8%
	1	57	58.8%
	2	10	10.3%
	3	2	2.1%
	6	1	1.0%
	10	1	1.0%
	Total	**97**	**100.0%**

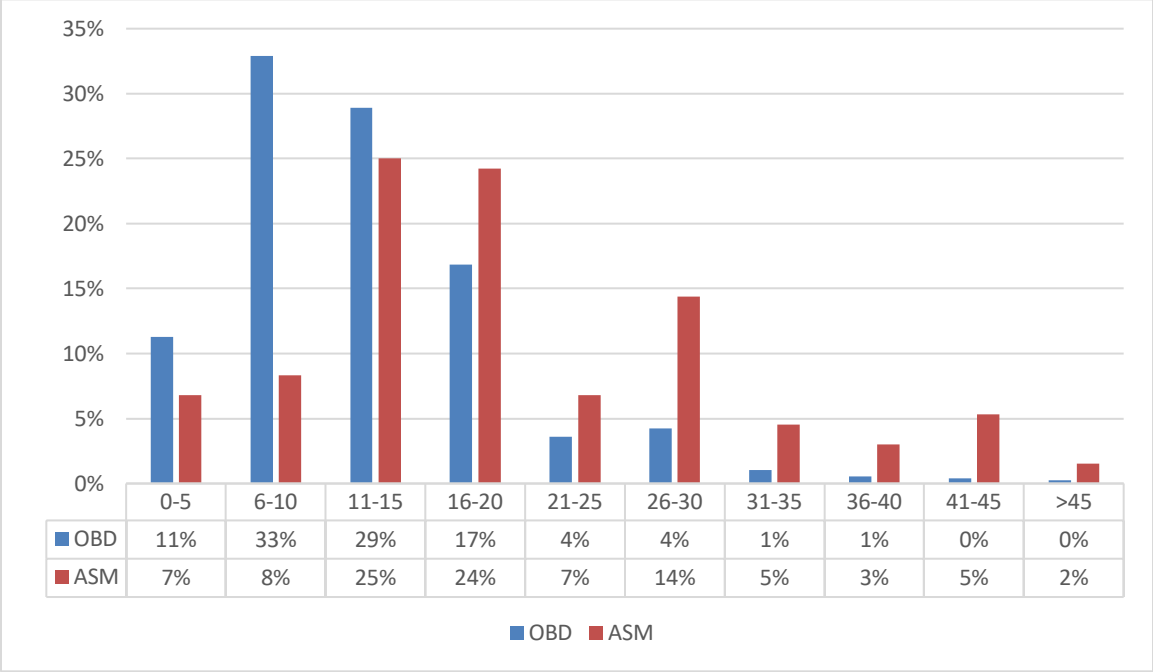
Table III-3. Number of Bays Used for Testing and Other Uses—HGB/DFW

Station and Test Type	Number of Bays	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	0	75	63.0%
	1	28	23.5%
	2	9	7.6%
	4	2	1.7%
	5	2	1.7%
	6	2	1.7%
	15	1	0.8%
	Total	**119**	**100.0%**
ASM/OBD	0	40	70.2%
	1	8	14.0%
	2	5	8.8%
	3	2	3.5%
	4	1	1.8%
	10	1	1.8%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	0	237	48.8%
	1	119	24.5%
	2	43	8.8%
	3	20	4.1%
	4	9	1.9%
	5	13	2.7%
	6	7	1.4%
	7	9	1.9%
	8	5	1.0%
	9	9	1.9%
	10	4	0.8%
	11	2	0.4%
	12	3	0.6%
	15	2	0.4%
	18	2	0.4%
	20	2	0.4%
	Total	**486**	**100.0%**
ASM/OBD	0	38	39.2%
	1	21	21.6%
	2	13	13.4%
	3	12	12.4%
	4	5	5.2%
	6	3	3.1%
	7	2	2.1%
	19	2	2.1%
	20	1	1.0%
	Total	**97**	**100.0%**

B. THE EMISSIONS INSPECTION PROCESS

Figure III-1 shows the distribution of survey responses regarding the average time (in minutes) to conduct emissions testing, for OBD tests and ASM tests. The median length of an OBD test in the HGB/DFW program areas is 15 minutes. Most respondents (79%) indicated that OBD tests take somewhere between 6 and 20 minutes. The median length of an ASM test is 20 minutes and most respondents (70%) indicated that ASM tests take somewhere between 11 and 30 minutes.

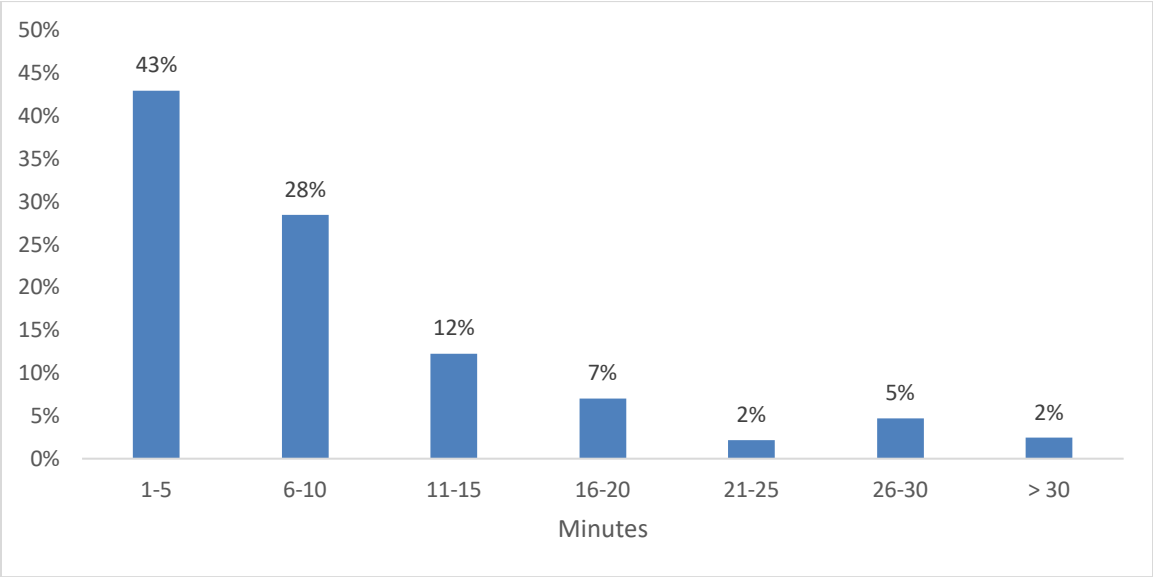
Figure III-1. Average Time in Minutes to Conduct OBD and ASM Emissions Tests—HGB/DFW



	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	>45
OBD	11%	33%	29%	17%	4%	4%	1%	1%	0%	0%
ASM	7%	8%	25%	24%	7%	14%	5%	3%	5%	2%

Respondents were also asked how much additional time, on average, is spent with each emissions inspection customer to explain either the emissions inspection process or reasons for failure and recommended repairs. The median additional time spent with inspection customers is 10 minutes in the HGB/DFW program areas. Figure III-2 shows the distribution of survey responses for this question. Nearly three quarters of respondents spend, on average, between 1 and 10 additional minutes with emissions inspector customers; 7% of respondents spend more than 25 extra minutes with these customers.

Figure III-2. Average Additional Time in Minutes Spent with Emissions Inspection Customers—HGB/DFW



C. REPAIR SERVICE REVENUE

Stations offering repair services in addition to emissions testing provided information about the revenue from repairing vehicles that failed emissions inspections. Since the relevant questions applied only to T&R stations, the results shown below in Table III-4, Table III-5, and Table III-6 represent only T&R stations. Table III-4 shows that the majority of stations reported between 1% and 20% of their repair revenue was generated from repairs following failed emissions inspections.

Table III-4. Percentage of Repair Revenues Resulting from Failed Emissions Inspections—HGB/DFW

Test Type	Percentage of Repair Revenues from Failed Inspections	Number of Responses	Percent of Total Responses
OBD-only	0%	50	10.3%
	1–20%	392	80.7%
	21–40%	29	6.0%
	41–60%	10	2.1%
	61–80%	2	0.4%
	81–100%	1	0.2%
	Missing	2	0.4%
	Total	**486**	**100.0%**
ASM-OBD	0%	21	21.6%
	1–20%	57	58.8%
	21–40%	14	14.4%
	41–60%	3	3.1%
	61–80%	0	0.0%
	81–100%	2	2.1%
	Missing	0	0.0%
	Total	**97**	**100.0%**

Table III-5 shows that the median number of repair jobs from failed emissions inspections is somewhat higher for ASM-OBD stations (median = 5) than OBD-only stations (median = 3). Figure III-3 is a histogram showing the distribution of repair jobs from failed inspections at OBD-only and ASM-OBD stations, respectively. Although the average number of repair jobs resulting from failed emissions tests is slightly higher for OBD-only stations, similar percentages of OBD-only and ASM-OBD stations report up to 10 repair jobs per month resulting from failed emissions inspections.

Table III-5. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests—HGB/DFW

Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	2	3	8	9.3	423
ASM-OBD	2	5	10	7.7	75

Figure III-3. Distribution of Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests— HGB/DFW

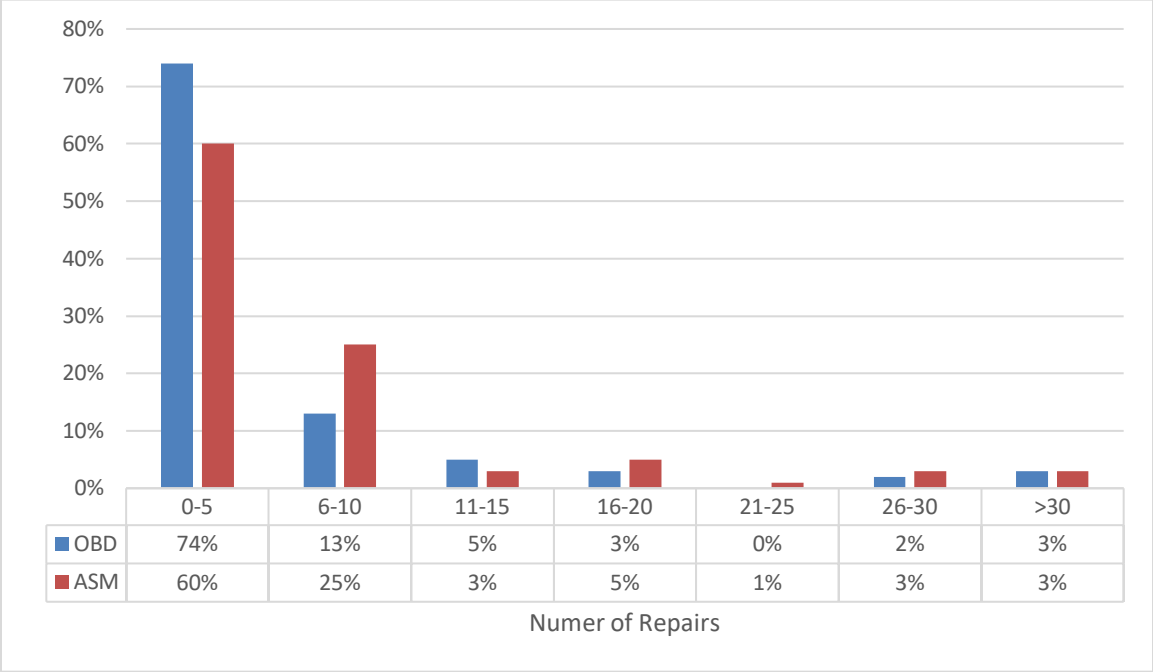
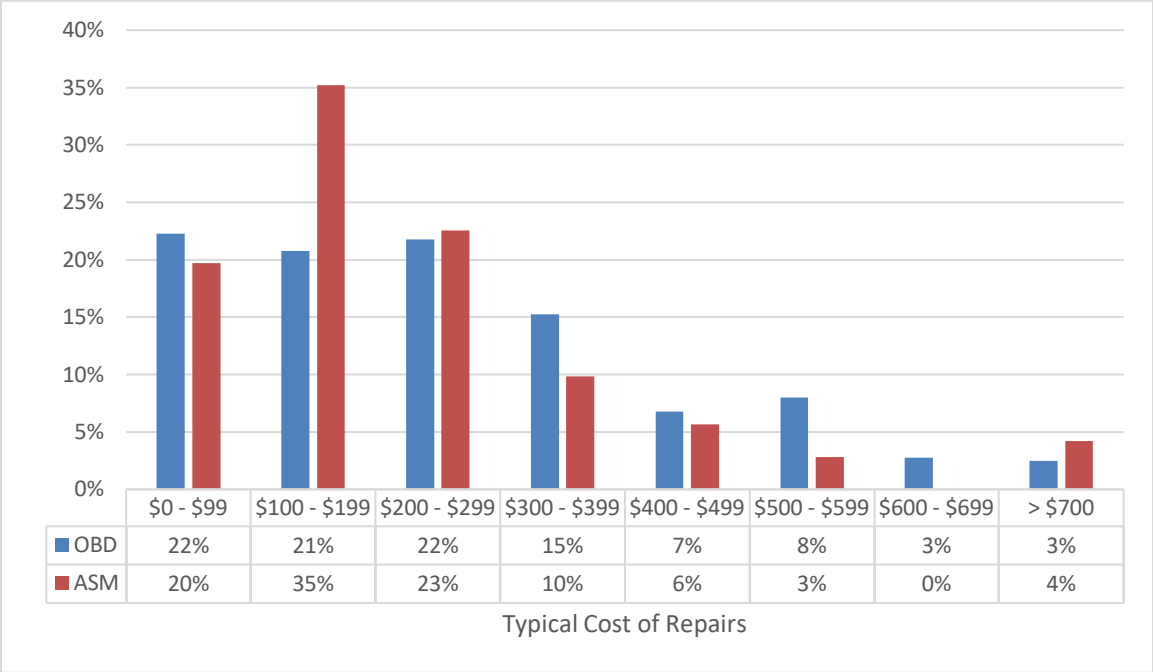


Table III-6 shows that the average cost of a repair following a failed emissions inspection at OBD-only stations was $245 with a median of $200; for ASM-OBD stations, the average was $229 with a median of $150. Figure III-4 illustrates the distribution of responses regarding average cost of repairs following a failed inspection. This information only provides gross revenue generated from repairs from failed inspections; it does not provide any insight into the additional profit from these repairs. This information does not feed directly into the cost model, but rather informs supplemental discussion about additional revenue from repairs.

Table III-6. Typical Repair Costs for an Emissions Test Failure—HGB/DFW

Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	$100	$200	$300	$245	400
ASM-OBD	$100	$150	$250	$229	71

Figure III-4. Distribution of Typical Repair Costs for an Emissions Test Failure—HGB/DFW



D. EMISSIONS INSPECTORS

Table III-7 and Table III-8 summarize the total number of vehicle emissions inspectors employed per station, by station type, for HGB/DFW. Most stations in these program areas employ one, two, or three inspectors. While most test-only stations in HGB/DFW employ three or fewer inspectors, one reported employing 27 inspectors. T&R stations report a wider range of inspectors employed, with 24 T&R stations employing 10 or more inspectors. Stations in HGB/DFW employ a median of two inspectors.

Table III-7. Number of Emissions Inspectors Currently Working at the Station—HGB/DFW (Test-Only)

Station and Test Type	Number of Inspectors	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	1	42	35.3%
	2	40	33.6%
	3	18	15.1%
	4	9	7.6%
	5	6	5.0%
	6	3	2.5%
	27	1	0.8%
	Total	**119**	**100.0%**
ASM-OBD	1	16	28.1%
	2	16	28.1%
	3	15	26.3%
	4	3	5.3%
	5	5	8.8%
	6	2	3.5%
	Total	**57**	**100.0%**

Table III-8. Number of Emissions Inspectors Currently Working at the Station—HGB/DFW (Test-and-Repair)

Station and Test Type	Working Inspectors	Number of Responses	Percent of Total Responses
Test-and-Repair			
OBD-only	1	126	25.9%
	2	161	33.1%
	3	75	15.4%
	4	60	12.3%
	5	30	6.2%
	6	14	2.9%
	7	5	1.0%
	8	3	0.6%
	10	4	0.8%
	11	1	0.2%
	15	1	0.2%
	16	1	0.2%
	20	1	0.2%
	23	1	0.2%
	25	1	0.2%
	31	1	0.2%
	53	1	0.2%
	Total	**486**	**100.0%**
ASM-OBD	1	18	18.6%
	2	22	22.7%
	3	15	15.5%
	4	11	11.3%
	5	8	8.2%
	6	1	1.0%
	7	6	6.2%
	8	3	3.1%
	9	1	1.0%
	10	2	2.1%
	12	2	2.1%
	14	2	2.1%
	20	1	1.0%
	27	1	1.0%
	40	3	3.1%
	48	1	1.0%
	Total	**97**	**100.0%**

Table III-9, Table III-10, and Table III-11 provide numbers of emissions inspectors per station, broken down into full-time and part-time inspectors. “Full-time inspectors” are full-time employees qualified to perform inspections. They may spend all, some, or just a little of their work time doing inspections. “Part-time inspectors” are part-time employees qualified to do inspections, who likewise may spend only some of their working time doing inspections. The tables show that 37% and 62.9% of OBD-only test-only and T&R stations, respectively, had more than one inspector working full time. This is slightly lower than the 42.1% and 72.1% of ASM-

OBD test-only and T&R stations, respectively, that had more than one inspector working full time. The survey results also indicate that ASM-OBD stations are somewhat more likely to employ part-time inspectors than OBD-only stations.

Table III-9. Number of Full-Time Emissions Inspectors*—HGB/DFW (Test-Only)

Station and Test Type	Number of Full-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	0	11	9.2%
	1	64	53.8%
	2	21	17.6%
	3	7	5.9%
	4	9	7.6%
	5	4	3.4%
	6	2	1.7%
	27	1	0.8%
	Total	**119**	**100.0%**
ASM-OBD	0	3	5.3%
	1	30	52.6%
	2	11	19.3%
	3	10	17.5%
	4	1	1.8%
	5	2	3.5%
	Total	**57**	**100.0%**

* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table III-10. Number of Full-Time Emissions Inspectors*—HGB/DFW (Test-and-Repair)

Station and Test Type	Number of Full-Time Inspectors	Number of Responses	Percent of Total Responses
Test-and-Repair			
OBD-only	0	11	2.3%
	1	169	34.8%
	2	144	29.6%
	3	71	14.6%
	4	37	7.6%
	5	22	4.5%
	6	14	2.9%
	7	6	1.2%
	8	2	0.4%
	10	3	0.6%
	15	1	0.2%
	16	1	0.2%
	20	1	0.2%
	23	1	0.2%
	25	1	0.2%
	30	1	0.2%
	53	1	0.2%
	Total	**486**	**100.0%**
ASM-OBD	0	2	2.1%
	1	25	25.8%
	2	25	25.8%
	3	11	11.3%
	4	10	10.3%
	5	4	4.1%
	7	6	6.2%
	8	4	4.1%
	10	2	2.1%
	11	1	1.0%
	12	2	2.1%
	20	1	1.0%
	40	3	3.1%
	48	1	1.0%
	Total	**97**	**100.0%**

* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table III-11. Number of Part-Time Emissions Inspectors*—HGB/DFW

Station and Test Type	Number of Part-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	0	75	63.0%
	1	29	24.4%
	2	11	9.2%
	3	3	2.5%
	5	1	0.8%
	Total	**119**	**100.0%**
ASM-OBD	0	28	49.1%
	1	19	33.3%
	2	5	8.8%
	3	3	5.3%
	4	2	3.5%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	0	376	77.4%
	1	78	16.0%
	2	20	4.1%
	3	8	1.6%
	4	4	0.8%
	Total	**486**	**100.0%**
ASM-OBD	0	71	73.2%
	1	15	15.5%
	2	5	5.2%
	3	3	3.1%
	4	1	1.0%
	9	1	1.0%
	27	1	1.0%
	Total	**97**	**100.0%**

* A part-time inspector is a part-time employee who does inspections as all or part of their duties.

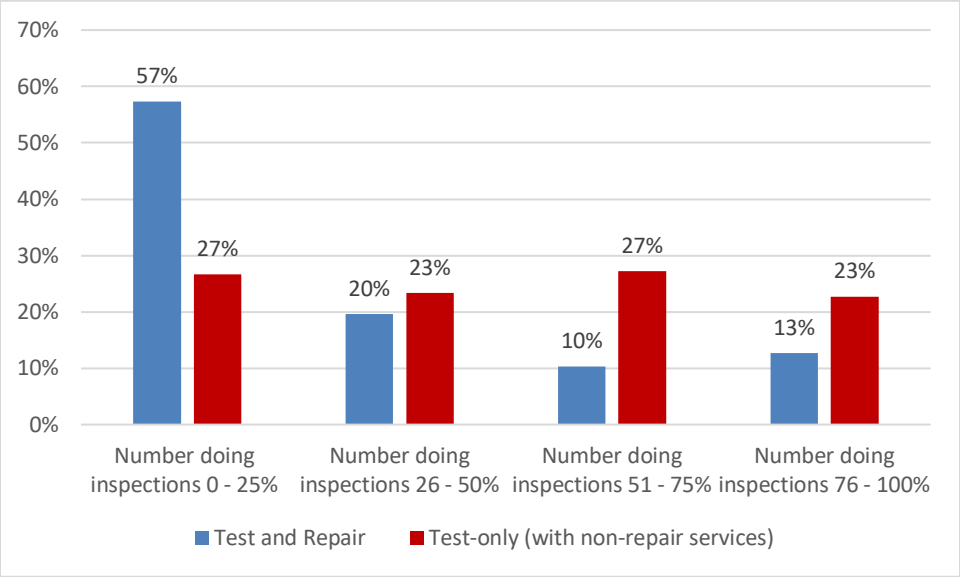
To explore the extent to which stations offering repair or non-repair services focus on activities other than emissions inspections, stations were asked how much time inspectors spend performing emissions inspections. Table III-12 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full-time inspector spending at least half of their time conducting inspections. Around 39% of test-only stations offer non-repair services (typically general maintenance services such as oil changes and filter replacements), but 70% of those that do offer other services have at least one full-time inspector working at least half of their time conducting inspections. Over half of T&R stations offer both repair and non-repair services in addition to emissions testing. About 35% of T&R stations have at least one full-time inspector spending at least half of their time on inspections.

Table III-12. Deployment of Labor by Station Type and Services Offered—HGB/DFW

Station Type and Services Offered	Count of All Stations	Percent of Station Type	Count of Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 51% of the Time	Percent Relative to All Stations	Full-Time Inspectors	Part-Time Inspectors
Test-Only	**176**	—	—	—	**318**	**111**
No other services	107	14%	NA	NA	164	77
Non-repair services	69	9%	48	70%	154	34
Test-and-Repair	583	—	205	35%	1,767	232
Repair services only	191	25%	75	39%	380	73
Repair and non-repair services	392	52%	130	33%	1,387	159
Total	759	100%	331	44%	2,085	343

Figure III-5 shows the distribution of full-time inspectors by percent of time doing inspections. For T&R, the figure shows that full-time workers' labor is not spent only on inspections; therefore, ERG assumed that inspectors are doing other work when not inspecting vehicles and did not include this time in the cost model (i.e., this justifies only including incremental inspection time).

Figure III-5. Full-Time Inspectors* by Percent of Time Spent Doing Inspections—HGB/DFW



*A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table III-13 summarizes average hourly wages (unloaded) paid to emissions inspectors, as well as per-test commissions paid, by station type. Overall, median reported hourly wages for emissions inspectors were very similar across OBD-only ($12 to $13) and ASM-OBD ($10.25 to $12) stations. These values are similar to the $12.56 and $13.07 hourly wages shown for the HGB and DFW areas, respectively, for level 1 auto service technicians and mechanics, as

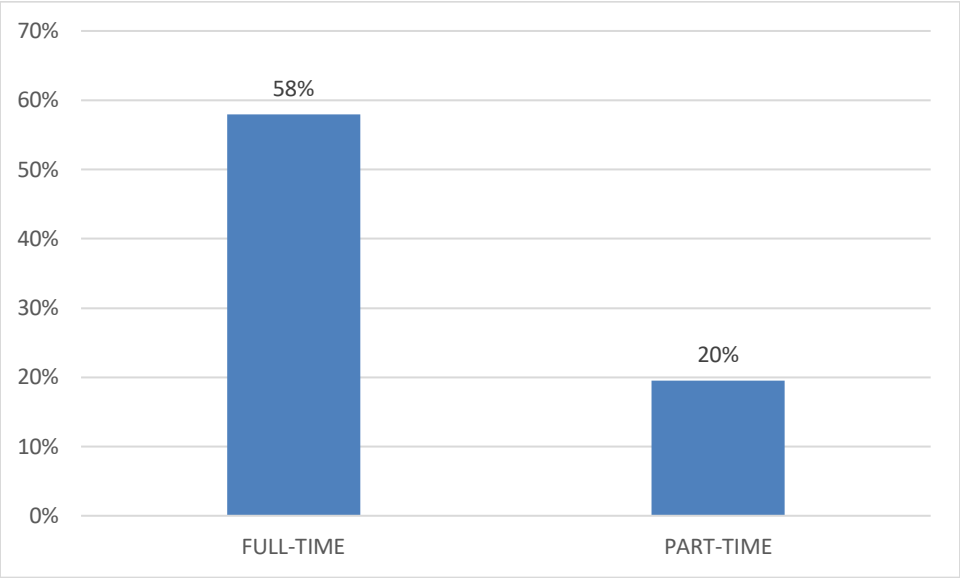
reported by the Foreign Labor Certification Data Center (FLC, 2020). The cost model uses hourly wage information directly; it does not include per-test payments since most inspectors are paid hourly or by salary (as opposed to commission).

Table III-13. Current Wages Paid to Emissions Inspectors, Hourly ($/hr) and Per-Test—HGB/DFW

Station and Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Hourly/Salary					
Test-Only					
OBD-only	$10.00	$12.00	$14.06	$32.81	84
ASM-OBD	$10.00	$10.25	$13.00	$11.45	44
Test-and-Repair					
OBD-only	$10.50	$13.00	$15.00	$23.99	381
ASM-OBD	$10.00	$12.00	$15.00	$27.44	76
Per-Test					
Test-Only					
OBD-only	$6.00	$10.00	$12.00	$9.53	25
ASM-OBD	$2.00	$5.00	$10.00	$7.79	14
Test-and-Repair					
OBD-only	$3.00	$7.25	$11.20	$8.29	106
ASM-OBD	$5.00	$10.00	$12.00	$9.00	25

The survey also asked how many full- and part-time emissions inspectors received benefits ("health care, paid leave, etc."). Determining the number of inspectors who receive benefits allows the cost model to adjust the Bureau of Labor Statistics (BLS) fringe benefit rate to control for those inspectors who do receive benefits and those who do not. As shown in Figure III-6, 58% of full-time emissions inspectors and only 20% of part-time inspections in HGB/DFW receive benefits.

Figure III-6. Percent of Emissions Inspectors Receiving Benefits—HGB/DFW



Respondents were asked if they incurred costs to train employees to conduct emissions inspections. If so, they were asked to provide dollar figures related to different types of costs related to training, such as inspector training application fees, food and lodging costs, and wages paid for both on-the-job training and time spent in training courses. Table III-14 shows that T&R stations were more likely to incur training costs (between 38.9% and 45.4%) than test-only stations in HGB/DFW (between 24.4% and 36.8%).

Table III-14. Does Your Station Incur Training Costs?—HGB/DFW

Station and Test Type	Incur training costs?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	No	86	72.3%
	Yes	29	24.4%
	Missing	4	3.4%
	Total	**119**	**100.0%**
ASM-OBD	No	36	63.2%
	Yes	21	36.8%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	No	293	60.3%
	Yes	189	38.9%
	Missing	4	0.8%
	Total	**486**	**100.0%**
ASM-OBD	No	53	54.6%
	Yes	44	45.4%
	Total	**97**	**100.0%**

E. EMISSIONS TESTING EQUIPMENT, BUILDING, AND OTHER COSTS

Cost data for certified emissions testing analyzers are presented in Table III-15 below. Emissions testing equipment data are presented on a per-unit basis rather than a per-station basis because stations may have more than one certified emissions testing analyzer. Because of this, totals may be larger than the number of stations that responded to the survey.

Respondents reported paying a median value of $30,000 for ASM-OBD analyzers and a median of $8,000 for OBD-only analyzers. A refurbished certified ASM-OBD analyzer ranges in price from $25,500 to $32,500 (TCEQ, 2017) and a new certified OBD analyzer typically ranges in price from $6,895 to $7,950, which coincides reasonably well with the reported survey values.

Table III-15. Cost of Certified Emissions Testing Analyzers by Equipment Type—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	$6,500	$8,000	$10,000	$11,896	566
ASM-OBD	$9,000	$30,000	$40,000	$35,652	93

As shown in Table III-16, 43% of OBD-only equipment and 45% of ASM-OBD equipment was purchased with cash. For the cost model, it is assumed that stations have a financing mechanism (loan or lease-to-purchase agreement) for acquiring inspection equipment, so the cost models use the survey data for these financing mechanisms.

Table III-16. Financing Mechanisms for Purchasing Emissions Testing Equipment—HGB/DFW

Equipment Type	Finance Type	Number of Responses	Percent of Total Responses
OBD-only	Paid cash	352	43.0%
	Lease-to-purchase	286	35.0%
	Bank loan	71	8.7%
	Not disclosed	109	13.3%
	Total	**818***	**100.0%**
ASM-OBD	Paid cash	54	45.0%
	Lease-to-purchase	19	15.8%
	Bank loan	29	24.2%
	Not disclosed	18	15.0%
	Total	**120***	**100.0%**

* Of the 759 respondents in the HGB/DFW program area, 26% (195 stations) reported more than one certified analyzer.

For stations that did not pay with cash, Table III-17 shows that the median lease-to-purchase or bank loan term is 5 years for ASM-OBD equipment and 4 years for OBD-only equipment. The interquartile range for ASM-OBD analyzers is wider (5.5 versus 2 years), however, indicating that there is more variability in loan terms for ASM-OBD machines. Figure III-7 more clearly illustrates this distribution of loan terms for the HGB/DFW program areas.

Table III-17. Lease-to-Purchase or Bank Loan Term (Years)—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only analyzers	3.0	4.0	5.0	5.3	157
ASM-OBD analyzers	4.5	5.0	10.0	7.0	28

Figure III-7. Distribution of the Lease-to-Purchase or Bank Loan Term (Years)—HGB/DFW

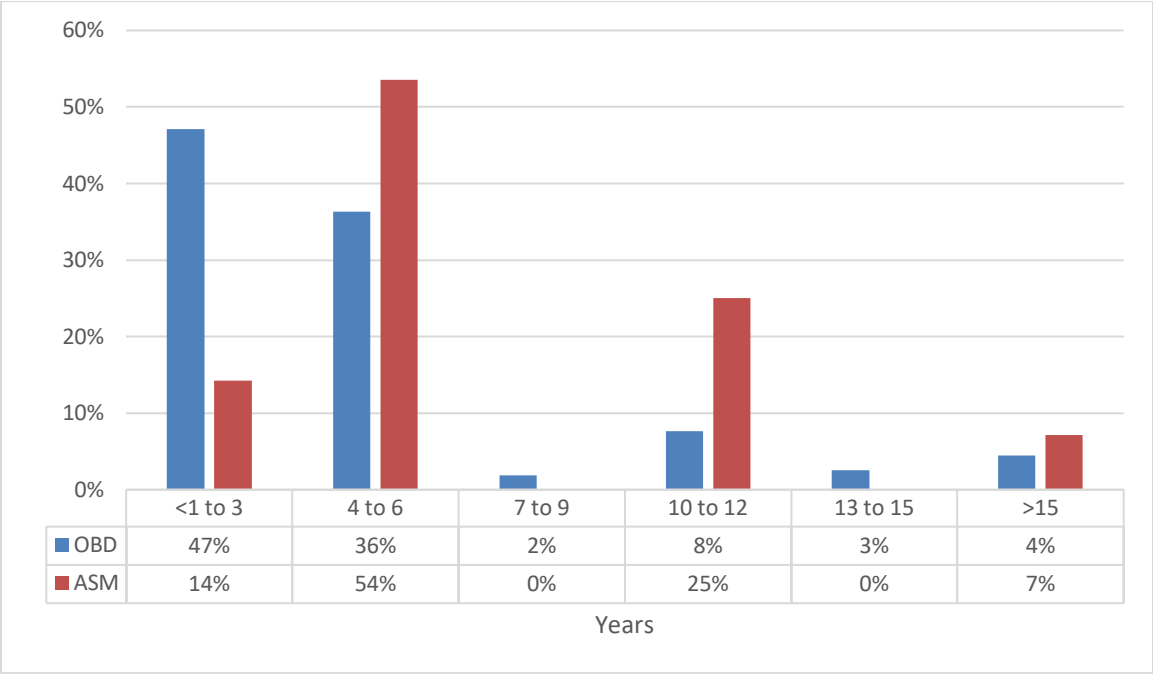
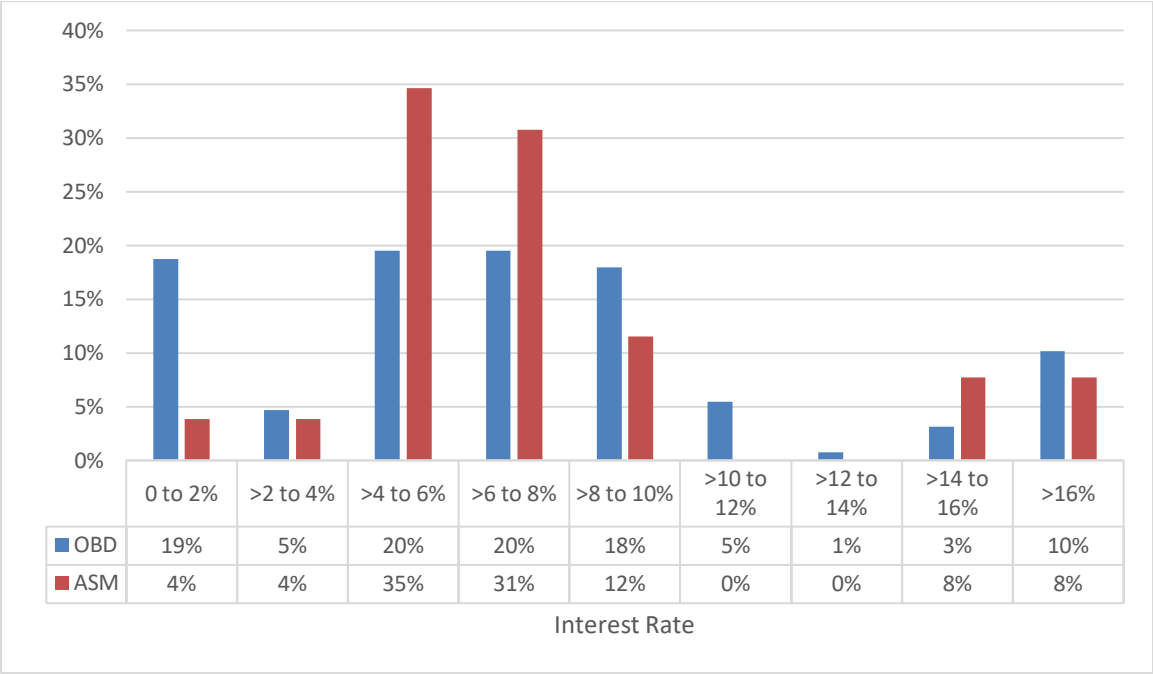


Table III-18 summarizes the survey responses regarding lease-to-purchase or bank loan interest rates. The data show that these rates were relatively similar for the two different equipment types. Figure III-8 presents the distributions of these interest rates by equipment type.

Table III-18. Interest Rates for Lease-to-Purchase or Bank Loan—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	4.50%	7.25%	10.00%	8.40%	128
ASM-OBD	6.00%	7.00%	8.50%	9.20%	26

Figure III-8. Distribution of the Interest Rates for Lease-to-Purchase or Bank Loan—HGB/DFW



While more test-only stations (48.9%) than T&R stations (36.6%) in HGB/DFW report having maintenance plans, roughly the same number of ASM-OBD (full-service) stations (38%) and OBD-only stations (40%) report having maintenance plans for their emissions testing equipment.

Table III-19 shows that OBD-only stations report paying a much lower median annual maintenance cost ($862 for test-only and $900 for T&R) than ASM-OBD stations ($3,000 median for test-only and $2,400 median for T&R). This is consistent with the much higher purchase price and maintenance costs of the certified ASM-OBD analyzers.

Table III-19. Annual Maintenance Package Costs—HGB/DFW

Station and Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-Only					
OBD-only	$600	$862	$1,800	$1,371	42
ASM-OBD	$1,700	$3,000	$4,200	$3,448	27
Test-and-Repair					
OBD-only	$500	$900	$1,800	$1,405	143
ASM-OBD	$995	$2,400	$3,200	$2,357	21

Many stations also incur maintenance costs not covered by a service contract or maintenance package agreement. As shown in Table III-20, these additional costs were again much higher for ASM-OBD stations (medians of $1,370 for test-only and $1,000 for T&R stations) than for OBD-only stations (medians of $400 for test-only and $450 for T&R stations).

Table III-20. Extra Annual Maintenance Costs for Stations with Maintenance Plans—HGB/DFW

Station and Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-Only					
OBD-only	$0	$400	$1,000	$800	86
ASM-OBD	$300	$1,370	$4,500	$2,458	49
Test-and-Repair					
OBD-only	$1	$450	$1,000	$889	406
ASM-OBD	$300	$1,000	$2,500	$1,714	82

The certified analyzer purchase and maintenance costs are major differences in the cost structure between an OBD-only and an ASM-OBD station. As mentioned above, OBD-only stations were more limited in their revenue stream before January 1, 2020, because they had a cap of 150 emissions inspections per month or 1,800 per year.

Table III-21 summarizes the results on whether stations have ever gotten rid of emissions testing equipment they no longer needed. Similar numbers of test-only and T&R stations (60% and 62%, respectively) reported not getting rid of equipment. T&R stations offering OBD-only inspections were most likely to report getting rid of analyzers, which is consistent with the phasing out of ASM emissions inspections (as they may have been formerly ASM-OBD stations). Overall, 61% of units that stations got rid of in HGB/DFW were ASM units.

Table III-21. Stations That Got Rid of Emissions Testing Equipment—HGB/DFW

Station and Test Type	Ever Got Rid of Equipment?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	Yes	37	31.1%
	No	66	55.5%
	Not sure	14	11.8%
	Missing	2	1.7%
	Total	**119**	**100.0%**
ASM-OBD	Yes	13	22.8%
	No	37	64.9%
	Not sure	7	12.3%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	Yes	134	27.6%
	No	296	60.9%
	Not sure	51	10.5%
	Missing	5	1.0%
	Total	**486**	**100.0%**
ASM-OBD	Yes	19	19.6%
	No	66	68.0%
	Not sure	12	12.4%
	Total	**97**	**100.0%**

Survey data show that stations that got rid of analyzers owned ASM analyzers for slightly longer, on average (13.2 years), before getting rid of them compared to OBD-only analyzers (11.9 years) that were decommissioned (see Table III-22). Table III-23 shows how stations got rid of their emissions testing equipment. Table III-24 and Table III-25 show costs and revenues from getting rid of emissions testing equipment. Note that, due to the small number of responses to the questions on equipment that stations got rid of, these results are not likely to be particularly representative of the whole industry.

Table III-22. Years Owned Before Stations Got Rid of Equipment—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	7	11	17	11.9	78
ASM-OBD	8	13	17	13.2	121

Table III-23. How Stations Got Rid of Equipment—HGB/DFW

Equipment Type	Free, Paid, or Sold?	Number of Responses	Percent of Total Responses
OBD-only	I sold this	8	10.0%
	I paid to get rid of this	9	11.3%
	I got rid of this for free	58	72.5%
	Not disclosed	5	6.3%
	Total	**80**	**100.0%**
ASM-OBD	I sold this	15	11.9%
	I paid to get rid of this	45	35.7%
	I got rid of this for free	58	46.0%
	Not disclosed	8	6.3%
	Total	**126**	**100.0%**

Table III-24. Cost to Get Rid of Equipment—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	$50	$100	$150	$108	6
ASM-OBD	$100	$500	$850	$620	34

Table III-25. Revenue from Getting Rid of Equipment—HGB/DFW

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-only	$400	$900	$1,250	$950	8
ASM-OBD	$1,000	$2,000	$5,000	$2,969	13

In the HGB/DFW program areas, the majority of both test-only (80%) and T&R (90%) stations reported that they did not ever add or acquire building space (i.e., bay space) to perform vehicle emissions testing. To control for both added or acquired building space and analyzer equipment, and just equipment costs, the analytical model is designed to provide results both with and without building space costs. Table III-26 provides an overview of the number of stations that purchased or rent/lease their building space. Among all stations in HGB/DFW, less

than half of stations (40%) own the building space used for vehicle emissions testing while 60% rent or lease their space, with more T&R stations owning than renting compared to test-only stations.

Table III-26. Building Space Rented or Purchased?—HGB/DFW

Station and Test Type	Purchase or Rent?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	Purchase	33	27.7%
	Rent/lease	82	68.9%
	Missing	4	3.4%
	Total	**119**	**100.0%**
ASM-OBD	Purchase	16	28.1%
	Rent/lease	40	70.2%
	Missing	1	1.8%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	Purchase	200	41.2%
	Rent/lease	269	55.3%
	Missing	17	3.5%
	Total	**486**	**100.0%**
ASM-OBD	Purchase	51	52.6%
	Rent/lease	45	46.4%
	Missing	1	1.0%
	Total	**97**	**100.0%**

Less than one-fifth of stations offer reduced-fee and/or free emissions inspections (other than performing obligatory free retests after a vehicle failed inspection at their station). As Table III-27 shows, OBD-only stations provided free emissions inspections at a similar frequency (15.1% at test-only stations and 14.8% at T&R stations) to ASM-OBD stations (19.3% at test-only stations and 18.6% at T&R stations). Common reasons for providing free tests included providing free inspections for general customer satisfaction; as a loss leader; and to friends, family, and employees.

Table III-27. Free Emissions Tests (Except Free Retests)—HGB/DFW

Station and Test Type	Free Tests Ever Given?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	No	101	84.9%
	Yes	18	15.1%
	Total	**119**	**100.0%**
ASM-OBD	No	46	80.7%
	Yes	11	19.3%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	No	414	85.2%
	Yes	72	14.8%
	Total	**486**	**100.0%**
ASM-OBD	No	79	81.4%
	Yes	18	18.6%
	Total	**97**	**100.0%**

Table III-28 shows, across station and testing types, similar rates of charging a reduced fee (less than $18.50 [OBD] or $24.50 [ASM]), excluding free retests for previously failed vehicles. The percent of stations that occasionally offer reduced-fee emissions inspections ranges from 11.3% (ASM-OBD T&R) to 18.5% (OBD-only test-only). Though this information does not feed into the cost model, it does provide an indicator on the adequacy of the fee. For example, a significant number of stations offering tests below the maximum fee might indicate that the fee cap is high enough. As Table III-29 shows, a typical fee reduction was $5, or a median reduced fee charge of $13.50 for OBD-only tests and $19.50 for ASM-OBD tests.

Table III-28. Reduced-Fee Emissions Tests (Less than $18.50 [OBD] or $24.50 [ASM])—HGB/DFW

Station and Test Type	Charged Less than $18.50 (ODB) or $24.50 (ASM)?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	No	97	81.5%
	Yes	22	18.5%
	Total	**119**	**100.0%**
ASM-OBD	No	47	82.5%
	Yes	10	17.5%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	No	425	87.4%
	Yes	61	12.6%
	Total	**486**	**100.0%**
ASM-OBD	No	86	88.7%
	Yes	11	11.3%
	Total	**97**	**100.0%**

Table III-29. Typical Reduced Fees Charged (Less than $18.50 [OBD] or $24.50 [ASM])—HGB/DFW

Test Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
OBD-Only	$10.00	$13.50	$15.00	$12.82	82
ASM-OBD	$15.00	$19.50	$20.00	$17.13	15

Respondents were also asked whether the fee for emissions inspections covers the associated costs. As shown in Table III-30, the majority of respondents answered "no": 58.0% of OBD-only test-only stations responded that the fee did not cover the costs, compared to the 68.4% of ASM-OBD test-only stations that indicated the fee does not cover the costs. Similarly, 64.8% of OBD-only T&R stations reported that the fee did not cover the costs, and 64.9% of ASM-OBD T&R stations reported that the fee did not cover the costs. Though the cost model does not include this information, it is important to the overall discussion of whether fees cover costs. Chapter VII provides an overview of stations' explanations for why the fee does not cover costs.

Table III-30. Does Fee Cover Emissions Testing Costs?—HGB/DFW

Station and Test Type	Fee Covers Testing Costs?	Number of Responses	Percent of Total Responses
Test-Only			
OBD-only	No	69	58.0%
	Yes	50	42.0%
	Total	**119**	**100.0%**
ASM-OBD	No	39	68.4%
	Yes	18	31.6%
	Total	**57**	**100.0%**
Test-and-Repair			
OBD-only	No	315	64.8%
	Yes	166	34.2%
	Missing	5	1.0%
	Total	**486**	**100.0%**
ASM-OBD	No	63	64.9%
	Yes	34	35.1%
	Total	**97**	**100.0%**

IV. EL PASO SURVEY RESULTS

This chapter describes the survey responses for test-only and T&R stations in the El Paso program area (the survey instrument itself can be found in Appendix A). Any survey fields that were left blank are reported as "missing." Due to rounding, the percentages in some of the tables do not total exactly 100%. Results are not provided for some basic questions that are not highly relevant to the analysis of the emissions inspection fee.

As noted in Chapter II, only 17 test-only stations in El Paso submitted (responses within the scope of this study) the survey, compared to 33 T&R stations that responded, so caution should be taken in assessing these data due to the small sample size.

A. GENERAL STATION INFORMATION

Table IV-1 summarizes the typical hours of operation of stations in El Paso, the number of hours these stations are open per day, and the number of stations closed on each day of the week. This information is not directly input into the cost model, but it does provide some insight into labor usage between station types, as test-only stations are required to pay inspectors for their entire shifts regardless of whether they are conducting inspections. Overall, test-only and T&R stations have similar operating hours.

Table IV-1. Hours of Operation—El Paso

Day	Median Open Time	Median Close Time	Median Hours Open	Number Open	Number Closed
Test-Only					
Monday	8:00am	6:00pm	10	16	1
Tuesday	8:00am	6:00pm	10	17	0
Wednesday	8:00am	6:00pm	10	17	0
Thursday	8:00am	6:00pm	10	17	0
Friday	8:00am	6:00pm	10	17	0
Saturday	8:00am	6:00pm	10	17	0
Sunday	10:00am	4:00pm	6	12	5
Test-and-Repair					
Monday	8:00am	5:45pm	9	31	2
Tuesday	8:00am	5:30pm	9	33	0
Wednesday	8:00am	5:30pm	9	33	0
Thursday	8:00am	5:30pm	9	33	0
Friday	8:00am	5:30pm	9	33	0
Saturday	8:30am	4:00pm	7	32	1
Sunday	10:00am	4:00pm	6	1	32

Table IV-2 and Table IV-3 summarize the number of emissions inspection bays at each station and the uses for those bays. Table IV-2 shows how many bays in the station are used exclusively for emissions testing, while Table IV-3 counts the bays used for emissions testing and other work.

Table IV-2. Number of Bays Used Exclusively for Testing—El Paso

Number of Bays	Number of Responses	Percent of Total Responses
Test-Only		
0	3	17.6%
1	11	64.7%
2	3	17.6%
Total	**17**	**100.0%**
Test-and-Repair		
0	1	3.0%
1	30	90.9%
2	2	6.1%
Total	**33**	**100.0%**

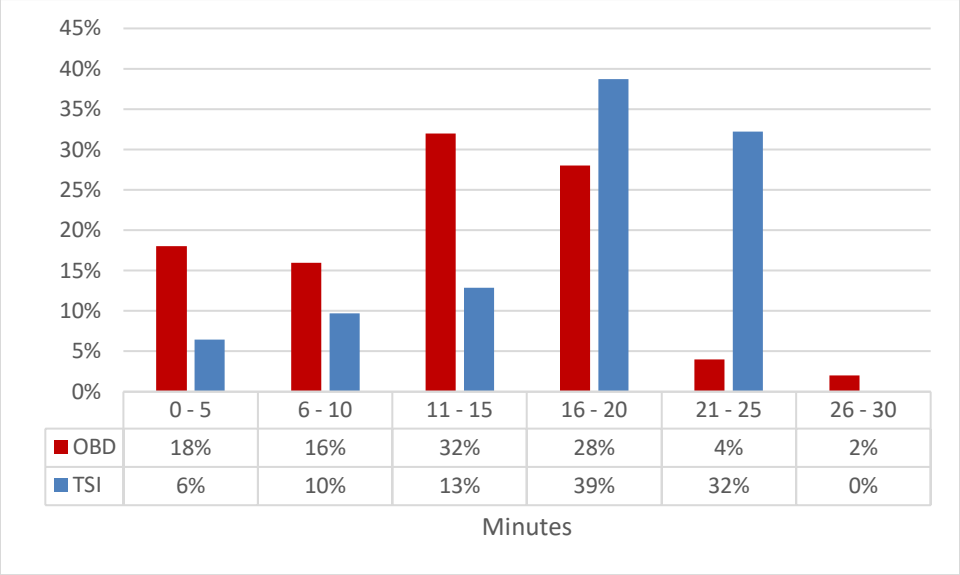
Table IV-3. Number of Bays Used for Testing and Other Uses—El Paso

Number of Bays	Number of Responses	Percent of Total Responses
Test-Only		
0	5	29.4%
1	2	11.8%
2	8	47.1%
3	1	5.9%
4	1	5.9%
Total	**17**	**100.0%**
Test-and-Repair		
0	17	51.5%
1	12	36.4%
2	2	6.1%
6	2	6.1%
Total	**33**	**100.0%**

B. THE EMISSIONS INSPECTION PROCESS

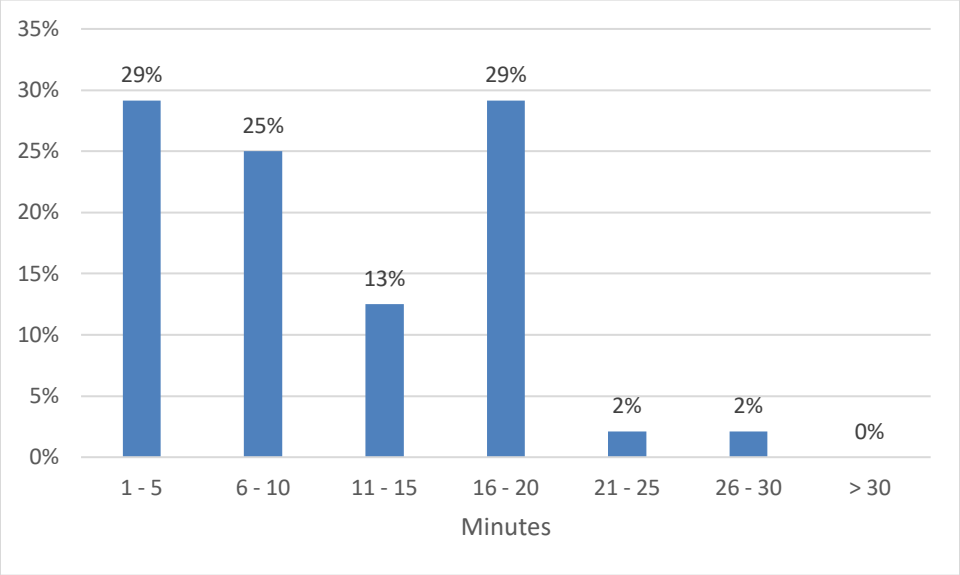
Figure IV-1 shows the distribution of survey responses regarding the average time (in minutes) for OBD tests and TSI tests. No stations reported testing times greater than 30 minutes. In El Paso, the median length of an OBD test is 15 minutes and the median length of a TSI test is 20 minutes.

Figure IV-1. Average Time in Minutes to Conduct OBD and TSI Emissions Tests—El Paso



Respondents were asked how much additional time, on average, emissions inspectors spend with each emissions inspection customer to explain either the inspection process or reasons for failure and recommended repairs. The median length of additional time spent with inspection customers in El Paso is 10 minutes.

Figure IV-2. Average Additional Time in Minutes Spent with Emissions Inspection Customers—El Paso



C. REPAIR SERVICE REVENUE

Stations offering repair services in addition to emissions inspections provided information about the revenue stream generated from repairs to vehicles that failed emissions inspections. Since the relevant questions were applicable only to T&R stations, the results shown below represent only T&R stations.

As Table IV-4 shows, 45.5% of T&R stations reported that between 1% and 20% of their repair revenue came from failed emissions repairs. One station reported that between 81% and 100% of its repair revenue came directly from failed emissions inspections.

Table IV-4. Percentage of Repair Revenues Resulting from Failed Emissions Inspections—El Paso

Percentage of Repair Revenues from Failed Inspections	Number of Responses	Percent of Total Responses
0%	2	6.1%
1–20%	15	45.5%
21–40%	8	24.2%
41–60%	5	15.2%
61–80%	2	6.1%
81–100%	1	3.0%
Total	**33**	**100.0%**

Table IV-5 shows that the average number of repair jobs per month that are generated from failed emissions inspections is 13.1, while the median is 10 repair jobs per month. The interquartile range is 15, with the middle half of the stations averaging between five and 20 repair jobs per month from failed emissions tests. Figure IV-3 shows the distribution of the responses in a histogram. The average cost of such a repair was $129, with a median value of $100 (Table IV-6). The distribution of the average cost of repairs from failed inspections is presented in Figure IV-4. This only gives insight into the gross revenue generated from repairs from failed inspections; it does not provide any insight into the additional profit from these repairs. This information does not feed directly into the cost model, but rather informs supplemental discussion about additional revenue from repairs.

Table IV-5. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
5	10	20	13.1	30

Figure IV-3. Distribution of Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests—El Paso

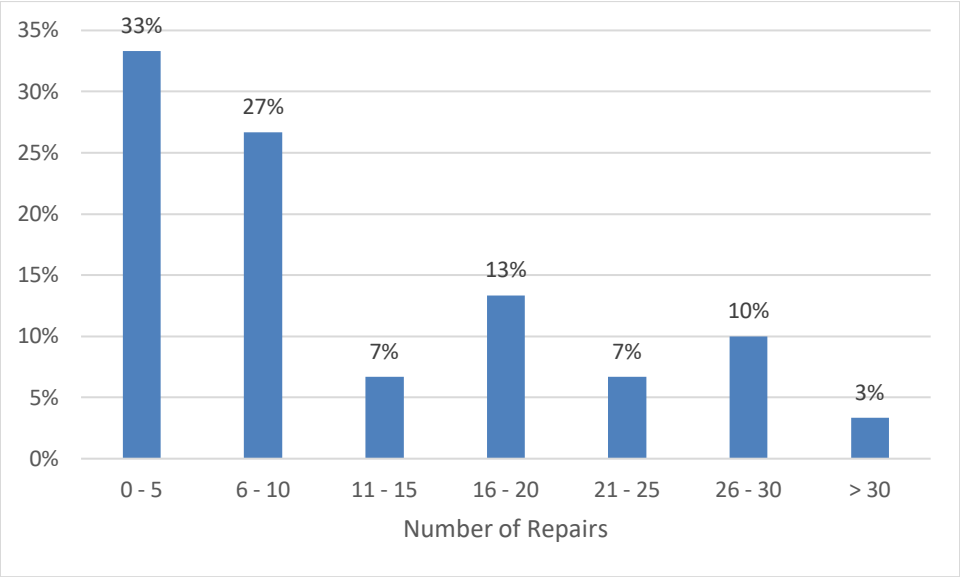
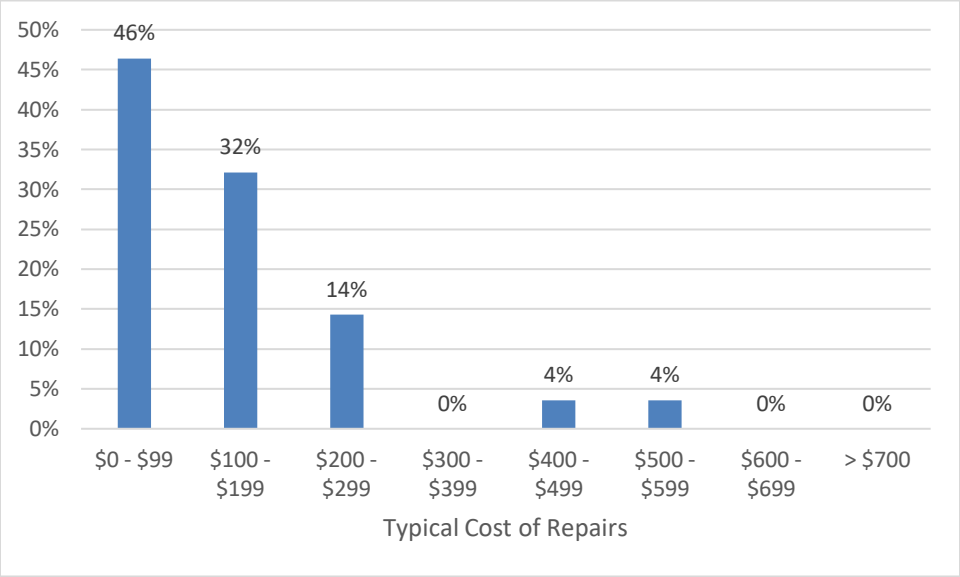


Table IV-6. Typical Repair Costs for an Emissions Test Failure—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$50.00	$100.00	$177.50	$129.00	28

Figure IV-4. Distribution of Typical Repair Costs for an Emissions Test Failure—El Paso



D. EMISSIONS INSPECTORS

Table IV-7 summarizes the total number of vehicle emissions inspectors employed per station, by station type, in El Paso. Most respondents reported employing one, two, or three inspectors at their stations. The highest number of inspectors a test-only station reported employing was five, while the highest number a T&R station reported was 12. Stations in El Paso employ a median of two inspectors.

Table IV-7. Number of Emissions Inspectors Currently Working at the Station—El Paso

Number of Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
1	2	11.8%
2	4	23.5%
3	6	35.3%
4	4	23.5%
5	1	5.9%
Total	**17**	**100.0%**
Test-and-Repair		
1	9	27.3%
2	13	39.4%
3	7	21.2%
4	2	6.1%
5	1	3.0%
12	1	3.0%
Total	**33**	**100.0%**

Table IV-8 and Table IV-9 provide numbers of emissions inspectors per station, broken down into full-time and part-time inspectors. “Full-time inspectors” are full-time employees qualified to perform inspections. They may spend all, some, or just a little of their work time doing inspections. “Part-time inspectors” are part-time employees qualified to do inspections, who likewise may spend only some working time doing inspections. These tables show that El Paso–area stations tend to hire more full-time than part-time emissions inspectors. Most test-only stations (94.1%) and T&R stations (66.7%) reported zero part-time inspectors.

Table IV-8. Number of Full-Time Emissions Inspectors*—El Paso

Number of Full-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
1	2	11.8%
2	4	23.5%
3	6	35.3%
4	5	29.4%
Total	**17**	**100.0%**
Test-and-Repair		
0	1	3.0%
1	14	42.4%
2	12	36.4%
3	4	12.1%
4	1	3.0%
12	1	3.0%
Total	**33**	**100.0%**

* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table IV-9. Number of Part-Time Emissions Inspectors*—El Paso

Number of Part-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
0	16	94.1%
1	1	5.9%
Total	17	100.0%
Test-and-Repair		
0	22	66.7%
1	7	21.2%
2	4	12.1%
Total	33	100.0%

* A part-time inspector is a part-time employee who does inspections as all or part of their duties.

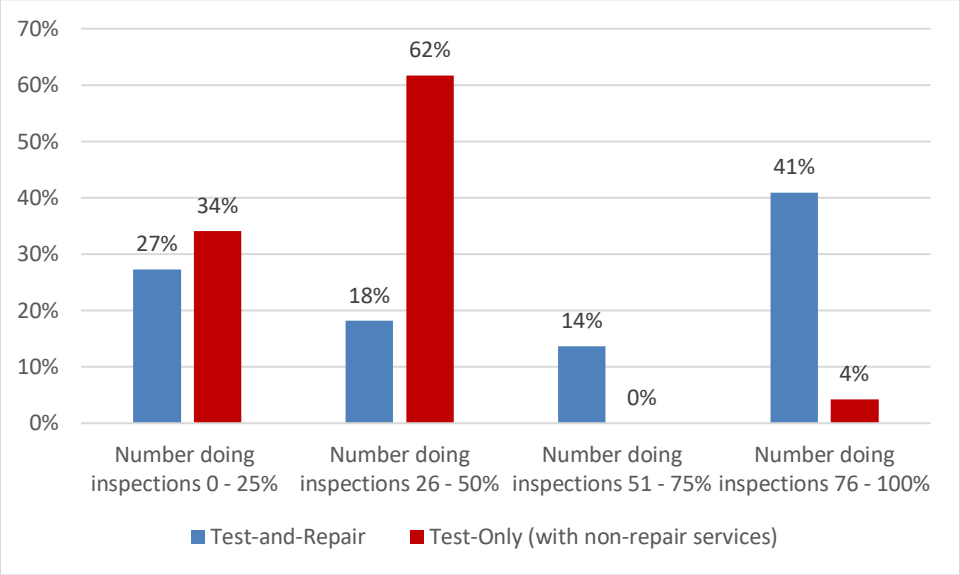
To explore the extent to which stations offering repair or non-repair services focus on activities other than emissions inspections, stations were asked how much time inspectors spend performing emissions inspections. Table IV-10 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full-time inspector spending at least half of their time conducting inspections. Almost all test-only stations reported offering other non-repair services, and only 13% of those stations do have at least one full-time inspector working at least half of their time conducting inspections. About 60% of T&R stations offer both repair and non-repair services in addition to emissions testing. Nearly three-quarters (72%) of T&R stations have at least one full-time inspector spending at least half of their time on inspections.

Table IV-10. Deployment of Labor by Station Type and Services Offered—El Paso

Station Type and Services Offered	Count of All Stations	Percent of Station Type	Count of Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 51% of the Time	Percent Relative to All Stations	Full-Time Inspectors	Part-Time Inspectors
Test-Only	**17**	—	2	—	**48**	**1**
No other services	1	2%	NA	NA	1	0
Non-repair services	16	32%	2	13%	47	1
Test-and-Repair	33	—	24	72%	66	15
Repair services only	13	26%	11	85%	22	8
Repair and non-repair services	20	40%	13	65%	44	7
Total	50	100%	26	52%	114	16

Figure IV-5 shows the distribution of full-time inspectors by percent of time doing inspections. For T&R, the figure shows that full-time workers' labor is not spent only on inspections; therefore, ERG assumed that inspectors are doing other work when not inspecting vehicles and did not include this time in the cost model (i.e., this justifies only including inspection time).

Figure IV-5. Full-Time Inspectors* by Percent of Time Spent Doing Inspections—El Paso



* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table IV-11 summarizes average hourly wages (unloaded) paid to emissions inspectors, as well as per-test commissions paid, by station type in the El Paso program area. Median hourly wages at test-only stations ($9.00) are just slightly lower than at T&R stations ($10.00). These values are close to the $9.57 average hourly wage for level 1 auto service technicians and mechanics reported for the El Paso program area by the Foreign Labor Certification Data Center (FLC, 2020). The wage gap from the average values is higher, but this is influenced by a few significantly higher wages at T&R stations that are not representative of what most stations

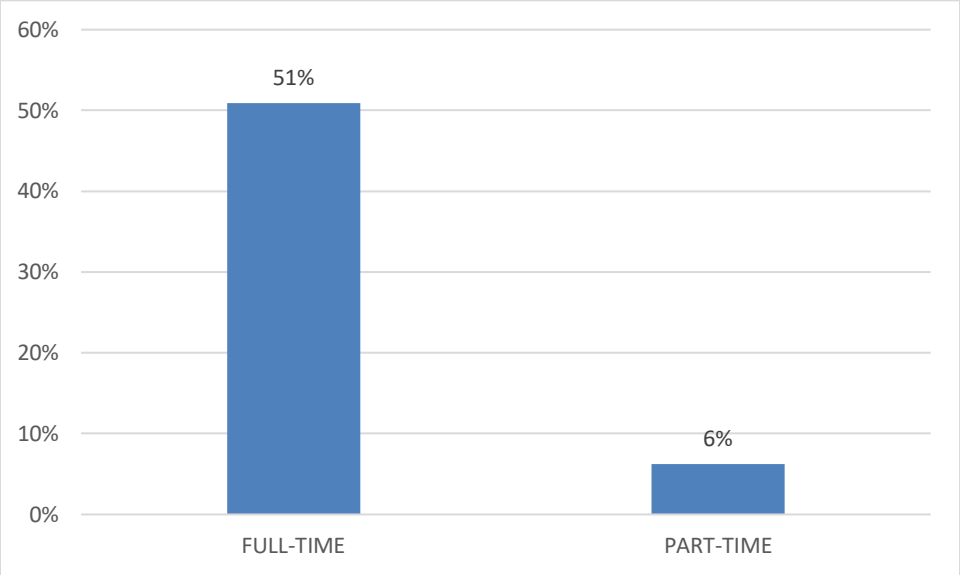
reported. The cost model uses hourly wage information directly; it does not include per-test payments since most inspectors are paid hourly or by salary (as opposed to commission).

Table IV-11. Current Wages Paid to Emissions Inspectors, Hourly ($/hr) and Per-Test—El Paso

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Hourly/Salary					
Test-only	$9.00	$9.00	$9.00	$9.16	16
Test-and-repair	$9.00	$10.00	$12.00	$25.02	25
Per-Test					
Test-only	$8.25	$8.25	$8.25	$8.25	1
Test-and-repair	$4.00	$7.00	$18.50	$9.83	3

The survey also asked how many full- and part-time emissions inspectors received benefits ("health care, paid leave, etc."). Determining the number of inspectors who receive benefits allows the cost model to adjust the BLS fringe benefit rate to control for those inspectors who do receive benefits and those who do not. As Figure IV-6 shows, 51% of full-time emissions inspectors and only 6% of part-time inspectors in El Paso receive benefits.

Figure IV-6. Percent of Emissions Inspectors Receiving Benefits—El Paso



Respondents were asked if they incur costs to train employees to conduct emissions inspections. If so, they were asked to provide dollar figures related to different types of costs related to training, such as inspector training application fees, food and lodging costs, and wages paid for both on-the-job training and time spent in training courses. Table IV-12 shows that T&R stations in El Paso were, unlike stations in HGB/DFW, less likely to incur training costs (48.5%) than test-only stations (70.6%).

Table IV-12. Does Your Station Incur Training Costs?—El Paso

Incur Training Costs?	Number of Responses	Percent of Total Responses
Test-Only		
No	5	29.4%
Yes	12	70.6%
Total	17	100.0%
Test-and-Repair		
No	17	51.5%
Yes	16	48.5%
Total	33	100.0%

E. EMISSIONS TESTING EQUIPMENT, BUILDING, AND OTHER COSTS

Cost data for certified emissions testing analyzers are presented in Table IV-13 below. Emissions testing equipment data are presented on a per-unit basis rather than a per-station basis because stations may have more than one certified emissions testing analyzer. Because of this, totals may be larger than the number of stations that responded to the survey.

The results show a median purchase price of emissions inspection equipment of $10,750—not on par with the price for a single new certified TSI/OBD analyzer, which typically ranges from $15,495 to $15,995 (TCEQ, 2017). This may reflect stations purchasing used equipment or that they have older equipment at their disposal. Some stations may have have purchased OBD-only equipment in preparation for changes in the program. The difference could also reflect mixed data due to multiple options for respondents to pick from.

Table IV-13. Cost of Certified Emissions Testing Analyzers by Equipment Type—El Paso

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
TSI/OBD	$7,000	$10,750	$16,000	$11,265	34

As shown in Table IV-14, nearly half of units were cash purchases (49.1%). For the cost model, it is assumed that stations have a financing mechanism (loan or lease-to-purchase agreement) for acquiring inspection equipment, so the cost models use the survey data for these financing mechanisms.

Table IV-14. Financing Mechanisms for Purchasing Emissions Testing Equipment—El Paso

Finance Type	Number of Responses	Percent of Total Responses
Paid cash	27	49.1%
Lease-to-purchase	10	18.2%
Bank loan	11	20.0%
Not disclosed	7	12.7%
Total	**55***	**100.0%**

* Of the 50 respondents in the El Paso program area, 10% (five stations) reported more than one certified analyzer.

For stations that financed the purchase of analyzers, Table IV-15 shows, the average lease-to-purchase or bank loan term is 4.5 years with a median of 5 years. Figure IV-7 shows the distribution of these loan terms for test-only and T&R stations combined.

Table IV-15. Lease-to-Purchase or Bank Loan Term (Years)—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
3.0	5.0	5.0	4.5	11

Figure IV-7. Distribution of Lease-to-Purchase or Bank Loan Term (Years)—El Paso

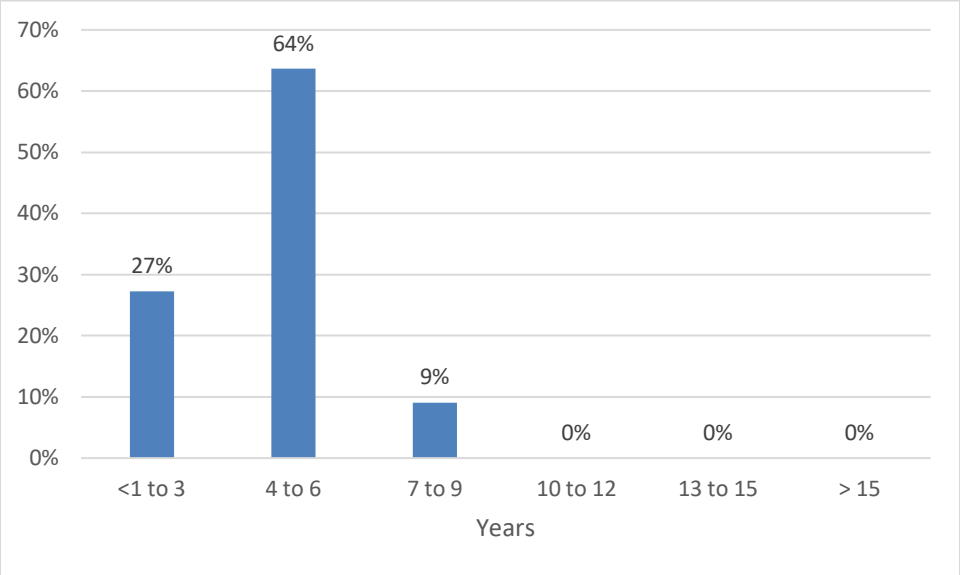
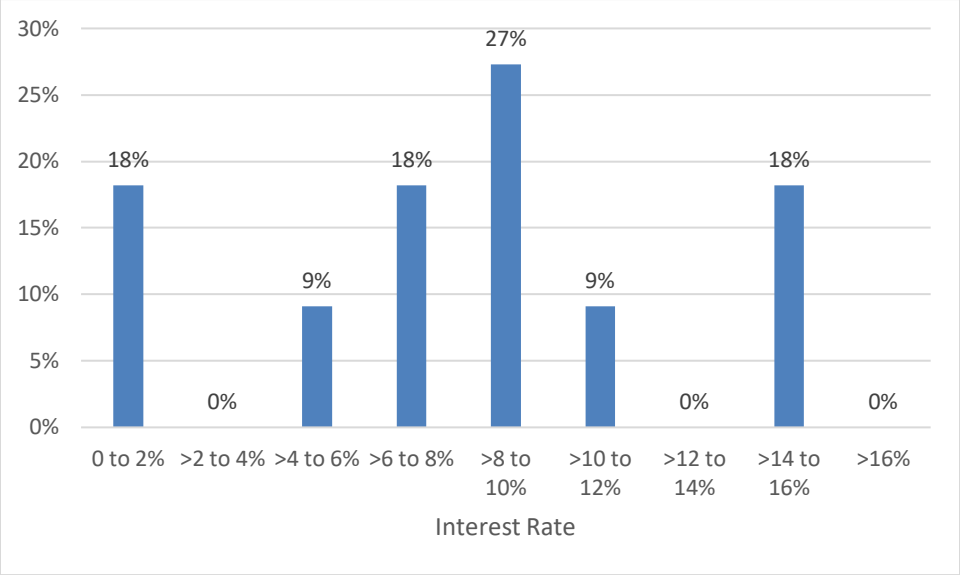


Table IV-16 shows reported lease-to-purchase or bank loan interest rates. The average and median reported values for interest rates on financed analyzers were similar, at 8.5% and 9.5% respectively. Figure IV-8 shows the distribution of these loan terms for current equipment.

Table IV-16. Interest Rates for Lease-to-Purchase or Bank Loan—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
6.0%	9.5%	12.0%	8.5%	11

Figure IV-8. Distribution of the Interest Rates for Lease-to-Purchase or Bank Loan—El Paso



Upon purchasing an emissions inspection analyzer, a station can usually opt into an annual maintenance package. Of the 17 test-only respondents, only one confirmed it has a maintenance package for its emissions inspection analyzer(s). Of the 33 T&R survey respondents, 12 (36%) confirmed they have annual maintenance packages. Table IV-17 shows the cost breakdown of an annual maintenance package for both test-only and T&R stations. Both station types (test-only and T&R) with annual maintenance packages had median costs of $2,000.

Table IV-17. Annual Maintenance Package Costs—El Paso

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-only	$2,000	$2,000	$2,000	$2,000	1
Test-and-repair	$1,500	$2,000	$2,200	$1,801	9

Some stations also incur maintenance costs not covered by a service contract or maintenance package agreement. Table IV-18 shows the median reported value of these costs was $1,500 annually for test-only stations and $1,000 annually for T&R stations.

Table IV-18. Extra Annual Maintenance Costs for Stations with Maintenance Plans—El Paso

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-only	$1,050	$1,500	$1,500	$1,338	16
Test-and-repair	$500	$1,000	$1,750	$1,226	32

Stations were also asked whether they have ever gotten rid of emissions testing equipment they no longer needed. As shown in Table IV-19, the majority of respondents either had not sold,

paid to get rid of, or gotten rid of old equipment for free or they were not sure if they had. Fourteen stations reported getting rid of analyzers. As shown in Table IV-20, not all stations reported how they got rid of the equipment (for free, paid, or sold). Due to the small number of responses to these questions, these results are not likely to be particularly representative of the whole industry.

Table IV-19. Stations That Got Rid of Emissions Testing Equipment—El Paso

Ever Got Rid of Equipment?	Number of Responses	Percent of Total Responses
Test-Only		
Yes	5	29.4%
No	12	70.6%
Not sure	0	0.0%
Total	**17**	**100.0%**
Test-and-Repair		
Yes	9	27.3%
No	19	57.6%
Not sure	5	15.2%
Total	**33**	**100.0%**

Table IV-20. How Station Got Rid of Emissions Testing Equipment—El Paso

Free, Paid, or Sold?	Number of Responses	Percent of Total Responses
I sold this	3	27.3%
I paid to get rid of this	0	0.0%
I got rid of this for free	8	72.7%
Total	**11**	**100.0%**

More information about the equipment stations got rid of—for example, years owned, and costs or profits from getting rid of the equipment—is summarized in Table IV-21, Table IV-22, and Table IV-23. The units that respondents got rid of in El Paso were owned for an average of 9.5 years. Most stations indicated getting rid of their equipment for free and no stations reported paying to get rid of decommissioned units.

Table IV-21. Years Owned Before Station Got Rid of Equipment—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
6.0	8.0	14.0	9.5	11

Table IV-22. Cost to Get Rid of Equipment—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
NA	NA	NA	NA	0

Table IV-23. Revenue from Getting Rid of Equipment—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$1,000	$1,100	$1,200	$1,100	2

In El Paso, 88.2% of test-only stations and 75.8% of T&R stations reported that they never added or acquired building space (i.e., bay space) to perform vehicle emissions testing. To control for the costs associated with just adding equipment or adding building space and equipment, the analytical model is designed to provide results both with and without building space costs. Table IV-24 provides an overview of the number of stations that purchased or rent/lease their building space. The data show that the vast majority (82.4%) of test-only stations rent/lease the building space used for vehicle emissions testing, while a little over half (54.5%) of T&R stations own the building space used for emissions testing.

Table IV-24. Building Space Rented or Purchased?—El Paso

Station Type	Purchase or Rent?	Number of Responses	Percent of Total Responses
Test-Only			
	Purchase	3	17.6%
	Rent/lease	14	82.4%
	Total	**17**	**100.0%**
Test-and-Repair			
	Purchase	18	54.5%
	Rent/lease	13	39.4%
	Missing	2	6.1%
	Total	**33**	**100.0%**

Overall, few stations in El Paso reported offering free emissions inspections (other than performing free retests of vehicles that failed initial inspection at their station). None of the test-only stations and only one of the T&R stations offer free emissions tests (see Table IV-25); the latter does so for friends and family, employees, and members of its customer loyalty program. Only one of the stations surveyed in El Paso offers emissions inspections for a reduced fee (under $11.50) (see Table IV-26). This station indicated that the lowest fee it charge for an emissions test is $5 (see Table IV-27). Though this information does not feed into the cost model, it is an indicator on the adequacy of the fee.

Table IV-25. Free Emissions Tests (Except Free Retests)—El Paso

Free Tests Ever Given?	Number of Responses	Percent of Total Responses
Test-Only		
No	17	100.0%
Yes	0	0.0%
Total	**17**	**100.0%**
Test-and-Repair		
No	32	97.0%
Yes	1	3.0%
Total	**33**	**100.0%**

Table IV-26. Reduced-Fee Emissions Tests (Less than $11.50)—El Paso

Charged Less than $11.50?	Number of Responses	Percent of Total Responses
Test-Only		
No	17	100.0%
Yes	0	0.0%
Total	17	100.00%
Test-and-Repair		
No	32	97.0%
Yes	1	3.0%
Total	**33**	**100.0%**

Table IV-27. Typical Reduced Fees Charged (Less than $11.50)—El Paso

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$5.00	$5.00	$5.00	$5.00	1

The final question of the survey asked whether the fee for emissions inspections covers the associated costs. As shown in Table IV-28, the majority of the respondents—94.1% of test-only stations and 97% of T&R stations—answered, "no, the fee does not cover costs." Though the cost model does not include this information, it is important to the overall discussion of whether fees cover costs. Chapter VII provides an overview of stations' explanations for why the fee does not cover costs.

Table IV-28. Does Fee Cover Emissions Testing Costs?—El Paso

Fee Covers Testing Costs?	Number of Responses	Percent of Total Responses
Test-Only		
No	16	94.1%
Yes	1	5.9%
Total	**17**	**100.0%**
Test-and-Repair		
No	32	97.0%
Yes	1	3.0%
Total	**33**	**100.0%**

V. ARR SURVEY RESULTS

This chapter describes the survey responses for test-only and T&R stations in the ARR program area (the survey instrument itself can be found in Appendix A of this report). Any survey fields that were left blank are reported as "missing." Due to rounding, the percentages in some of the tables do not total exactly 100%. Results are not provided for some basic questions that are not highly relevant to the analysis of the emissions inspection fee.

As noted in Chapter II, only 20 test-only stations in ARR submitted surveys, compared to 60 T&R stations. Caution should be taken in assessing the data from test-only stations due to this small sample size.

A. GENERAL STATION INFORMATION

Table V-1 summarizes the typical hours of operation for stations in ARR, the number of hours these stations are open per day, and the number of stations closed on each day of the week. This information is not directly input into the cost model, but it does provide some insight into labor usage between station types, as test-only stations are required to pay inspectors for their entire shifts regardless of whether they are conducting inspections. Overall, test-only and T&R stations have similar operating hours, although a higher percentage of T&R stations are closed on the weekends.

Table V-1. Hours of Operation—ARR

Day	Median Open Time	Median Close Time	Median Hours Open	Number Open	Number Closed
Test-Only					
Monday	7:30am	6:00pm	10	19	1
Tuesday	7:45am	6:00pm	10	20	0
Wednesday	7:45am	6:00pm	10	20	0
Thursday	7:45am	6:00pm	10	20	0
Friday	7:30am	6:00pm	10	19	1
Saturday	8:00am	5:00pm	9	18	2
Sunday	9:00am	5:00pm	8	5	15
Test-and-Repair					
Monday	8:00am	5:30pm	10	60	0
Tuesday	8:00am	5:30pm	10	60	0
Wednesday	8:00am	5:30pm	10	60	0
Thursday	8:00am	5:30pm	10	59	1
Friday	8:00am	5:30pm	10	59	1
Saturday	8:00am	5:00pm	8	34	26
Sunday	9:00am	5:00pm	8.5	4	56

Table V-2 and Table V-3 summarize the number of emissions inspection bays at each station and the uses for those bays. Table V-2 shows how many bays in the station are used exclusively for emissions testing, while Table V-3 shows the bays used for emissions testing in addition to other uses.

Table V-2. Number of Bays Used Exclusively for Testing—ARR

Number of Bays	Number of Responses	Percent of Total Responses
Test-Only		
0	8	40.0%
1	8	40.0%
2	3	15.0%
3	1	5.0%
Total	**20**	**100.0%**
Test-and-Repair		
0	13	21.7%
1	45	75.0%
2	2	3.3%
Total	**60**	**100.0%**

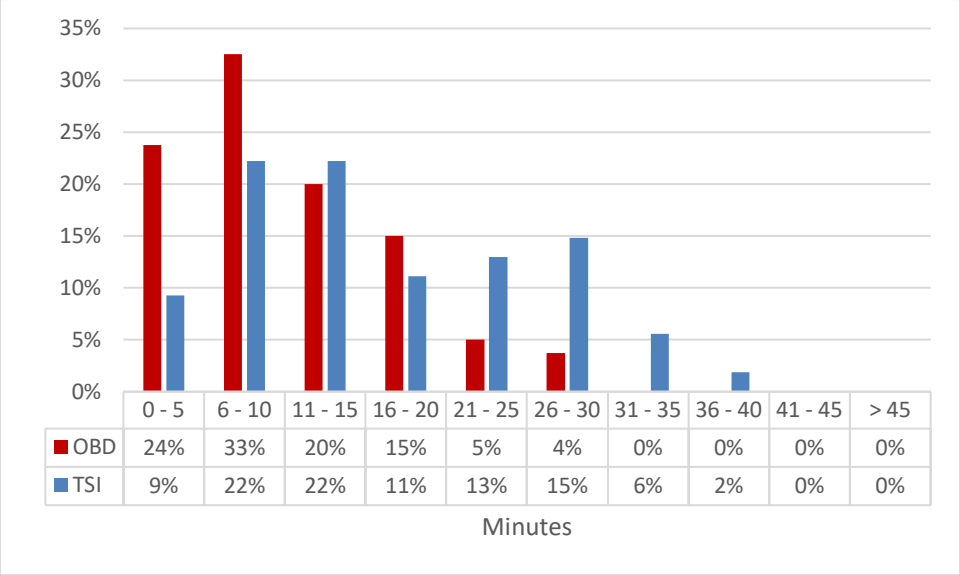
Table V-3. Number of Bays Used for Testing and Other Uses—ARR

Number of Bays	Number of Responses	Percent of Total Responses
Test-Only		
0	7	35.0%
1	10	50.0%
2	3	15.0%
Total	**20**	**100.0%**
Test-and-Repair		
0	29	48.3%
1	21	35.0%
2	5	8.3%
3	1	1.7%
4	2	3.3%
10	1	1.7%
20	1	1.7%
Total	**60**	**100.0%**

B. THE EMISSIONS INSPECTION PROCESS

Figure V-1 shows the distribution of survey responses regarding the average time (in minutes) for OBD tests and TSI tests. No stations reported OBD testing times greater than 30 minutes; four (5% of stations) reported TSI testing times greater than 30 minutes. The median length of the OBD test was 10 minutes, compared to a median TSI testing time of 15 minutes.

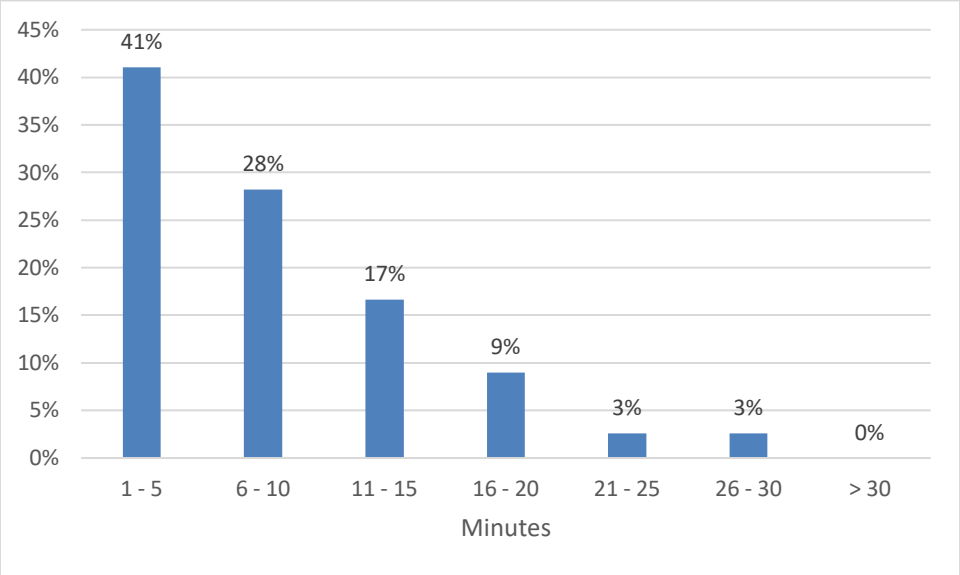
Figure V-1. Average Time in Minutes to Conduct OBD and TSI Emissions Tests—ARR



	0 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	> 45
OBD	24%	33%	20%	15%	5%	4%	0%	0%	0%	0%
TSI	9%	22%	22%	11%	13%	15%	6%	2%	0%	0%

Respondents were also asked how much additional time, on average, is spent with each emissions inspection customer to explain either the emissions inspection process or reasons for failure and recommended repairs. The median length of additional time spent with inspection customers in ARR was 10 minutes. Figure V-2 shows the distribution of responses for the average time (in minutes) that emissions inspectors spend with emissions inspection customers.

Figure V-2. Average Additional Time in Minutes Spent with Emissions Inspection Customers—ARR



C. REPAIR SERVICE REVENUE

Stations offering repair services in addition to emissions testing provided information about the revenue stream generated from repairs to vehicles that failed emissions inspections. Since the relevant questions were applicable only to T&R stations, the results shown below represent only T&R stations.

As Table V-4 shows, over 80% of stations reported that between 1% and 20% of their repair revenue resulted from work following failed emissions inspections. Only two stations reported generating between 61% and 80% of their repair income from failed emissions inspections.

Table V-4. Percentage of Repair Revenues Resulting from Failed Emissions Inspections—ARR

Percentage of Repair Revenues from Failed Inspections	Number of Responses	Percent of Total Responses
0%	2	3.3%
1–20%	49	81.7%
21–40%	5	8.3%
41–60%	2	3.3%
61–80%	2	3.3%
81–100%	0	0.0%
Missing	2	3.3%
Total	**60**	**100.0%**

Table V-5 shows that the average number of repair jobs per month from failed emissions inspections is 6.5, while the median value is five. The interquartile range is eight. Figure V-3 shows the distribution of the responses in a histogram. The average and median typical cost of such a repair is $248 and $175, respectively (see Table V-6), and Figure V-4 shows the distribution of these repair costs in a histogram. This only gives insight into the gross revenue generated by repairs from failed inspections; it does not provide any insight to the additional profit from these repairs. This information does not feed directly into the cost model, but rather informs supplemental discussion about additional revenue from repairs.

Table V-5. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
2	5	10	6.5	57

Figure V-3. Distribution of Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests—ARR

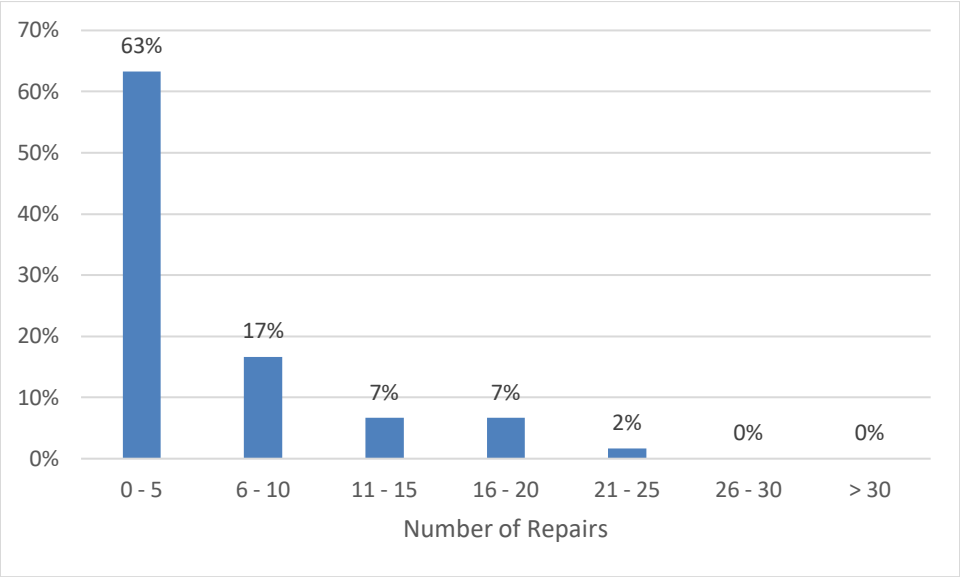
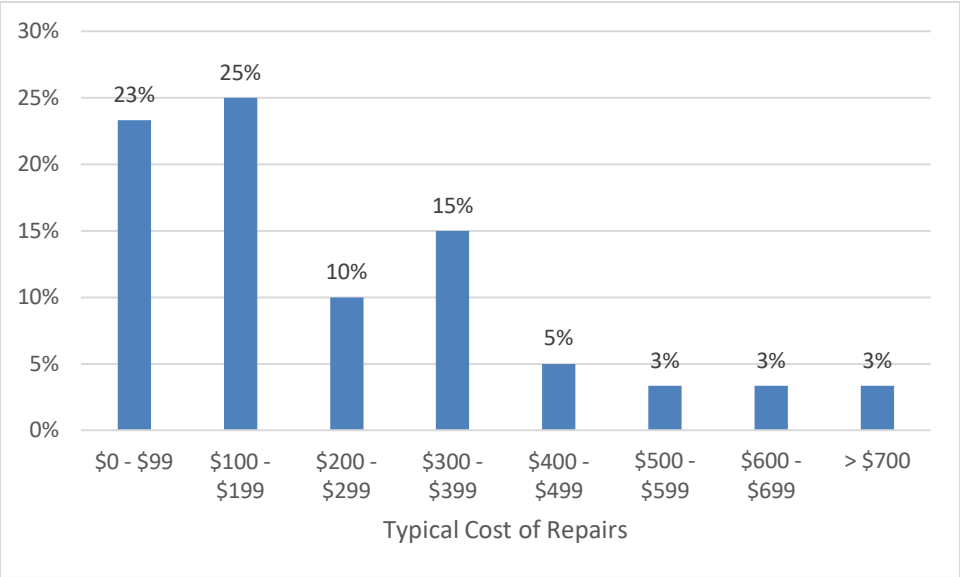


Table V-6. Typical Repair Cost for an Emissions Test Failure—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$95	$175	$300	$248	53

Figure V-4. Distribution of Typical Repair Costs for an Emissions Test Failure—ARR



D. EMISSIONS INSPECTORS

Table V-7 summarizes the total number of vehicle emissions inspectors employed per station, by station type, for ARR. Most respondents reported employing one, two, or three inspectors at their stations. The highest number of inspectors a test-only station reported employing was 17, while the highest number a T&R station reported was 42. Stations in ARR employ a median of three inspectors.

Table V-7. Number of Emissions Inspectors Currently Working at the Station—ARR

Number of Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
1	3	15.0%
2	5	25.0%
3	4	20.0%
4	1	5.0%
5	2	10.0%
6	4	20.0%
17	1	5.0%
Total	**20**	**100.0%**
Test-and-Repair		
1	13	21.7%
2	16	26.7%
3	13	21.7%
4	8	13.3%
5	3	5.0%
6	2	3.3%
7	1	1.7%
8	1	1.7%
10	1	1.7%
35	1	1.7%
42	1	1.7%
Total	**60**	**100.0%**

Table V-8 and Table V-9 provide numbers of emissions inspectors per station, broken down into full-time and part-time inspectors. “Full-time inspectors” are full-time employees qualified to perform inspections. They may spend all, some, or just a little of their work time doing inspections. “Part-time inspectors” are part-time employees qualified to do inspections, who likewise may spend only some working time doing inspections. These tables show that ARR program area stations tend to employ more full-time than part-time emissions inspectors. This is especially true for T&R stations: only 15% reported having any part-time employees. No stations in the ARR program area reported employing more than two part-time inspectors.

Table V-8. Number of Full-Time Emissions Inspectors*—ARR

Number of Full-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
1	5	25.0%
2	5	25.0%
3	3	15.0%
4	2	10.0%
5	3	15.0%
6	1	5.0
17	1	5.0
Total	20	100.0%
Test-and-Repair		
1	16	26.7%
2	18	30.0%
3	10	16.7%
4	6	10.0%
5	4	6.7%
6	1	1.7%
7	1	1.7%
8	1	1.7%
10	1	1.7%
35	1	1.7%
42	1	1.7%
Total	60	100.0%

* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

Table V-9. Number of Part-Time Emissions Inspectors*—ARR

Number of Part-Time Inspectors	Number of Responses	Percent of Total Responses
Test-Only		
0	13	65.0%
1	4	20.0%
2	3	15.0%
Total	**20**	**100.0%**
Test-and-Repair		
0	51	85.0%
1	7	11.7%
2	2	3.3%
Total	**60**	**100.0%**

* A part-time inspector is a part-time employee who does inspections as all or part of their duties.

To explore the extent to which stations offering repair or non-repair services focus on activities other than emissions inspections, stations were asked how much time inspectors spend performing emissions inspections. Table V-10 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full-time inspector spending at least half of their time conducting inspections. More than half

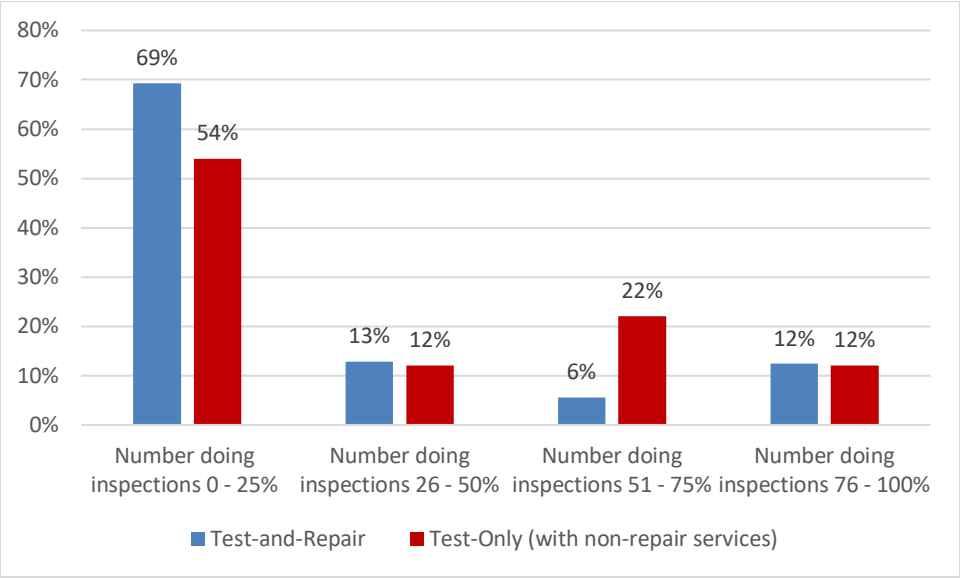
(65%) of test-only stations offer other non-repair services, and roughly half of those stations report at least one full-time inspector working at least half of their time conducting inspections. About three-quarters of T&R stations offer both repair and non-repair services in addition to emissions testing. Half of T&R stations with both repair and non-repair services have at least one full-time inspector spending least half of their time on inspections.

Table V-10. Deployment of Labor by Station Type and Services Offered—ARR

Station Type and Services Offered	Count of All Stations	Percent of Station Type	Count of Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 51% of the Time	Percent Relative to All Stations	Full-Time Inspectors	Part-Time Inspectors
Test-Only	**20**	—	7	—	**70**	**10**
No other services	7	9%	NA	NA	20	4
Non-repair services	13	16%	7	54%	50	6
Test-and-Repair	**60**	—	30	50%	**234**	**11**
Repair services only	14	18%	7	50%	35	1
Repair and non-repair services	46	57%	23	50%	199	10
Total	80	100%	37	46%	304	21

Figure V-5 shows the distribution of full-time inspectors by percent of time doing inspections. For T&R, the figure shows that full-time workers' labor is not spent only on inspections; therefore, ERG assumed that inspectors are doing other work when not inspecting vehicles and did not include this time in the cost model (i.e., this justifies only including incremental inspection time).

Figure V-5. Full-Time Inspectors* by Percent of Time Spent Doing Inspections—ARR



* A full-time inspector is a full-time employee who does inspections as all or part of their duties.

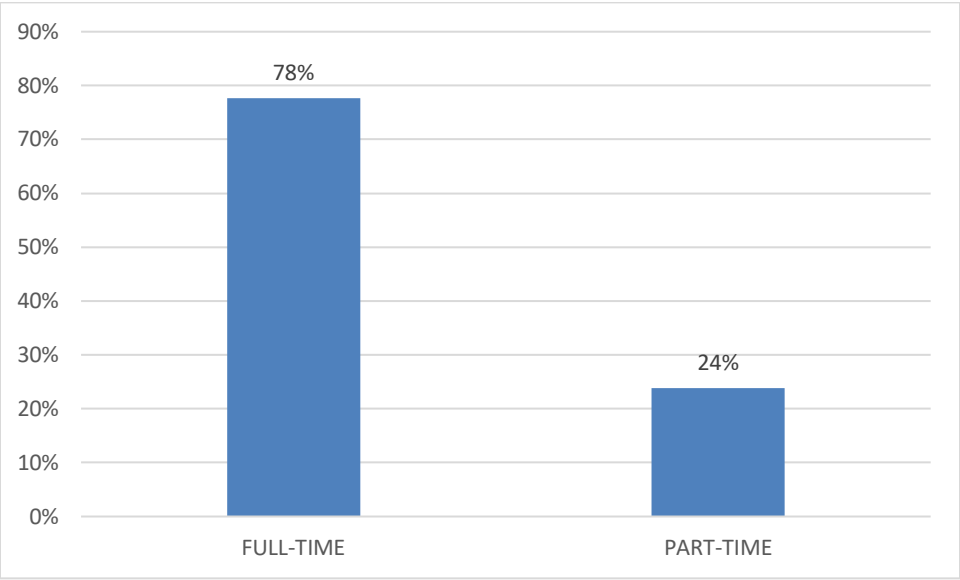
Table V-11 summarizes average hourly wages (unloaded) paid to emissions inspectors, as well as per-test commissions paid, by station type in the ARR program area. Median hourly wages are slightly higher at T&R stations ($15.00) than test-only stations ($12.00) and the interquartile ranges for these data are also narrow ($11.00 to $13.00 for test-only and $12.50 to $15.00 for T&R), indicating that the middle half of stations pay a very similar rate to inspectors. For comparison, the average wage values ($12.79 for test-only stations and $14.73 for T&R stations) fall just around the $13.28 average hourly wage shown for the ARR program area for level 1 auto service technicians and mechanics, as reported by the Foreign Labor Certification Data Center (FLC, 2020). The cost model uses hourly wage information directly; it does not include per-test payments, since most inspectors are paid hourly or by salary (as opposed to commission).

Table V-11. Current Wages Paid to Emissions Inspectors, Hourly ($/hr) and Per-Test—ARR

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Hourly/Salary					
Test-only	$11.00	$12.00	$13.00	$12.79	17
Test-and-repair	$12.50	$15.00	$15.00	$14.73	47
Per-Test					
Test-only	$1.00	$4.00	$11.50	$6.12	10
Test-and-repair	$1.50	$5.00	$10.00	$6.14	19

The survey also asked how many full- and part-time emissions inspectors received benefits ("health care, paid leave, etc."). Determining the number of inspectors who receive benefits allows the cost model to adjust the BLS fringe benefit rate to control for those inspectors who do receive benefits and those who do not. As shown in Figure V-6, 78% of full-time emissions inspectors and only 24% of part-time inspections in the ARR program area receive benefits.

Figure V-6. Percent of Emissions Inspectors Receiving Benefits—ARR



Respondents were asked if they incurred costs to train employees to conduct emissions inspections. If so, they were asked to provide dollar figures related to different types of costs related to training, such as inspector training application fees, food and lodging costs, and wages paid for both on-the-job training and time spent in training courses. Table V-12 shows that T&R stations in ARR were less likely to incur training costs (46.7%) than test-only stations (70.0%).

Table V-12. Does Your Station Incur Training Costs?—ARR

Incur Training Costs?	Number of Responses	Percent of Total Responses
Test-Only		
No	6	30.0%
Yes	14	70.0%
Total	**20**	**100.0%**
Test-and-Repair		
No	31	51.7%
Yes	28	46.7%
Missing	1	1.7%
Total	**33**	**100.0%**

E. EMISSIONS TESTING EQUIPMENT, BUILDING, AND OTHER COSTS

Cost information for the certified emissions testing analyzers is presented in Table V-13 below. Emissions testing equipment data are presented on a per-unit basis rather than a per-station basis because stations may have more than one certified emissions testing analyzer. Because of this, totals may be larger than the number of stations that responded to the survey.

The results show a median purchase price of emissions inspection equipment of $15,000. This value is comparable to the price for a single new certified TSI/OBD analyzer, which typically ranges from $15,495 to $15,995 (TCEQ, 2017).

Table V-13. Cost of Certified Emissions Testing Analyzers by Equipment Type—ARR

Equipment Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
TSI/OBD	$10,000	$15,000	$17,314	$14,448	66

As shown in Table V-14, 40.2% of current equipment purchases were paid for with cash, 21.7% were financed with lease-to-purchase agreements, and 16.3% required bank loans. For the cost model, it is assumed that stations have a financing mechanism (loan or lease-to-purchase agreement) for acquiring inspection equipment, so the cost models use the survey data for these financing mechanisms model.

Table V-14. Financing Mechanisms for Purchasing Emissions Testing Equipment—ARR

Finance Type	Number of Responses	Percent of Total Responses
Paid cash	37	40.2%
Lease-to-purchase	20	21.7%
Bank loan	15	16.3%
Not disclosed	20	21.7%
Total	**92***	**100.0%**

* Of the 80 respondents in the ARR program area, 14% (11 stations) reported more than one certified analyzer.

Table V-15 shows the typical lease-to-purchase or bank loan terms for current equipment used by stations responding to the survey. The median term is 3.5 years; the average is 5.3 years. The interquartile range for these data is 2.5 years. Figure V-7 more clearly illustrates this distribution of loan terms for the ARR program area.

Table V-15. Lease-to-Purchase or Bank Loan Term (Years)—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
3.0	3.5	5.5	5.3	16

Figure V-7. Distribution of Lease-to-Purchase or Bank Loan Term (Years)—ARR

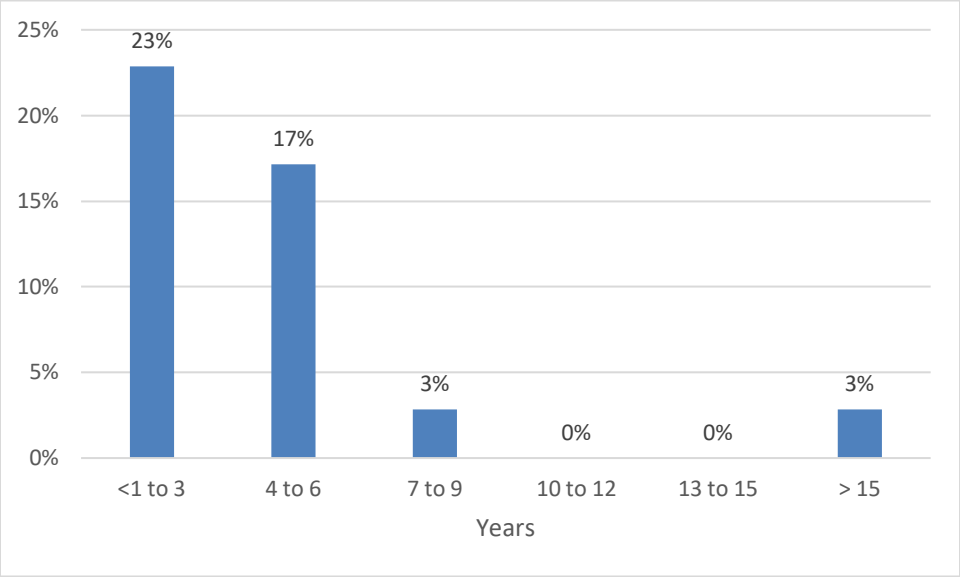
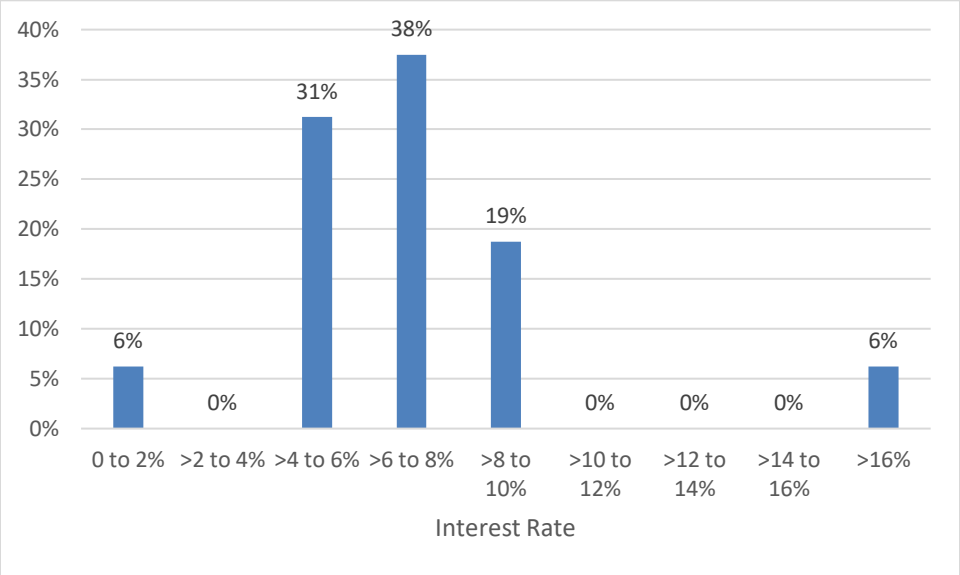


Table V-16 shows the reported lease-to-purchase or bank loan interest rates. The average and median reported values for interest rates on financed analyzers were very similar at 8% and 7%, respectively. The interquartile range (middle half of the data) is from 5% to 8.5%. Figure V-8 shows the distribution of these loan interest rates.

Table V-16. Interest Rates for Lease-to-Purchase or Bank Loan—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
5.0%	7.0%	8.5%	8.0%	16

Figure V-8. Distribution of Interest Rates for Lease-to-Purchase or Bank Loan—ARR



Upon purchasing an emissions inspection analyzer, a stations can usually opt into an annual maintenance package. Table V-17 shows that test-only and T&R stations paid different median costs annually for maintenance packages for their emissions inspection equipment—$3,378 and $1,800, respectively. Of the 20 test-only respondents, 10 (50%) confirmed they have maintenance packages; of the 60 T&R survey respondents, 25 (about 42%) confirmed they have maintenance plans.

Table V-17. Annual Maintenance Package Costs—ARR

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-only	$2,202	$3,378	$4,638	$3,279	8
Test-and-repair	$1,560	$1,800	$2,040	$1,827	23

Some stations also incur additional maintenance costs not covered by a service contract or maintenance agreement. These costs are shown in Table V-18. The median reported value of these additional annual costs was $1,000 for test-only stations and $500 for T&R stations.

Table V-18. Extra Maintenance Costs for Stations with Maintenance Plans—ARR

Station Type	25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
Test-only	$500	$1,000	$2,800	$1,398	14
Test-and-repair	$224	$500	$1,700	$1,359	46

Stations were also asked whether they have ever gotten rid of emissions testing equipment they no longer needed. As shown in Table V-19, most respondents in ARR had not sold, paid to get rid of, or gotten rid of old equipment for free, although several stations were unsure. Seventeen stations reported getting rid of analyzers they no longer needed, but those stations reported selling only one unit (see Table V-20). Several stations did not provide data on decommissioned analyzers. Due to the small number of responses to the questions on equipment stations got rid of, these results are not likely to be representative of the whole industry.

Table V-19. Stations That Got Rid of Emissions Testing Equipment—ARR

Ever Got Rid of Equipment?	Number of Responses	Percent of Total Responses
Test-Only		
Yes	6	30.0%
No	12	60.0%
Not sure	2	10.0%
Total	**20**	**100.0%**
Test-and-Repair		
Yes	11	18.3%
No	42	70.0%
Not sure	7	11.7%
Total	**60**	**100.0%**

Table V-20. How Stations Got Rid of Emissions Testing Equipment—ARR

Free, Paid, or Sold?	Number of Responses	Percent of Total Responses
I sold this	1	7.1%
I paid to get rid of this	3	21.4%
I got rid of this for free	9	64.3%
Not disclosed	1	7.1%
Total	**14**	**100.0%**

More information about the equipment stations got rid of—for example, years owned and costs or profits from getting rid of equipment—is summarized in Table V-21, Table V-22, and Table V-23. The fourteen decommissioned analyzers on which respondents in the ARR program area provided data were owned for an average of 8.6 years.

Table V-21. Years Owned Before Stations Got Rid of Equipment—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
5.0	8.0	10.0	8.6	14

Table V-22. Cost to Get Rid of Equipment—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$50	$110	$110	$90	3

Table V-23. Revenue from Getting Rid of Equipment—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$3,000	$3,000	$3,000	$3,000	1

In ARR, about 93% of stations overall (95% of test-only stations and 91.7% of T&R stations) did not add or acquire building space (i.e., bay space) to perform vehicle emissions inspections. To control for the costs associated with just adding equipment or adding building space and equipment, the analytical model is designed to provide results both with and without building space costs. Table V-24 provides an overview of whether stations purchased or rent/lease their building space. The data show that slightly more test-only stations (55.5%) rent or lease their space than do T&R stations (43.3%).

Table V-24. Building Space Rented or Purchased?—ARR

Station Type	Purchase or Rent?	Number of Responses	Percent of Total Responses
Test-Only			
	Purchase	9	45.0%
	Rent/lease	11	55.0%
	Total	**20**	**100.0%**
Test-and-Repair			
	Purchase	33	55.0%
	Rent/lease	26	43.3%
	Missing	1	1.7%
	Total	**60**	**100.0%**

Table V-25 shows that 5% of test-only stations (only one station) reported providing free emissions inspections (other than free retests on vehicles that previously failed inspection), and Table V-26 shows that 20% of test-only stations reported having offered emissions inspections at reduced fees (under $11.50). In comparison, 25% of T&R stations reported having provided free tests (other than free retests after an initial failure), and 5% reported offering emissions inspections at reduced fees (under $11.50).

Stations reported several reasons for offering free emissions inspections, including general customer satisfaction; customers getting retests just outside 15 days; customers who could not afford inspections; and providing a service for friends, family, and employees.

Table V-25. Free Emissions Tests (Except Free Retests)—ARR

Free Tests Ever Given?	Number of Responses	Percent of Total Responses
Test-Only		
No	19	95.0%
Yes	1	5.0%
Total	**20**	**100.0%**
Test-and-Repair		
No	45	75.0%
Yes	15	25.0%
Total	**60**	**100.0%**

Table V-26. Reduced-Fee Emissions Tests (Less than $11.50)—ARR

Charged Less than $11.50?	Number of Responses	Percent of Total Responses
Test-Only		
No	16	80.0%
Yes	4	20.0%
Total	**20**	**100.0%**
Test-and-Repair		
No	57	95.0%
Yes	3	5.0%
Total	**60**	**100.0%**

Table V-27 breaks down instances when stations offered emissions inspections at a reduced fee, under $11.50. Only one station in this program area reported charging a reduced fee at a price of $7.50. While important to ask about, this information does not feed into the cost model.

Table V-27. Typical Reduced Fees Charged (Less than $11.50)—ARR

25th Percentile	50th Percentile (Median)	75th Percentile	Average	Number of Responses
$7.50	$7.50	$7.50	$7.50	1

Respondents were also asked whether the fee for emissions inspections covers their costs associated with emissions inspections. As illustrated in Table V-28, the majority of the respondents—90% of both test-only and T&R stations—answered, "no, the fee does not cover costs." Though the cost model does not include this information, it is important to the overall discussion of whether fees cover costs. Chapter VII provides an overview of stations' explanations for why the fee does not cover costs.

Table V-28. Does Fee Cover Emissions Testing Costs?—ARR

Fee Covers Testing Costs?	Number of Responses	Percent of Total Responses
Test-Only		
No	18	90.0%
Yes	2	10.0%
Total	**20**	**100.0%**
Test-and-Repair		
No	54	90.0%
Yes	6	10.0%
Total	**60**	**100.0%**

VI. COST MODEL ANALYSES

This chapter presents the results of the "model station" and "break-even" cost analyses performed for four program area and test type combinations:

- HGB/DFW: OBD-only
- HGB/DFW: OBD and ASM
- El Paso: OBD and TSI
- ARR: OBD and TSI

The chapter first summarizes the results of the break-even and model station analyses, then presents the applicable costs and revenues that feed into the cost models, and then provides these cost models in more detail in program area-specific sections.

The break-even analyses show the number of inspections at which the net revenue from emissions inspections (calculated as the average number of emissions inspections performed multiplied by the average net emissions inspection fee) equals the sum of the total incremental costs (fixed and variable) attributed to emissions inspections. These analyses provide the break-even number of emissions inspections for stations that incurred equipment costs and for stations that incurred both equipment and building costs. As shown in Table VI-3, between 7.5% and 20% in each program area had added or acquired additional building space due to emissions inspections; thus, the equipment-only scenario could be considered more representative of the industry. Additionally, the bay space is regularly used for safety tests and is thus not a definitive incremental cost of performing vehicle emissions inspection testing. Table VI-1 summarizes the results of the break-even analyses. Excluding building costs, the percent of stations that break even according to the model ranges from 89% to 96% in the HGB/DFW program areas; the El Paso and ARR program areas are much lower, at 69% to 78%. Including building costs, the percent of stations that break even according to the model ranges from 73% to 92% in the HGB/DFW program areas; the El Paso and ARR program areas are again much lower, at 42% to 52%.

The model station analyses include representative small, medium, and large stations solely based on actual emissions inspection throughput from January 1 to December 31, 2019, for the 5,630 stations in the TCEQ vehicle emissions inspection database. The small station represents a station with emissions inspection throughput in the 25th percentile (1st quartile), the medium station represents a station with emissions inspection throughput in the 50th percentile (median), and the large station represents a station with emissions inspection throughput in the 75th percentile (3rd quartile).

The net revenues and total costs (fixed and variable) for these model stations are shown in Table VI-2, which includes both equipment and building costs. For stations with lower testing volume, revenues do not exceed total costs in a few cases. These instances occur in small model stations in the HGB/DFW program areas conducting OBD-only inspections, small model stations in the El Paso program area, and small model stations in the ARR program area; medium stations in ARR also have revenues that do not exceed total costs. All other station types across the four program areas had net revenues that exceeded costs. These models do not make a distinction between test-only and T&R stations (as the incremental emissions inspection costs

are the same)—these station types are aggregated in the analyses. This section does, however, provide supplementary quantitative and qualitative analysis discussing how the generally higher throughput at test-only stations affects the cost models. This section also provides a qualitative analysis of how the additional income from emissions-inspection-generated repairs affects the model.

Table VI-1. Stations At/Above Break-Even Number of Inspections

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Monthly break-even number of tests including equipment costs	28	56	80	99
Monthly break-even number of tests including equipment and building costs	54	90	153	195
Percent of stations above break-even number including equipment costs	89%	96%	78%	69%
Percent of stations above break-even number including equipment and building costs	73%	92%	52%	42%

Table VI-2. Total Monthly Costs and Net Revenues at Model Stations

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Small station net revenue	$944	$3,332	$955	$966
Small station total costs	$982	$2,036	$1,423	$1,535
Small stations net revenue – total cost	**($39)**	**$1,296**	**($469)**	**($569)**
Medium station net revenue	$1,684	$5,332	$1,852	$1,829
Medium station total costs	$1,249	$2,478	$1,800	$2,012
Medium station net revenue – total cost	**$434**	**$2,854**	**$51**	**($183)**
Large station net revenue	$2,387	$8,146	$3,554	$3,542
Large station total costs	$1,503	$3,099	$2,516	$2,959
Large station net revenue – total cost	**$884**	**$5,047**	**$1,037**	**$583**

Table VI-3. Building Cost Incidence by Geographic Area/Test Type

Types of Costs Ever Incurred	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Building costs	10.0%	15.7%	20.0%	7.5%

A. COSTS AND REVENUES THAT FEED INTO THE MODELS

The model station and break-even cost analyses were compiled from a combination of non-survey data (compiled from government sources, information the TCEQ provided, and previous AirCheckTexas Fee studies) and median values calculated from survey data provided by respondents from the given program areas and emissions inspection types. Table VI-4 presents the values for the non-survey data used in both types of analyses, and Table VI-5 presents the median values for the survey data used in the cost models. As noted above, these are the median values for test-only and T&R stations combined. All inputs used in the cost model analyses are provided in Table VI-4 and Table VI-5.

Table VI-4. Non-Survey Data Used in Cost Model Analyses

Variable	Source	Value
All equipment: useful life	BEA, 2004; Cusick, 2012	11 years (from BEA service life estimate for "Service industry machinery, other than wholesale and retail trade")
Building life: useful life	BEA, 2004; Cusick, 2012	34 years (from BEA estimate of service life for "Other commercial buildings")
Electricity: monthly cost ($)	ERG, 2007	$43.40 (the TCEQ reconfirmed value in May 2018; inflated this year using FRED's Consumer Price Index for All Urban Consumers: Electricity in U.S. City Average)
Communication with VID (vehicle inspection database): number of transactions per inspection	TCEQ	2 transactions per inspection
Communication with VID (vehicle inspection database): cost per call ($)	TCEQ	$0.18 per call
Fringe benefits: percent of total compensation	BLS, 2020	Total benefits make up 26.4% of total compensation in 2019
Bay size	TxDPS, 2017	288 square feet (the minimum size of a bay; used to apportion the cost of the building to vehicle emissions testing)

Table VI-5. Survey Data Used in Cost Model Analyses

Variable	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Building space—median purchase price (bay-related)*	$27,000.00	$96,600.00	$40,000.00	$69,120.00
Building space—monthly rent for bay space	$315.49	$492.00	$488.44	$492.00
Testing equipment—median purchase price	$8,000.00	$30,000.00	$10,750.00	$15,000.00
Dedicated phone line and/or internet—median annual cost	$780.00	$1,200.00	$600.00	$720.00
Calibration gases/wands/probes/hoses—median annual cost	NA	$400.00	$400.00	$400.00
Gas cap tester kits—median annual cost	$150.00	$200.00	$50.00	$80.00
Printer paper and ink/toner—median annual cost	$300.00	$600.00	$500.00	$300.00
Maintenance agreement—median annual cost	$880.00	$2,540.00	$2,000.00	$2,000.00
Extra maintenance—median annual cost	$450.00	$1,000.00	$1,100.00	$550.00
Inspector wage—median hourly salary	$12.50.00	$12.00	$9.00	$13.50
Percent of employees receiving benefits	50.20%	57.20%	45.38%	74.15%
Labor—median minutes per TSI test	NA	NA	20	20
Labor—median minutes per OBD test	15	10	15	10
Labor—median minutes per ASM test	NA	20	NA	NA
Labor—other time with customer (minutes per test)	10	5	10	10
Loan term—median length (years)	4.0	5.0	5.0	3.5
Loan rate—median amount (percent)	7.25%	7.00%	9.50%	7.00%
Retest rate for TSI test (percent)	NA	NA	6.00%	13.90%
Retest rate for OBD test (percent)	4.80%	4.80%	4.50%	6.50%
Retest rate for ASM test (percent)	NA	12.00%	NA	NA

* Median purchase price (bay-related) was contextually informative but was not used in the cost model. Instead, for building space, monthly rent for bay space is used to estimate building costs because renting is more prevalent than purchasing. Monthly rent for bay space ends up being a higher monthly cost, for building space, than the median purchase price (bay-related) when spread over the life of the building.

ERG cross-checked the survey data in Table VI-5 with publicly available information. According to the Foreign Labor Certification Data Center (FLC, 2020), the average hourly wage for a level 1 auto service technician and mechanic is $12.56 in Houston, $13.07 in Dallas, $9.57 in El Paso, and $13.28 in ARR. These values are all consistent with the median inspector wages reported by survey respondents (shown in Table VI-5).

The survey-reported costs of the certified analyzers and their maintenance agreements are reasonably consistent with publicly available information. The cost for a new certified OBD-only analyzer ranges from $6,895 to $7,950; a new certified ASM-OBD analyzer ranges between $25,500 and $32,500. As shown in Table VI-5, the survey median values for stations purchasing certified OBD-only analyzers in the HGB/DFW program areas are reasonably close to the listed price of the analyzers. The reported ASM analyzer costs are also in line with what is currently available on the market. Additionally, a maintenance agreement for an OBD-only analyzer is listed to cost between $786 and $1,131 annually depending on the agreement (survey median value of $880), and one for an ASM-OBD analyzer ranges from $3,998 to $4,861 annually (survey median value of $2,540) (TCEQ, 2019). For both the El Paso and ARR program areas, the

new certified TSI analyzer is listed to cost between $15,495 and $15,995 (TCEQ, 2017). While this is consistent with the survey median value for ARR ($15,000), this is not the case for El Paso, which has a survey median value of $10,750. This could reflect stations purchasing used equipment, but could also reflect mixed data due to multiple options for respondents to pick from. The annual maintenance agreement for these certified analyzers ranges from $2,230 to $2,447 annually, which also is reasonably close to the median survey value of $2,000 for both El Paso and ARR (TCEQ, 2017).

Table VI-6 presents the net fee by program area and test type. Offering emissions inspections is incremental to offering safety inspections; thus, the net revenue calculation only considers the net fee charged to the customer by the inspection station, excluding the safety inspection fee and costs associated with the safety inspection. The net fee thus excludes the safety portion of the fee and inspection-related fees paid directly to the state at the time of vehicle registration.

Table VI-6. Net Fees from an Emissions Inspection

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Net Fee	$18.50	$24.50 (ASM) $18.50 (OBD)	$11.50	$11.50

The cost model assumes that testing equipment lasts 11 years as outlined in Table VI-4, and that the equipment is paid off over the entire 11-year period and has no value at the end of it. The cost model does not factor in tax impacts, including depreciation, associated with costs and revenues of performing vehicle emissions inspections.

B. HGB/DFW OBD-ONLY COST MODELS

Table VI-7 presents the revenues and costs associated with an OBD-only station in HGB/DFW based on survey and non-survey data. These results feed into the Table VI-8 model station analysis and Table VI-9 break-even analysis.

Table VI-8 presents the HGB/DFW-program area model station analysis for OBD-only stations. It presents the total costs and total revenue for model stations—hypothetical stations based on a certain throughput—that have a monthly emissions inspection volume of 51 (small-throughput station), 91 (medium-throughput station), and 129 (large-throughput station). These emissions inspection throughputs correspond to the 25th percentile, 50th percentile, and 75th percentile of monthly emissions inspections per OBD-only station in the HGB/DFW program areas. As the table shows, the monthly revenues for medium and large stations exceed monthly costs by $434 and $884, respectively. As in 2018, small model stations in the HGB/DFW program areas that only conduct OBD-only inspections do not have revenues that exceed costs. Per the cost model, HGB/DFW OBD-only small model stations lose a median value of $39 per month.

Table VI-9 presents the HGB/DFW-program area break-even model analysis for OBD-only stations. This analysis calculates the number of inspections that it takes for revenue to equal costs, as well as the percent of stations open for an entire year in the program area that perform at least that number of inspections in an average month. The analysis indicates that it takes 28 inspections per month to break even and 89% of stations perform enough inspections to cover costs that include only equipment (all costs in Table VI-7 except building costs); with

both equipment and building costs (all costs in Table VI-7) taken into consideration, it takes 54 inspections per month to break even and 73% of stations perform enough inspections to cover costs.

Table VI-7. Revenues and Costs—HGB/DFW OBD-Only

Revenues and Costs		Per OBD Test
Station Revenue per Test		**$18.50**
Variable Costs	**Total**	**Per OBD Test**
Communication with VID (cost per call)	$0.18	$0.36
Communication with VID (calls per test)	2	
Labor (wage per hour)	$12.50	$5.21
Labor (minutes per test)	15	
Labor—other time with customer (minutes per test)	10	
Fringe benefits (percent of total compensation)*	13.3%	$0.80
Percent of OBD tests with free retests	4.8%	$0.31
Total Variable Costs per Month		**$6.67**
Fixed Costs	**Total**	**Monthly**
OBD analyzer (purchase price)†	$8,000	$70.00
Other equipment (annual cost)	$450	$37.50
Maintenance agreement (annual cost)	$880	$73.33
Additional maintenance cost (annual cost)	$450	$37.50
Dedicated phone line or internet (monthly cost)	$780	$65.00
Loan period (years)	4	
Loan interest rate (percent)	7.25%	
Building space (monthly rent for bay space)		$315.49
Electricity (monthly cost)		$43.40
Total Fixed Costs		**$642.22**

* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits. ERG calculates this by multiplying percent of fringe benefits compared to compensation by the percent of employees receiving benefits (from the survey).

† Assumes that total principal and interest paid over life of loan is spread over a useful life of 11 years.

Table VI-8. Model Station Analysis—HGB/DFW OBD-Only

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month (small, medium, large)*	51	91	129
Net Revenue (Number of Tests × Revenue per Test)	**$944**	**$1,684**	**$2,387**
Total fixed costs	$642	$642	$642
Total variable costs	$340	$607	$860
Total Cost	**$982**	**$1,249**	**$1,503**
Net Revenue – Total Costs (Monthly)	**($39)**	**$434**	**$884**

* Values represent number of emissions inspections for 25th percentile, median, and 75th percentile stations, of all stations performing inspections in the program area.

Table VI-9. Break-Even Analysis—HGB/DFW OBD-Only

Item	Equipment Only	Equipment and Building Costs
Fixed cost per month	$326.73	$642.22
Variable cost per inspection	$6.67	$6.67
Net revenue per inspection	$18.50	$18.50
Break-Even Number of Inspections	**28**	**54**
Station at/above Break-Even Number of Inspections	**89%**	**73%**

C. HGB/DFW ASM-OBD COST MODELS

Table VI-10 presents the revenues and costs associated with an ASM-OBD station in the HGB/DFW program areas based on survey and non-survey data. These results feed into the Table VI-11 model station analysis and Table VI-12 break-even analysis.

Table VI-11 presents the HGB/DFW–program area model station analysis for ASM-OBD stations. It presents the total costs and total revenue for model stations—hypothetical stations based on a certain throughput—that have a monthly emissions inspection volume of 180 (small-throughput station), 288 (medium-throughput station), and 440 (large-throughput station). These emissions inspection throughputs correspond to the 25th percentile, 50th percentile, and 75th percentile of monthly emissions inspections per ASM-OBD station in the HGB/DFW program areas. As the table shows, the monthly revenues for small, medium, and large stations exceed monthly costs by $1,296, $2,854, and $5,047, respectively.

Table VI-12 presents the HGB/DFW–program area break-even model analysis for ASM-OBD stations. The break-even analysis calculates the number of inspections that it takes for revenue to equal costs, as well as the percent of stations open for an entire year in the program area that perform at least that number of inspections in an average month. This analysis indicates that it takes 56 inspections per month to break even and 96% of stations perform enough inspections to cover costs that include equipment (all costs in Table VI-10 except building costs); with both equipment and building costs (all costs in Table VI-10) taken into consideration, it takes 90 inspections per month to break even and 92% of stations perform enough inspections to cover costs.

Table VI-10. Revenues and Costs—HGB/DFW ASM-OBD

Revenues and Costs		Per ASM Test	Per OBD Test
Station Revenue per Test		$24.50	$18.50
Variable Costs	**Total**	**Per ASM Test**	**Per OBD Test**
Communication with VID (cost per call)	$0.18	$0.36	$0.36
Communication with VID (calls per test)	2		
Labor (wage per hour)	$12.00	$5.00	$3.00
Labor (minutes per ASM test)	20		
Labor (minutes per OBD test)	10		
Labor—other time with customer (minutes per test)	5		
Fringe benefits (percent of total compensation)*	15.1%	$0.89	$0.53
Percent of ASM tests with free retest	12.0%	$0.75	
Percent of OBD tests with free retest	4.8%		$0.19
Percent of tests that are ASM tests	0.2%		
Percent of tests that are OBD tests	99.8%		
Total variable costs per test		$7.00	$4.08
Weighted Variable Cost per Test†	**$4.09**		
Fixed Costs	**Total**	**Monthly**	
ASM analyzer (purchase price)‡	$30,000	$270.02	
Other equipment (annual cost)	$1,200	$100.00	
Maintenance agreement (annual cost)	$2,540	$211.67	
Additional maintenance cost (annual cost)	$1,000	$83.33	
Dedicated phone line or internet (monthly cost)	$1,200	$100.00	
Loan period (years)	5		
Loan interest rate (percent)	7.0%		
Building space (monthly rent for bay space)		$492.00	
Electricity (monthly cost)		$43.40	
Total Fixed Costs		**$1,300.41**	

* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits. ERG calculates this by multiplying percent of fringe benefits compared to compensation by the percent of employees receiving benefits (from the survey).

† Weighted cost is calculated from the relative percent of TSI and OBD tests performed.

‡ Assumes total principal and interest paid over life of loan is spread over useful life of 11 years.

Table VI-11. Model Station Analysis—HGB/DFW ASM-OBD

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month (small, medium, large)*	180	288	440
Net Revenue (Number of Tests × Revenue per Test)	**$3,332**	**$5,332**	**$8,146**
Total fixed costs	$1,300	$1,300	$1,300
Total variable costs	$736	$1,177	$1,798
Total Cost	**$2,036**	**$2,478**	**$3,099**
Net Revenue – Total Costs (monthly)	**$1,296**	**$2,854**	**$5,047**

* Values represent number of emissions inspections for 25th percentile, median, and 75th percentile stations, of all stations performing inspections in the program area.

Table VI-12. Break-Even Analysis—HGB/DFW ASM-OBD

Item	Equipment Only	Equipment and Building Costs
Fixed cost per month	$808.41	$1,300.41
Variable cost per inspection	$4.09	$4.09
Net revenue per inspection	$18.51	$18.51
Break-Even Number of Inspections	**56**	**90**
Station at/above Break-Even Number of Inspections	**96%**	**92%**

D. EL PASO COST MODELS

Table VI-13 presents the revenues and costs associated with a station in El Paso based on survey and non-survey data. These results feed into the Table VI-14 model station analysis and the Table VI-15 break-even analysis.

Table VI-14 presents the El Paso–program area model station analysis. It presents the total costs and total revenue for model stations—hypothetical stations based on a certain throughput—that have a monthly emissions inspection volume of 83 (small-throughput station), 161 (medium-throughput station), and 309 (large-throughput station). These emissions inspection throughputs correspond to the 25th percentile, 50th percentile, and 75th percentile of monthly emissions inspections per station in the El Paso program area. As the table shows, the monthly revenues for medium and large stations exceed monthly costs by $51 and $1,037, respectively. Similar to 2018, small model stations again have costs that exceed revenue; costs exceed revenue by $469 per month for small model stations in the El Paso program area.

Table VI-15 presents the El Paso–area break-even model analysis. This analysis calculates the number of inspections that it takes for revenue to equal costs, as well as the percent of stations open for an entire year in the program area that perform at least that number of inspections in an average month. The analysis indicates that it takes 80 inspections per month to break even and 78% of stations perform enough inspections to cover costs that include equipment (all costs in Table VI-13 except building costs); with both equipment and building costs (all costs in Table VI-13) taken into consideration, it takes 153 inspections per month to break even and 52% of stations perform enough inspections to cover costs.

Table VI-13. Revenues and Costs—El Paso

Revenues and Costs		Per TSI Test	Per OBD Test
Station Revenue per Test		**$11.50**	**$11.50**
Variable Costs	**Total**	**Per TSI Test**	**Per OBD Test**
Communication with VID (cost per call)	$0.18	$0.36	$0.36
Communication with VID (calls per test)	2		
Labor (wage per hour)	$9.00	$4.50	$3.75
Labor (minutes per TSI test)	20		
Labor (minutes per OBD test)	15		
Labor—other time with customer (minutes per test)	10		
Fringe benefits (percent of total compensation)*	12.0%	$0.61	$0.51
Percent of TSI tests with free retest	6.0%	$0.33	
Percent of OBD tests with free retest	4.5%		$0.21
Percent of tests that are TSI tests	0.7%		
Percent of tests that are OBD tests	99.3%		
Total variable costs per test		$5.80	$4.83
Weighted Variable Cost per Test†	**$4.84**		
Fixed Costs	**Total**	**Monthly**	
TSI analyzer (purchase price)‡	$10,750	$102.62	
Other equipment (annual cost)	$950	$79.17	
Maintenance agreement (annual cost)	$2,000	$166.67	
Additional maintenance cost (annual cost)	$1,100	$91.67	
Dedicated phone line or internet (monthly cost)	$600	$50.00	
Loan period (years)	5		
Loan interest rate (percent)	9.5%		
Building space (monthly rent for bay space)		$488.44	
Electricity (monthly cost)		$43.40	
Total Monthly Fixed Costs		**$1,021.96**	

* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits. ERG calculates this by multiplying percent of fringe benefits compared to compensation by the percent of employees receiving benefits (from the survey).

† Weighted cost is calculated from the relative percent of TSI and OBD tests performed.

‡ Assumes total principal and interest paid over life of loan is spread over useful life of 11 years.

Table VI-14. Model Station Analysis—El Paso

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month (small, medium, large)*	83	161	309
Net Revenue (Number of Tests × Revenue per Test)	**$955**	**$1,852**	**$3,554**
Total fixed costs	$1,022	$1,022	$1,022
Total variable costs	$401	$778	$1,494
Total Cost	**$1,423**	**$1,800**	**$2,516**
Net Revenue – Total Costs (monthly)	**($469)**	**$51**	**$1,037**

* Values represent number of emissions inspections for 25th percentile, median, and 75th percentile stations, of all stations performing inspections in the program area.

Table VI-15. Break-Even Analysis—El Paso

Item	Equipment Only	Equipment and Building Costs
Fixed cost per month	$533.52	$1,021.96
Variable cost per inspection	$4.84	$4.84
Net revenue per inspection	$11.50	$11.50
Break-Even Number of Inspections	**80**	**153**
Station at/above Break-Even Number of Inspections	**78%**	**52%**

E. ARR COST MODELS

Table VI-16 presents the revenues and costs associated with a station in ARR based on survey and non-survey data. These results feed into the Table VI-17 model station analysis and Table VI-18 break-even analysis.

Table VI-17 presents the ARR–program area model station analysis. It presents the total costs and total revenue for model stations—hypothetical stations based on a certain throughput—that have a monthly emissions inspection volume of 84 (small-throughput station), 159 (medium-throughput station), and 308 (large-throughput station). These emissions inspection throughputs correspond to the 25th percentile, 50th percentile, and 75th percentile of monthly emissions inspections per station in the ARR area. As the table shows, the monthly revenues for large model stations exceed monthly costs by $583. However, unlike in 2018, the cost model indicates that medium model stations in the ARR program area do not have revenues that exceed monthly costs. That is, medium model stations have costs that exceed revenue by $183 per month. Small model stations in the ARR program area had costs that exceeded revenue by $569 per month.

Table VI-18 presents the ARR–program area break-even model analysis. This analysis calculates the number of inspections that it takes for revenue to equal costs, as well as the percent of stations open for an entire year in the program area that perform at least that number of inspections in an average month. The analysis indicates that it takes 93 inspections per month to break even and 69% of stations perform enough inspections to cover costs that include equipment (all costs in Table VI-16 except building costs); with both equipment and building costs (all costs in Table VI-16) taken into consideration, it takes 188 inspections per month to break even and 42% of stations perform enough inspections to cover costs.

Table VI-16. Revenues and Costs—ARR

Revenues and Costs		Per TSI Test	Per OBD Test
Station Revenue per Test		**$11.50**	**$11.50**
Variable Costs	**Total**	**Per TSI Test**	**Per OBD Test**
Communication with VID (cost per call)	$0.18	$0.36	$0.36
Communication with VID (calls per test)	2		
Labor (wage per hour)	$13.50	$6.75	$4.50
Labor (minutes per TSI test)	20		
Labor (minutes per OBD test)	10		
Labor—other time with customer (minutes per test)	10		
Fringe benefits (percent of total compensation)*	19.6%	$1.65	$1.10
Percent of TSI tests with free retest	13.9%	$1.22	
Percent of OBD tests with free retest	6.5%		$0.39
Percent of tests that are TSI tests	0.3%		
Percent of tests that are OBD tests	99.7%		
Total variable costs per test		$9.97	$6.34
Weighted Variable Cost per Test†	**$6.35**		
Fixed Costs	**Total**	**Monthly**	
TSI analyzer (purchase price)‡	$15,000	$128.45	
Other equipment (annual cost)	$780	$65.00	
Maintenance agreement (annual cost)	$2,000	$166.67	
Additional maintenance cost (annual cost)	$550	$45.83	
Dedicated phone line or internet (monthly cost)	$720	$60.00	
Loan period (years)	3.5		
Loan interest rate (percent)	7.0%		
Building space (monthly rent for bay space)	$69,120	$492.00	
Electricity (monthly cost)		$43.40	
Total Monthly Fixed Costs		**$1,001.35**	

* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits. ERG calculates this by multiplying percent of fringe benefits compared to compensation by the percent of employees receiving benefits (from the survey).

† Weighted cost is calculated from the relative percent of TSI and OBD tests performed.

‡ Assumes total principal and interest paid over life of loan is spread over useful life of 11 years.

Table VI-17. Model Station Analysis—ARR

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month (small, medium, large)*	84	159	308
Net Revenue (Number of Tests × Revenue per Test)	**$966**	**$1,829**	**$3,542**
Total fixed costs	$1,001	$1,001	$1,001
Total variable costs	$534	$1,010	$1,957
Total Cost	**$1,535**	**$2,012**	**$2,959**
Net Revenue – Total Costs (monthly)	**($569)**	**($183)**	**$583**

* Values represent number of emissions inspections for 25th percentile, median, and 75th percentile stations, of all stations performing inspections in the program area.

Table VI-18. Break-Even Analysis—ARR

Item	Equipment Only	Equipment and Building Costs
Fixed cost per month	$509.35	$1,001.35
Variable cost per inspection	$6.35	$6.35
Net revenue per inspection	$11.50	$11.50
Break-Even Number of Inspections (monthly)	**99**	**195**
Station at/above Break-Even Number of Inspections	**69%**	**42%**

VII. COMMENTS FROM EMISSIONS INSPECTION SURVEY RECIPIENTS

As in prior surveys, respondents were asked if they felt the emissions inspection fee covered the costs associated with offering emissions inspections at their stations. Respondents claiming an insufficient fee amount were prompted to rate their agreement with eight statements representing the most commonly cited justifications for a fee insufficiency, as garnered from prior years' survey responses.

Table VII-1 shows these agreement ratings using a 5-point Likert scale, where 1 is "strongly agree," 2 is "agree," 3 is "neither agree nor disagree," 4 is "disagree," and 5 is "strongly disagree"; those who chose "not applicable" for any item are also included. ERG calculated the mean value of responses after converting each response to its number on the Likert scale. The table is sorted by mean value from highest agreement to lowest. As it shows, the statement with which the largest number of respondents agreed or strongly agreed was, "All the costs simply add up to more than the fee, but I decide to offer testing because it is important to my business in other ways."

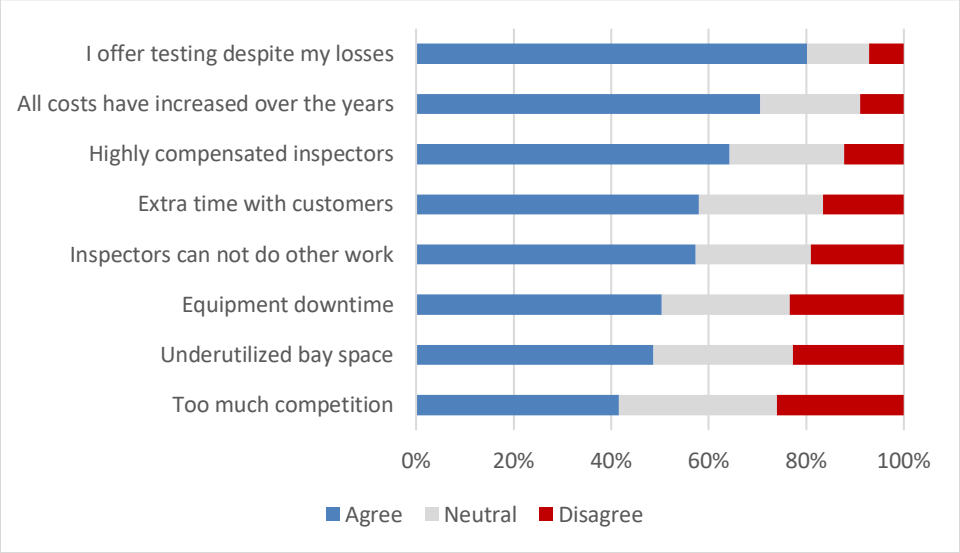
Table VII-1. Reasons the Emissions Inspection Fee Does Not Cover Costs of Testing

Reason Fee Does Not Cover Costs	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree	NA	Mean Value*
All the costs simply add up to more than the fee, but I decide to offer testing because it is important to my business in other ways.	41%	37%	12%	6%	1%	2%	1.86
Costs associated with testing have increased over the years and now our costs exceed the revenue from the test fee.	36%	33%	20%	8%	1%	2%	2.03
I must pay my inspectors a high salary/rate because their primary job function is one that demands a higher salary than emissions inspectors.	33%	26%	22%	10%	2%	8%	2.14
The extra time I spend with customers during emissions inspections is costly.	27%	29%	25%	13%	3%	3%	2.34
I must pay an emissions inspector to be on site, and it is costly because it is difficult to task them with other work when they are not performing inspections.	27%	25%	21%	12%	5%	10%	2.38
I pay for emissions inspection bay/building space, but it is underutilized for emissions testing or cannot easily be used for other purposes.	24%	19%	26%	16%	5%	10%	2.52
My testing equipment is frequently in need of repair, and the downtime hurts my ability to break even.	21%	26%	25%	16%	6%	6%	2.56
I do not conduct enough emissions inspections because there are too many stations performing inspections.	21%	19%	31%	16%	8%	5%	2.71

* Weighted average of score (1 is assigned to strongly agree, 2 is assigned to agree, 3 is assigned to neither, 4 is assigned to disagree, 5 is assigned to strongly disagree). The lower the score, the higher the level of agreement.

Figure VII-1 further illustrates the level of agreement by respondents across the various statements by comparing the percentage of those who agree or strongly agree with a statement to those who disagree or strongly disagree. While more than half of respondents agree or strongly agree with 5 of the 8 statements, more respondents agreed than disagreed with all of the listed statements. The statement with which more respondents were likely to disagree was "I do not conduct enough emissions inspections because there are too many stations performing inspections."

Figure VII-1. Reasons Emissions Inspection Fee Does Not Cover Costs Testing



Respondents were also invited to describe any additional reasons that the emissions inspection fee does not cover their costs. One hundred twenty respondents submitted supplementary answers, although the majority of them elaborated on the issues covered by the statements listed—with particular emphasis on high labor, rent, insurance and other business expenses, underutilized bay space, maintenance expenses, and lost revenue due to equipment downtime. Below are examples of other explanations not previously captured:

- Cost of living increased for station owners, who worry about making enough profit to cover their personal expenses (10 respondents).
- Property taxes increased for station owners (nine respondents).
- Failed inspections require more paper, which station owners view as a waste of resources (five respondents).
- Credit card processing fees are high, and many more people use cards now than when the station made the decision to enter the market (four respondents).

VIII. CONCLUSIONS AND FINDINGS

Section VIII.A presents survey responses about whether emissions inspection fees cover station costs. Section VIII.B examines how investors (current and potential station owners) view the market based on the net flow of stations into the vehicle emissions inspection market, while Section VIII.C delves into the adequacy of the fee from the point of cost models based on survey and non-survey data. Sections VIII.D and VIII.E present two further considerations: revenue streams from failed inspections and emissions inspection cost-model differences between T&R and test-only stations. Section VIII.F is an overall assessment of the adequacy of the fee. Section VIII.G recommends a fee range for the TCEQ's consideration across all program areas as all program areas move forward with OBD-only testing. Finally, Section VIII.H recommends possible changes to the survey for future data collection efforts.

A. ADEQUACY OF THE FEE: WHAT THE RESPONDENTS SAY

The final survey question asked whether the emissions inspection fee cap covered the costs of offering emissions inspections at their station. Figure VIII-1 and Figure VIII-2 provide the responses by program area, station type, and test type.

As shown in Figure VIII-1, among test-only and T&R respondents in HGB/DFW, between 35% and 42% of OBD-only stations reported the fee covered their costs. This is compared to ASM-OBD stations, of which between 32% and 35% (across test-only and T&R stations) reported the fee covered their costs. These represent small to moderate increases compared to 2018.

As shown in Figure VIII-2, among test-only and T&R stations in El Paso, between 3% and 6% of stations reported the fee covered their costs. This represents a substantial decrease from 2018. Among test-only and T&R stations in ARR, 10% of stations reported their fees cover the costs of emissions inspections. This represents a small decrease, for both test-only and T&R stations, from 2018.

Figure VIII-1. Respondents Reporting Test Fees Cover Their Costs: HGB/DFW

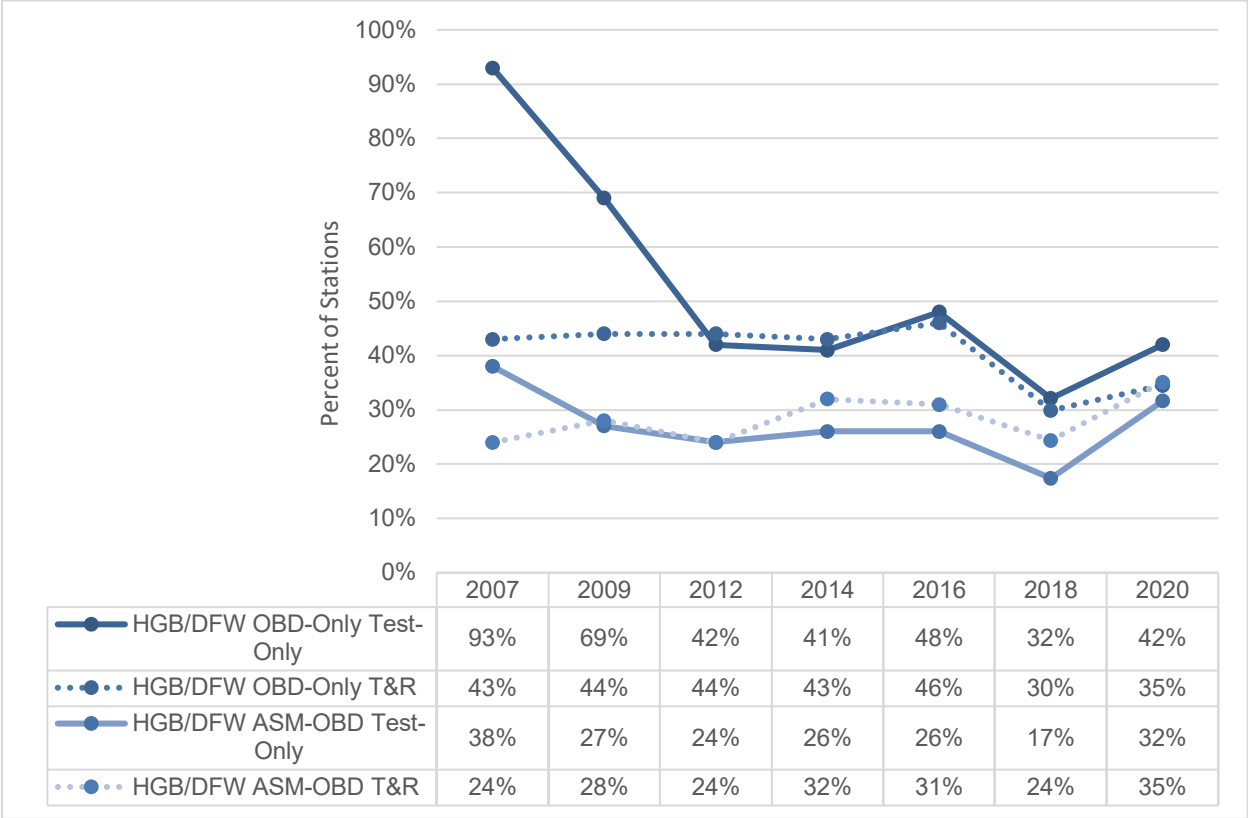
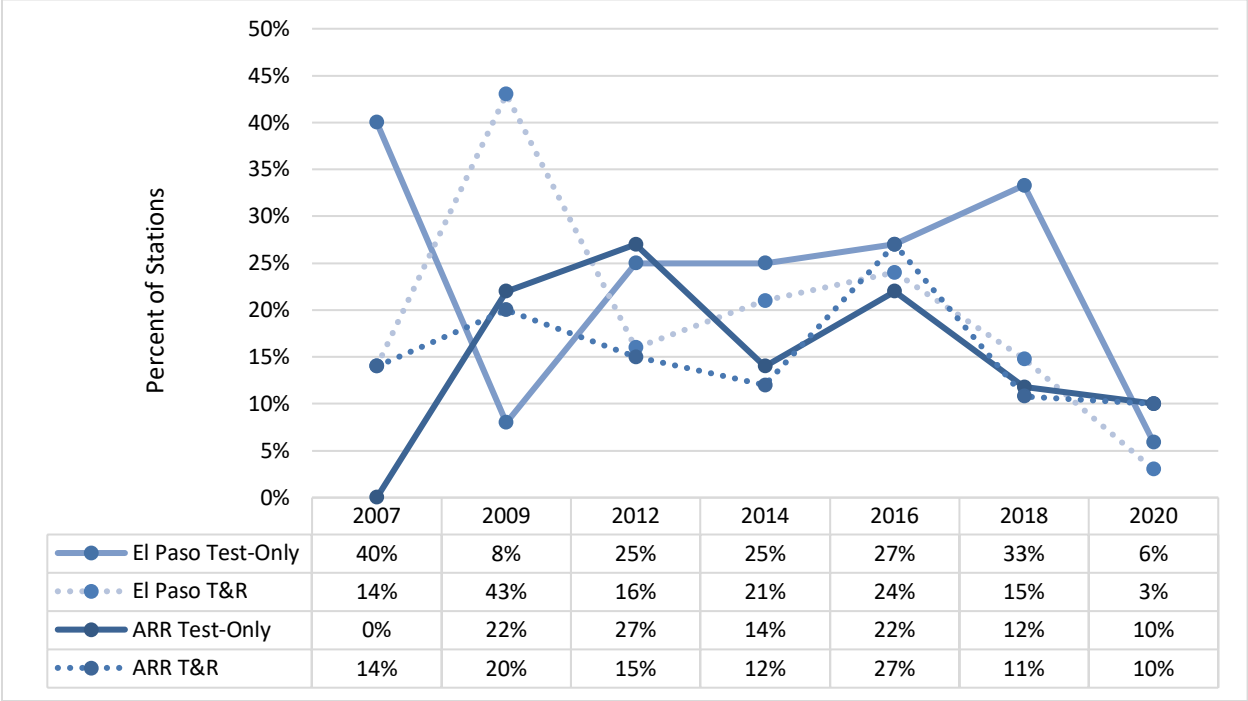


Figure VIII-2. Respondents Reporting Test Fees Cover Their Costs: El Paso and ARR



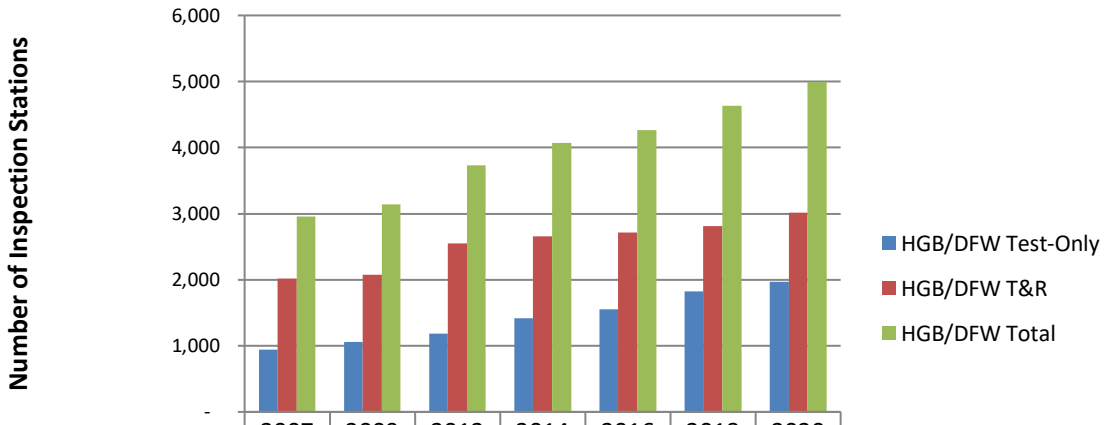
B. ADEQUACY OF THE FEE: HOW INVESTORS VIEW MARKET

The number of stations joining or leaving the I/M program is a good indicator of the expected profitability of a station in the market. Each station owner or prospective station owner makes a business decision about whether they should enter the market (in the case of a prospective owner) or whether they should remain in or leave the market (in the case of a current owner). A net decrease in the number of stations may indicate that existing stations are finding that fees are not sufficient to cover their variable costs; thus, existing station owners would tend to leave the market and prospective owners would avoid joining the market.

An increasing number of inspection stations may indicate that prospective and existing owners estimate that fees cover costs; thus, the existing owners would generally stay in the market and more prospective station owners would enter the market. Stations may also find further benefits from performing emissions inspections (e.g., more repair revenue and more customer volume into their shops) that offset their net losses from performing inspections. These data alone, however, do not definitively determine whether the fee is adequate: some potential investors likely have imperfect information, and some stations could be making decisions based on poor cost and revenue estimates or dated information. However, these data are certainly an important indicator and do provide good insight into how investors see the market. The counts from prior years' analyses (ERG, 2005, 2007, 2012, 2014, 2016, 2018; Pechan, 2009) and the counts made in March 2020 for this study were used to develop the following comparisons.

Figure VIII-3 summarizes the station counts for the HGB/DFW program areas from the TCEQ Vehicle Identification Database in 2007, 2009, 2012, 2014, 2016, 2018, and 2020. This figure shows a 9% increase in the number of stations between the 2016 and 2018 counts, and another 8% increase since the 2018 count. Table VIII-5 summarizes average monthly throughput per station for 2008, 2011, 2013, 2015, 2017, and 2019. The monthly throughput data for one year correspond with the station counts for the year after (i.e., 2019 throughput data match with the 2020 station count). As shown in this table, the throughput per station decreased slightly from 2017 to 2019 after increasing from 2015 to 2017. In 2018, the overall testing volume in the HGB/DFW program areas increased by 23% compared to 2016, which resulted in the increased throughput per station. In 2020, station growth (7.5%) outweighed throughput increases (6%), resulting in a lower throughput per station. The increase in the number of stations indicates that a fair number of station owners are making the business decision to remain in and enter the market, presumably based on the cost and revenue streams. This is an indicator that the $18.50 fee is probably close to adequate in the HGB/DFW program areas.

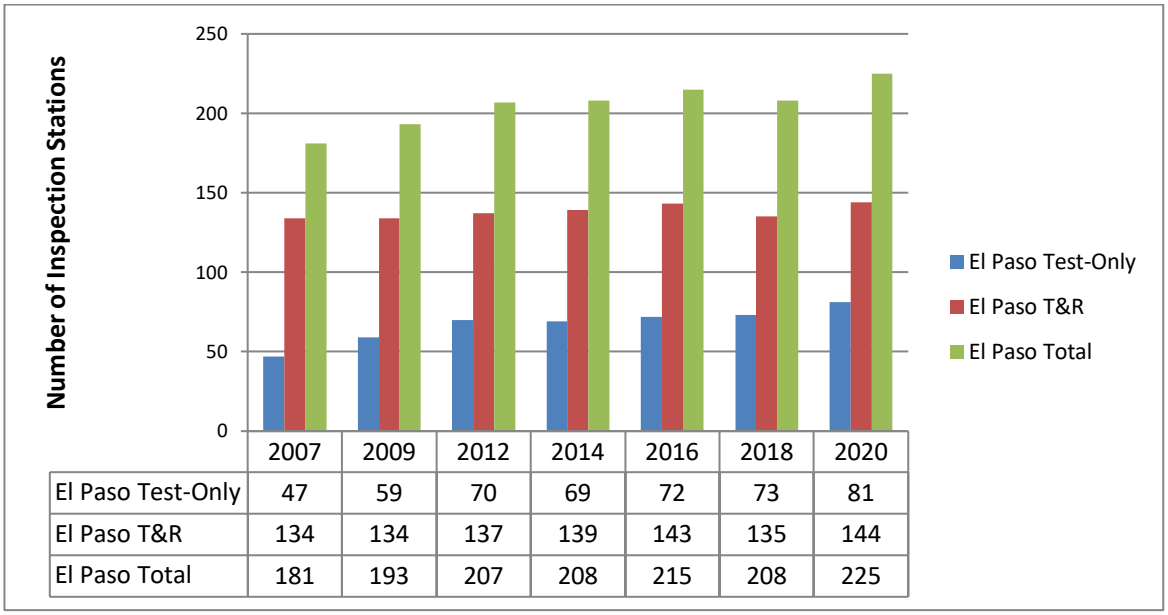
Figure VIII-3. Number of Inspection Stations in HGB/DFW Program Areas, 2007 to 2020



	2007	2009	2012	2014	2016	2018	2020
HGB/DFW Test-Only	942	1,063	1,183	1,415	1,553	1,823	1,967
HGB/DFW T&R	2,017	2,076	2,548	2,658	2,710	2,814	3,019
HGB/DFW Total	2,959	3,139	3,731	4,073	4,263	4,637	4,986

Figure VIII-4 summarizes the station counts for the El Paso program areas for 2007, 2009, 2012, 2014, 2016, 2018, and 2020. This figure shows an increase of 17 stations in the El Paso program area from 2018 to 2020 compared to a decrease of seven stations between 2016 and 2018. In 2020, the overall testing volume in the El Paso program area increased by 15% compared to 2018. Throughput per station (as seen in Table VIII-5 below) decreased from 2018 to 2020 after an increase from 2016 to 2018. This was the result of a greater increase in the number of stations in the market than total throughput in the program area. The total increase in stations from 2018 to 2020 indicates that more station owners chose to enter the market than to exit the market. When more stations are entering the market, that is an indicator that the fee being charged could be adequate, with market entrants viewing that fee as worth incurring the costs to get started in the industry. However, it is important to consider other indicators: the number of stations has been relatively stable between 2012 and 2020 (between 207 and 225), which is not a definitive indicator of the fee being adequate.

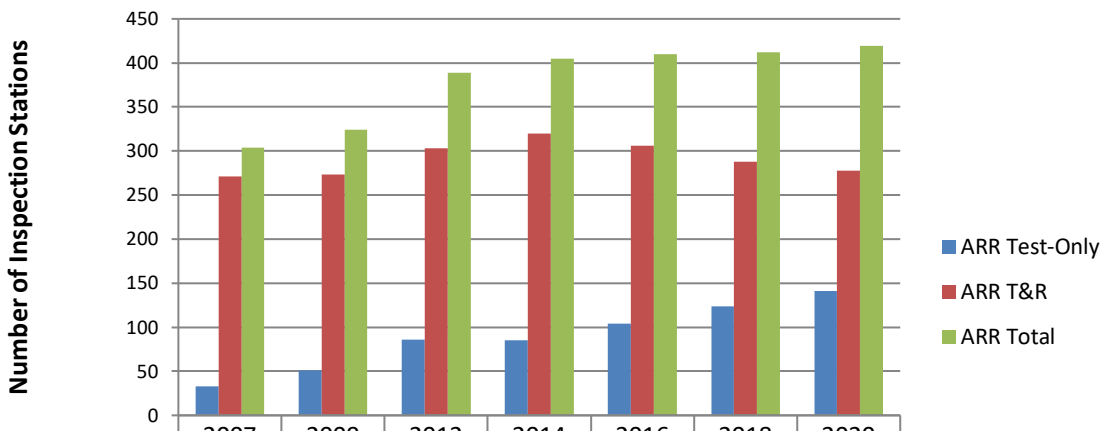
Figure VIII-4. Number of Inspection Stations in El Paso Program Area, 2007 to 2020



	2007	2009	2012	2014	2016	2018	2020
El Paso Test-Only	47	59	70	69	72	73	81
El Paso T&R	134	134	137	139	143	135	144
El Paso Total	181	193	207	208	215	208	225

Figure VIII-5 summarizes the station counts for the ARR program area for 2007, 2009, 2012, 2014, 2016, 2018, and 2020. This figure shows a small increase of 14 stations in the ARR program area between 2014 and 2020, compared to an increase of 101 stations between 2007 and 2014. Between 2018 and 2020, the total number of stations offering emissions inspections only increased by seven, from 412 to 419. Test-only stations experienced modest growth, as the number of stations increased from 124 in 2018 to 141 in 2020. T&R stations saw a modest decrease in the number of stations, from 288 stations in 2018 to 278 stations in 2020. In 2020, the overall testing volume in the ARR program area increased by 8% compared to 2018, and as a result (see Table VIII-5 below), the throughput per station increased from 2018 to 2020. Because the total number of stations increased, the public did not see a reduction in supply for their emissions inspections. Additionally, the number of total stations in ARR remained relatively consistent, indicating that station owners entered and exited the market at about the same rate. These data alone do not definitively determine the adequacy of the fee, as investors often make decisions on imperfect information. Thus, it is also important to consider whether the cost models provide a clearer picture on the adequacy of the fee.

Figure VIII-5. Number of Inspection Stations in ARR Program Area, 2007 to 2020



	2007	2009	2012	2014	2016	2018	2020
ARR Test-Only	33	51	86	85	104	124	141
ARR T&R	271	273	303	320	306	288	278
ARR Total	304	324	389	405	410	412	419

C. ADEQUACY OF THE FEE: WHAT THE COST MODEL INDICATES

As Chapter VI discusses in more detail, ERG developed both break-even and model station cost models for the HGB/DFW (both OBD-only and ASM-OBD), El Paso, and ARR program areas.

In the break-even cost model summarized in Table VIII-1, 89% to 96% of stations (excluding building costs) in HGB/DFW (both test types) are shown to have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs. In El Paso and ARR, 69% to 78% of stations (excluding building costs) have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs. As discussed in previous sections, some stations did not incur incremental building costs to be able to offer testing, so the analyses are done with and without building costs included.

Table VIII-1. Stations At/Above Break-Even Number of Inspections

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Monthly break-even number of tests including equipment costs	28	56	80	99
Monthly break-even number of tests including equipment and building costs	54	90	153	195
Percent of stations above break-even number including equipment costs	89%	96%	78%	69%
Percent of stations above break-even number including equipment and building costs	73%	92%	52%	42%

The summary of the percent of stations breaking even since 2012, shown below in Table VIII-2, compares 2020 percentages of stations breaking even to those of the past. OBD-only stations in the HGB/DFW program area had a break-even number of tests consistent with prior years (26 to

28). However, the number of break-even tests for full-service HGB/DFW stations was not consistent with prior years. The large drop in break-even tests for ASM-OBD stations is driven largely by the median test times for both OBD and ASM tests decreasing (15 to 10 minutes for OBD tests; 25 to 20 minutes for ASM). The additional time spent for tests also dropped from 10 to 5 minutes. Likewise, the El Paso program area had a shift in the number of break-even tests (70 to 80) and a drop in the percent of stations breaking even (84% to 78%). This is because the median time spent for TSI tests increased (15 to 20 minutes) and OBD test time increased (10 to 15 minutes). The ARR program area had a similar development to El Paso, with break-even tests increasing (82 to 99) and the percent of break-even stations decreasing (77% to 69%). This change is due to increased wages ($1.00 per hour) and more time spent for TSI tests (15 to 20 minutes) and more time spent for all tests (7.5 to 10 minutes).

Table VIII-2. Summary of Break-Even Number of Inspections from 2012 to 2020 in All Program Areas, Excluding Building Costs

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Break-even tests (2012)	27	94	70	80
Break-even tests (2014)	26	89	73	76
Break-even tests (2016)	26	89	70	79
Break-even tests (2018)	26	97	70	82
Break-even tests (2020)	28	56	80	99
Percent of stations breaking even (2012)	86%	84%	80%	74%
Percent of stations breaking even (2014)	87%	85%	81%	73%
Percent of stations breaking even (2016)	87%	87%	80%	74%
Percent of stations breaking even (2018)	89%	93%	84%	77%
Percent of stations breaking even (2020)	89%	96%	78%	69%

Table VIII-3 shows the percent of OBD tests at HGB/DFW ASM-OBD stations, El Paso stations (which perform OBD and TSI tests), and ARR stations (which perform OBD and TSI tests). In the 2020 survey, El Paso stations and OBD-only stations in the HGB/DFW program area reported a median time of 15 minutes for OBD tests, while ARR stations and full-service stations in the HGB/DFW program area reported a median time of 10 minutes for OBD tests. ARR and El Paso, the program areas with TSI testing, recorded a median time of 20 minutes for TSI tests. The full-service stations in the HGB/DFW program area recorded a median time of 20 minutes for ASM tests. These median times indicate a benefit for stations making the transition to only OBD testing: less time and a lower cost to conduct tests.

Table VIII-3. Percent OBD Tests Relative to All Test Types

Program Area	Percent OBD Tests (2012)	Percent OBD Tests (2014)	Percent OBD Tests (2016)	Percent OBD Tests (2018)	Percent OBD Tests (2020)
HGB/DFW (ASM-OBD)	85.4%	95.2%	97.7%	98.9%	99.8%
El Paso	88.0%	91.7%	95.7%	97.6%	99.4%
ARR	88.1%	95.6%	97.8%	98.8%	99.7%

The model station analysis reveals similar findings. This analysis created area-specific small-, medium-, and large-throughput stations representative of stations in the 25th, 50th (median), and 75th percentiles, respectively, based on emissions inspection throughput. Table VIII-4 shows whether small-, medium-, and large-throughput model stations in HGB/DFW (both testing

types), El Paso, and ARR generate enough revenue from emissions inspections to recoup costs. As in 2018, some station types have revenues that do not exceed total costs. These instances occur in small model stations in HGB/DFW program areas conducting OBD-only inspections, and both small and medium model stations in both the El Paso and ARR program areas. All other model station types across the four program areas had net revenues that exceeded costs.

Table VIII-4. Total Monthly Costs and Net Revenues at Model Stations (2020)

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Small station net revenue	$944	$3,332	$955	$966
Small station total costs	$982	$2,036	$1,423	$1,535
Small stations net revenue – total cost	**($39)**	**$1,296**	**($469)**	**($569)**
Medium station net revenue	$1,684	$5,332	$1,852	$1,829
Medium station total costs	$1,249	$2,478	$1,800	$2,012
Medium station net revenue – total cost	**$434**	**$2,854**	**$51**	**($183)**
Large station net revenue	$2,387	$8,146	$3,554	$3,542
Large station total costs	$1,503	$3,099	$2,516	$2,959
Large station net revenue – total cost	**$884**	**$5,047**	**$1,037**	**$583**

Table VIII-5 (average testing throughput per station)[10] and Table VIII-6 (total testing throughput by program area) provide some additional insight, as throughput is a major driver of generating enough revenue to break even. Across all program areas. the total testing throughput has increased from 2017 through 2019. The average monthly throughput per station has increased substantially in all program areas as well.

Table VIII-5. Average Monthly Throughput per Station from Calendar Year 2008 to 2019

Program Area	2008	2011	2013	2015*	2017	2019
HGB/DFW	184	165	148	137	156	153
EL Paso	194	188	179	181	217	208
ARR	222	195	184	178	225	239
Average	187	169	153	143	164	162

* March 1, 2015, through February 29, 2016.

[10] These throughput per month calculations were typically done using throughput from calendar years (i.e., 2008, 2011, 2013, 2015, 2017, and 2019) and the number of active stations the following March (March 2009, 2012, 2014, 2016, 2018, and 2020).

Table VIII-6. Initial Calendar Year Testing Throughput from 2011 to 2019 in All Program Areas

Program Area	2011 Annual Throughput	2013 Annual Throughput	2015 Annual Throughput*	2017 Annual Throughput	2019 Annual Throughput
HGB/DFW (overall)	7,402,704	7,240,815	7,027,333	8,666,394	9,169,664
HGB/DFW (OBD tests)	6,840,062	6,892,947	6,862,215	8,567,335	9,150,905
HGB/DFW (ASM tests)†	562,642	347,868	165,118	99,059	18,759
El Paso (overall)	466,570	446,991	467,653	541,250	561,384
El Paso (TSI test)	57,283	41,489	19,889	12,903	3,633
El Paso (OBD tests)	409,287	405,502	447,764	528,347	557,751
ARR (overall)	911,455	894,648	877,146	1,114,352	1,200,711
ARR (TSI tests)	61,969	39,421	19,592	12,993	3,294
ARR (OBD test)	849,486	855,227	857,554	1,101,359	1,197,417
Total	**8,780,729**	**8,582,454**	**8,372,132**	**10,321,996**	**10,931,759**

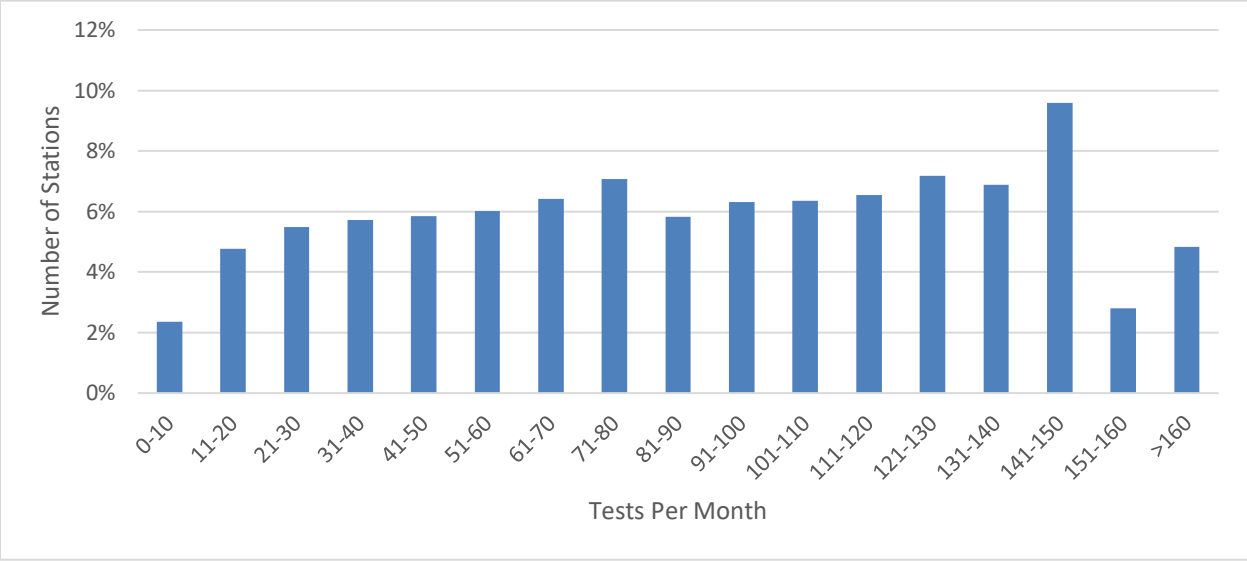
* March 1, 2015, through February 29, 2016.

† Includes a small number of TSI tests performed in the program area.

Figure VIII-6 (HGB/DFW OBD-only), Figure VIII-7 (HGB/DFW ASM-OBD), Figure VIII-8 (El Paso), and Figure VIII-9 (ARR) and show the distribution of station testing throughput for stations open the entire year. The following analysis provides context about the percent of stations that could start to break even if conditions improve or no longer break even if conditions worsen.

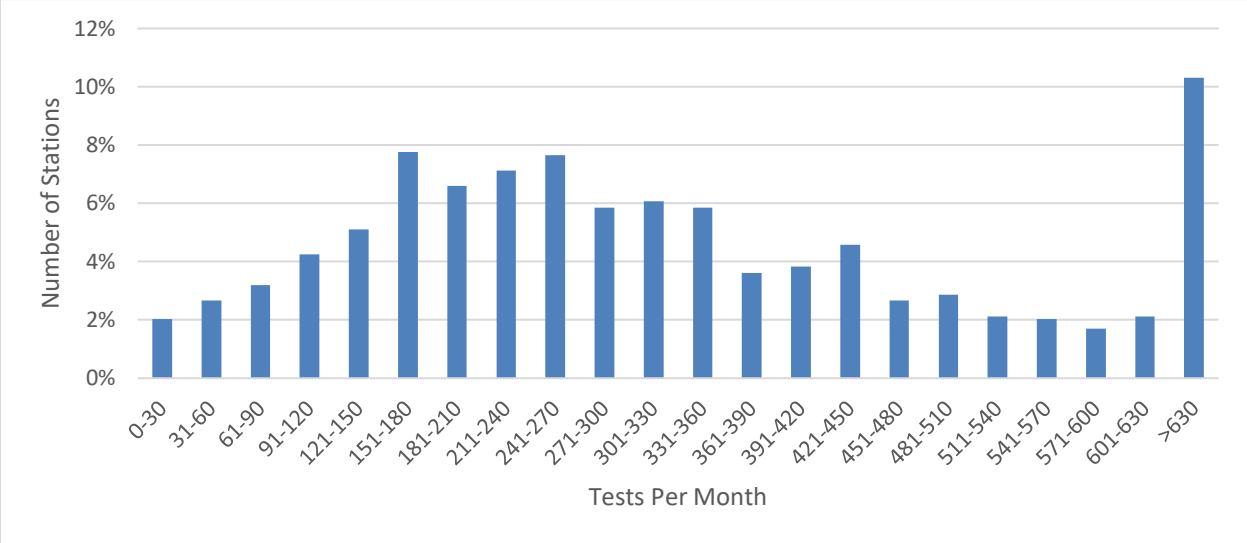
For HGB/DFW, the break-even analysis showed it took about 28 tests per month for an OBD-only station to break even (see Table VIII-2). As shown in Figure VIII-6, about 6% of stations had a monthly throughput between 20 and 30 (barely breaking even). About 5% of stations had a monthly throughput between 10 and 20 tests (not quite breaking even), which provides insight about the number of stations that could start to break even if conditions improve. Almost 6% of stations had a monthly throughput between 30 and 40 tests and risk no longer breaking even if conditions worsen.

Figure VIII-6. Monthly Testing Throughput for OBD-Only Stations in HGB/DFW



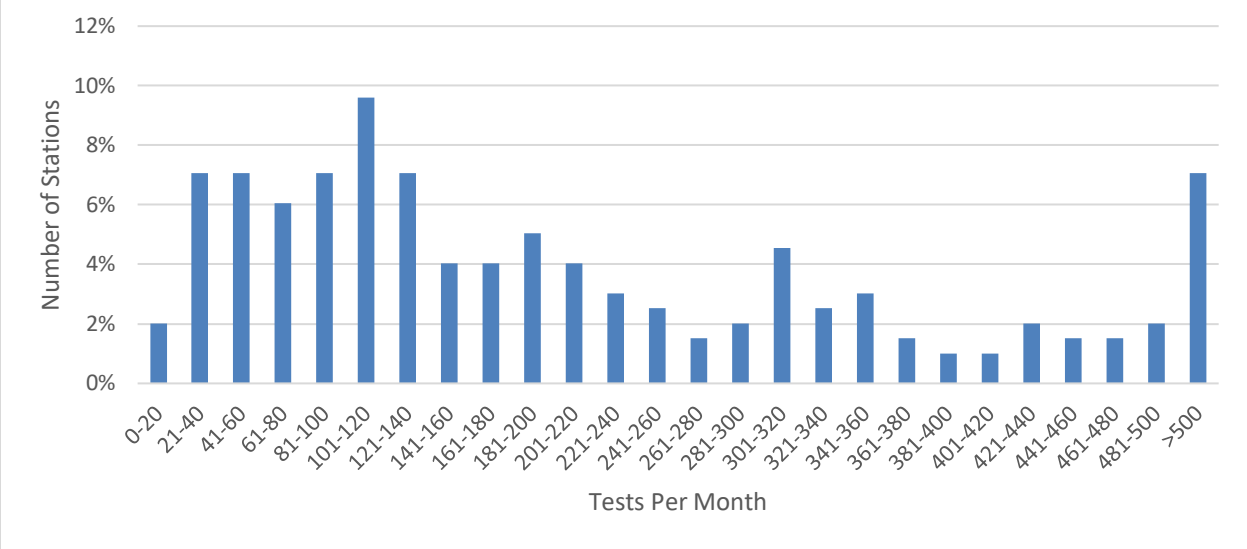
For HGB/DFW, the break-even analysis showed, it took about 56 tests per month for an ASM/OBD station to break even (see Table VIII-2). As shown in Figure VIII-7, about 3% of stations performed 30 to 60 tests a month (barely breaking even or falling short of breaking even). About 3% of stations perform 60 to 90 tests per month (and risk no longer breaking even if conditions worsen).

Figure VIII-7. Monthly Testing Throughput for ASM-OBD Stations in HGB/DFW



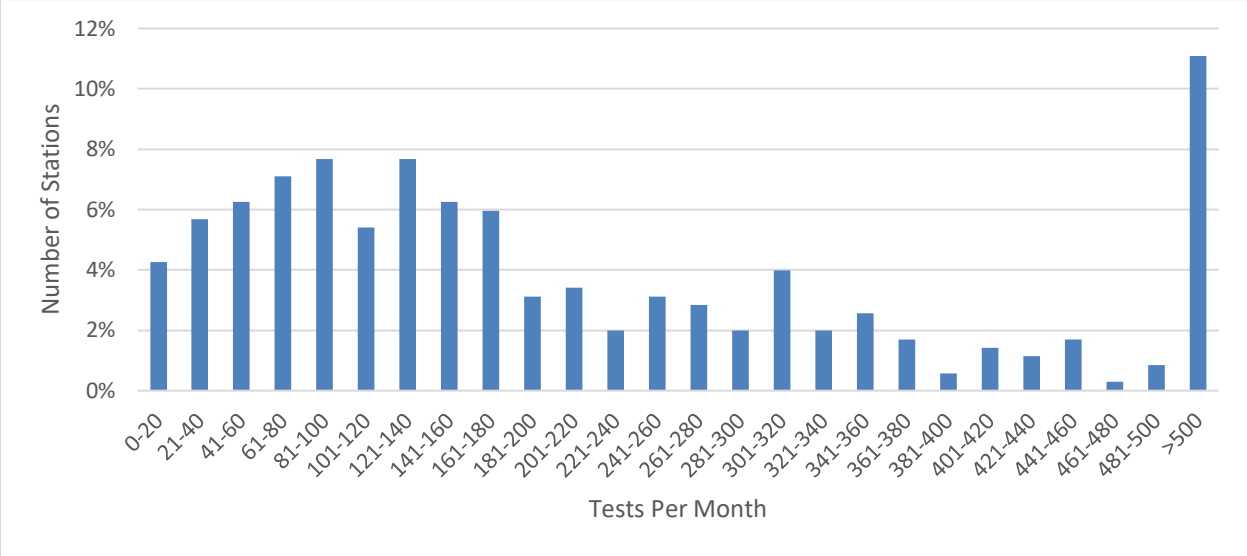
In El Paso, the break-even analysis showed, it took about 80 tests per month for a station to break even (see Table VIII-2). As shown in Figure VIII-8, approximately 6% of stations performed 60 to 80 tests a month (barely breaking even), over 7% of stations perform 40 to 60 tests per month (and could break even if situations improve), and 7% of stations perform 80 to 100 tests per month (and are at risk to stop breaking even if conditions worsen).

Figure VIII-8. Monthly Testing Throughput for El Paso Stations



In ARR, the break-even analysis showed, it took about 99 tests per month for a station to break even (see Table VIII-2). As shown in Figure VIII-9, about 8% of stations performed 80 to 100 tests a month (barely breaking even, and at risk of no longer breaking even if conditions worsen) and 7% of stations perform 60 to 80 tests per month (and could break even if situations improve).

Figure VIII-9. Monthly Testing Throughput for ARR Stations



D. ADDITIONAL CONSIDERATIONS: REPAIR REVENUE FROM FAILED INSPECTIONS

As noted in the Chapter VI cost model analysis, there was no differentiation between test-only and T&R stations (because the incremental costs of emissions inspections are the same for both station types), and repair revenue generated from failed emissions inspections was excluded from the Chapter VI analysis. The survey asked T&R stations to estimate the number of repairs from failed inspections and average repair revenue generated from failed inspections over the past month. This is summarized in Table VIII-7 along with the total monthly revenue generated from failed inspections.

Table VIII-7. Monthly Revenue Generated from Failed Inspections

	HGB/DFW OBD-Only	HGB/DFW ASM-OBD	El Paso	ARR
Number of repairs per month (median)	3	5	10	5
Repair revenue from each failed emissions inspection (median)	$200.00	$150.00	$100.00	$175.00
Estimated monthly repair revenue generated from failed inspections	$600.00	$750.00	$1,000.00	$875.00
Percent net revenue per dollar of repair work	4.9%	4.9%	4.9%	4.9%
Estimated net revenue attributed to emissions inspection repairs	$29.40	$36.75	$49.00	$42.88
Reduction in number of tests to break even	4	9	10	7

The table above shows that a typical T&R station generates about $600 to $1,000 per month in additional gross revenue, depending on the program area, from repairs associated with failed emissions inspections. Stations will have an assortment of costs associated with repairs (labor, parts, etc.); thus, the net revenue to the station attributable to the repairs from failed emissions inspections will be some relatively small fraction, about 4.9% of the total revenue generated (IRS, 2016).[11] This is the equivalent impact of reducing a station's break-even number of tests by between four (HGB/DFW OBD-only) and 10 (El Paso) per month. Additionally, this is an opportunity for stations to build a relationship with potential clients. Based on the comments from respondents and answers to current and past survey questions, repair revenue from failed emissions inspections plays an important part in the business decision to offer emissions inspections.

E. ADDITIONAL CONSIDERATIONS: HIGHER THROUGHPUT AT TEST-ONLY STATIONS

The cost model analyses in Chapter VI use throughput figures for all stations to generate representative small, medium, and large stations based on throughput. As discussed above in Section 0, T&R stations have an additional revenue stream from repairs from failed inspections; accordingly, they could be expected to remain in business with a lower emissions inspection throughput than test-only stations, whose viability in the market is much more dependent (solely dependent, for stations that do not offer non-repair services) on revenue from emissions inspections. Table VIII-8 shows the 25th percentile, 50th percentile (median), and 75th percentile emissions inspection throughput by program area for test-only stations, T&R stations, and both aggregated. As expected, test-only stations had higher inspection throughput than T&R stations across all program areas and test types, with much larger disparities in throughput for El Paso and ARR.

Table VIII-8. Initial Testing Throughput by Program Area and Station Type (Excluding Building Costs)

Program Area	Station Type	25th Percentile ("Small")	50th Percentile (Median) ("Medium")	75th Percentile ("Large")	Break-Even Tests (No Building)	Break-Even Tests (with Building)
HGB/DFW (OBD-only)	Test-only	53	97	134	28	54
	Test-and-repair	50	87	126	28	54
	Both types	51	91	129	28	54
HGB/DFW (ASM-OBD)	Test-only	207	322	487	56	90
	Test-and-repair	165	263	412	56	90
	Both types	180	288	440	56	90
El Paso	Test-only	116	243	407	80	153
	Test-and-repair	78	129	228	80	153
	Both types	83	161	309	80	153
ARR	Test-only	87	205	346	99	195
	Test-and-repair	84	146	279	99	195
	Both types	84	159	308	99	195

[11] Based on a net income of $3,659,508,000 divided by business receipts of $74,577,213,000 for the entire "Automotive Repair and Maintenance" minor industry in 2012.

Table VIII-8 also shows the break-even number of emissions inspections—the number needed for revenue to equal the costs associated with emissions inspections in each program area. Before building costs are factored in, both small T&R and test-only stations in the ARR program area and small T&R stations in El Paso do not meet the break-even test numbers for their program areas.

F. OVERALL FINDINGS ON THE ADEQUACY OF THE FEE

The cost model analyses show over 89% of stations (excluding building costs) in the HGB/DFW program areas with total revenue covering costs and an increasing number of stations entering the market, which seems to indicate that the fee of $18.50 is close to sufficient in these program areas.

In the El Paso program area, 78% of stations (excluding building costs) are estimated to break even, while only 52% of stations break-even when building costs are included. The number of stations in El Paso increased by about 8% since 2018. Only 2% of stations reported offering free tests aside from retests compared to 20.5% in 2018. Given the decrease in the percentage of stations breaking even and the diminishing number of stations offering free or reduced-price tests, this suggests that stations may be having a difficult time covering their costs with the revenue and the $11.50 price should be increased.

In the ARR program area, a smaller percentage of stations (excluding building costs) break even according to the cost model analyses (69%). The number of stations in the program area has been relatively unchanged since 2014. There was also a decrease in the percentage of stations that offer free tests aside from retests compared to 2018. Overall, this may indicate that the fee needs to be increased.

G. ADEQUATE FEE RECOMMENDATION

On January 1, 2020, all model year 1995 and older vehicles became exempt from the vehicle emissions inspection requirements in Texas and OBD became the only type of emissions inspection performed across AirCheckTexas program areas. Currently, the El Paso and ARR program areas offer OBD vehicle emissions inspections for a maximum of $11.50, while the HGB and DFW program areas offer OBD inspections for a maximum of $18.50. Therefore, the TCEQ is considering setting a single fee for OBD emissions inspections across all program areas.

ERG reviewed all OBD vehicle emissions inspection programs and associated fees charged to consumers across the country. Table VIII-9 shows the average, 25th percentile, median, and 75th percentile cost for OBD inspection fees across 22 states that require emissions inspections. This includes the per-inspection fee and average annual OBD inspection fee, which ERG calculated by dividing the fee by the number of years the inspection covers (either one or two years in all cases). The interquartile range of $11.63 to $32.50 and median value of $20 per OBD inspection provide useful context for a fee recommendation, which is built on below with some program-specific data.

Table VIII-10 shows the average annual OBD vehicle emissions inspection fee by state. For states that have different fee prices for OBD inspections based on model year, vehicle type, or

county/region, the table presents each average annual OBD inspection fee in a separate row. The fees presented represent only OBD inspection fees and do not include ASM or TSI emissions inspections prices or safety inspection components.

Table VIII-9. Summary Statistics of State Vehicle Emissions Inspections Fees

	Average Fee per Inspection	Average Annual OBD Fee to Public
Average	$24.44	$20.91
25th percentile	$11.63	$8.50
50th percentile (median)	$20.00	$16.40
75th percentile	$32.50	$28.00

Table VIII-10. Comparison of State Vehicle Emissions Inspections Fees

State	County/Region	OBD Fee per Inspection	Average Annual OBD Fee	Model Years	Vehicle Type
Arizona	Phoenix	$17.00	$8.50	1996–	GVWR* < 8,500 lbs.
Arizona	Tucson	$12.25	$6.13	1996–	GVWR < 8,500 lbs.
Colorado	Boulder, Broomfield, Denver, Douglas, Jefferson, and parts of Adams, Arapahoe, Larimer, Weld	$25.00	$12.50	2009–2012	GVWR < 8,500 lbs.
Connecticut	Statewide	$20.00	$20.00	1996–	Any size
Delaware	Statewide	$0.00	$0.00	1996–2015	GVWR < 8,500 lbs.
Idaho	Ada, Canyon, city of Kuna	$11.00	$5.50	1996–2015	GVWR < 14,000 lbs.
Illinois	Cook, Dupage, Lake, and parts of Kane, Kendall, McHenry, Madison, Monroe, St. Clair, Will	$20.00	$10.00	1996–2016	GVWR between 8,500 and 14,000 lbs.
Indiana	Clark, Ford, Lake, Port	$0.00	$0.00	1996–	GVWR < 9,000 lbs.
Louisiana	Ascension, East Baton Rouge, West Baton Rouge, Iberville, Livingston	$8.00	$8.00	1996–	GVWR < 10,000 lbs.
Maine	Cumberland	$18.50	$18.50	1996–	Any size
Maryland	Statewide	$14.00	$7.00	1996–	Passenger vehicles
Maryland	Statewide	$14.00	$7.00	2008–	GVWR < 14,000 lbs.
Massachusetts	Statewide	$35.00	$35.00	2000–	Passenger cars, trucks, and SUVs
Massachusetts	Statewide	$35.00	$35.00	2000–	Diesel w/ GVWR < 8,500 lbs.
Massachusetts	Statewide	$35.00	$35.00	2008–	Medium-duty vehicles
Massachusetts	Statewide	$35.00	$35.00	2008–	Non-diesel w/ GVWR between 8,500 and 14,000 lbs.
Massachusetts	Statewide	$35.00	$35.00	2007–	Diesel w/ GVWR between 8,500 and 14,000 lbs.
Missouri	St. Louis, Franklin, Jefferson, St. Charles	$24.00	$24.00	2000–	Any size

State	County/Region	OBD Fee per Inspection	Average Annual OBD Fee	Model Years	Vehicle Type
Nevada	Clark	$44.00	$44.00	1996–2018	GVWR < 8,500 lbs.
Nevada	Clark	$48.00	$48.00	1996–2018	GVWR > 8,500 lbs.
Nevada	Clark	$73.00	$73.00	1996–2018	Diesel w/ GVWR < 14,000 lbs.
Nevada	Washoe	$44.00	$44.00	1996–2018	GVWR < 8,500 lbs.
Nevada	Washoe	$45.50	$45.50	1996–2018	GVWR > 8,500 lbs.
Nevada	Washoe	$53.00	$53.00	1996–2018	Diesel w/ GVWR < 14,000 lbs.
New York	New York Metropolitan Area (NYMA)	$27.00	$27.00	1996–	GVWR < 8,500 lbs.
New York	Outside NYMA	$11.00	$11.00	1996–	GVWR < 8,500 lbs.
North Carolina	48 counties	$16.40	$16.40	1996–	GVWR < 8,500 lbs.
Ohio	Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, Summit	$18.00	$18.00	1996–	GVWR < 10,000 lbs.
Oregon	Portland	$21.00	$10.50	1996–	GVWR < 8,500 lbs.
Oregon	Medford	$10.00	$5.00	1996–	GVWR < 8,500 lbs.
Rhode Island	Statewide	$55.00	$27.50	1996–	Any size
Tennessee	Hamilton, Rutherford, Sumner, Williamson, Wilson	$9.00	$9.00	1996–	Any size
Utah	Cache	$20.00	$10.00	2015–	Any size
Utah	Cache	$20.00	$20.00	1996–2014	Any size
Utah	Weber	$30.00	$15.00	2015–	Any size
Utah	Weber	$30.00	$30.00	1996–2014	Any size
Virginia	Alexandria, Fairfax, Loudoun, Prince William, Stafford	$28.00	$28.00	1996–	GVWR < 10,000 lbs.
Virginia	Alexandria, Fairfax, Loudoun, Prince William, Stafford	$28.00	$28.00	1997–	GVWR < 8,500 lbs.
Wisconsin	Racine, Washington, Kenosha, Sheboygan, Milwaukee, Waukesha, Ozaukee	$0.00	$0.00	1996–	GVWR < 8,500 lbs.
Wisconsin	Racine, Washington, Kenosha, Sheboygan, Milwaukee, Waukesha, Ozaukee	$0.00	$0.00	1997–	Diesel w/ GVWR < 14,000 lbs.

* GVWR—gross vehicle weight rating

ERG also developed models for analyzing the impacts of different OBD inspection fee prices on station break-even rates across the four program areas. Table VIII-11 provides a summary of the key survey data that outlines overhead costs. These data are used in determining the number of inspections needed for a station to break even and the break-even rates for stations in each program area.

The cost for an OBD analyzer shown in the table is not derived from the survey results. Instead, ERG used a $200 per month rental rate for this equipment cost. Since the rental option used for this analysis includes toner costs, but not paper costs, ERG split the median survey cost estimate for combined printer paper and toner costs by assuming that only 20% of the combined printer paper and toner costs are for printer paper. The values for the combined HGB/DFW program area only represent OBD-only stations.

Table VIII-11. Survey Data Used in Adequate Fee Cost Model Analyses

Variable	HGB/DFW	El Paso	ARR
Building space—median purchase price (bay-related)*	$27,000.00	$40,000.00	$69,120.00
Building space—monthly rent for bay space	$315.49	$488.00	$492.00
OBD testing equipment—monthly rental rate	$200.00	$200.00	$200.00
Extra maintenance—median annual cost	$221.00	$1,200.00	$500.00
Inspector wage—median hourly salary	$12.50	$9.00	$13.50
Loan term—median length (years)	4.0	5.0	3.5
Loan rate—median amount (percent)	7.25%	9.50%	7.00%
Labor—median minutes per OBD test	15	15	10
Labor—other time with customer (minutes per test)	10	10	10
Retest rate for OBD test (percent)	4.80%	4.50%	6.50%
Percent of employees receiving benefits	50.20%	45.38%	74.15%
Dedicated phone line and/or internet—median annual cost	$780.00	$600.00	$720.00
Printer paper—median annual cost	$60.00	$100.00	$60.00

* Median purchase price (bay-related) was contextually informative but was not used in the cost model. Instead, for building space, monthly rent for bay space is used to estimate building costs because renting is more prevalent than purchasing. Monthly rent for bay space ends up being a higher monthly cost, for building space, than the median purchase price (bay-related) when spread over the life of the building.

Using a similar model to that currently used for HGB/DFW OBD-only stations, ERG performed an incremental cost analysis to see the impacts of different fee prices on the break-even rates for stations in each program area. ERG used increments of $0.50 for this analysis. This analysis provides both the number of emissions inspections needed to break even and the break-even rate of stations based on fixed and variable cost coverage (both including and excluding building costs). Table VIII-12 and Table VIII-13 provide complete results of the incremental analysis. These values include throughput data for HGB/DFW stations that offered both OBD and ASM emissions inspections, since these stations will only perform OBD inspections in the future.

Table VIII-12. Number of Inspections Needed per Month to Break Even

Fee Price	HGB/DFW Equipment Costs Only	HGB/DFW Equipment and Building Costs	El Paso Equipment Costs Only	El Paso Equipment and Building Costs	ARR Equipment Costs Only	ARR Equipment and Building Costs
$10.00	100	194	78	172	96	230
$10.50	87	169	71	157	84	203
$11.00	77	150	65	144	75	181
$11.50	69	134	60	133	68	163
$12.00	62	121	56	124	62	149
$12.50	57	111	52	116	57	137
$13.00	52	102	49	109	53	127
$13.50	49	95	46	103	49	118
$14.00	45	88	44	97	46	110
$14.50	42	83	42	92	43	103
$15.00	40	78	39	88	40	97
$15.50	38	73	38	83	38	92
$16.00	36	69	36	80	36	87
$16.50	34	66	34	76	34	83
$17.00	32	63	33	73	33	79
$17.50	31	60	32	70	31	75
$18.00	29	57	31	68	30	72
$18.50	28	55	29	65	29	69
$19.00	27	53	28	63	28	67
$19.50	26	50	27	61	27	64
$20.00	25	49	26	59	26	62
$20.50	24	47	26	57	25	59
$21.00	23	45	25	55	24	57
$21.50	22	44	24	53	23	56
$22.00	22	42	23	52	22	54
$22.50	21	41	23	50	22	52
$23.00	20	40	22	49	21	51
$23.50	20	38	22	48	20	49
$24.00	19	37	21	46	20	48
$24.50	19	36	20	45	19	46
$25.00	18	35	20	44	19	45
$25.50	18	34	19	43	18	44
$26.00	17	33	19	42	18	43
$26.50	17	33	19	41	17	42
$27.00	16	32	18	40	17	41
$27.50	16	31	18	39	17	40
$28.00	16	30	17	38	16	39
$28.50	15	30	17	38	16	38
$29.00	15	29	17	37	15	37
$29.50	15	28	16	36	15	36
$30.00	14	28	16	35	15	36
$30.50	14	27	16	35	14	35
$31.00	14	27	15	34	14	34
$31.50	13	26	15	33	14	33
$32.00	13	26	15	33	14	33

Table VIII-13. Break-Even Rates by Program Area and Fee

Fee Price	HGB/DFW Equipment Costs Only	HGB/DFW Equipment and Building Costs	El Paso Equipment Costs Only	El Paso Equipment and Building Costs	ARR Equipment Costs Only	ARR Equipment and Building Costs
$10.00	55%	20%	79%	47%	70%	36%
$10.50	62%	22%	82%	51%	75%	40%
$11.00	67%	26%	84%	54%	80%	44%
$11.50	72%	37%	84%	56%	82%	48%
$12.00	75%	44%	85%	60%	83%	52%
$12.50	77%	50%	86%	63%	86%	58%
$13.00	79%	54%	87%	65%	87%	61%
$13.50	81%	58%	87%	68%	88%	64%
$14.00	83%	61%	90%	71%	89%	67%
$14.50	84%	64%	91%	72%	89%	68%
$15.00	85%	66%	91%	73%	90%	69%
$15.50	86%	69%	92%	75%	90%	72%
$16.00	87%	71%	93%	78%	91%	74%
$16.50	88%	73%	93%	80%	91%	76%
$17.00	89%	74%	94%	81%	92%	78%
$17.50	90%	76%	94%	82%	92%	80%
$18.00	90%	77%	96%	83%	92%	81%
$18.50	91%	78%	96%	84%	93%	82%
$19.00	91%	79%	96%	84%	93%	82%
$19.50	92%	80%	96%	84%	93%	83%
$20.00	92%	82%	97%	84%	94%	83%
$20.50	93%	83%	97%	85%	94%	84%
$21.00	93%	83%	97%	86%	94%	85%
$21.50	93%	84%	97%	86%	95%	86%
$22.00	93%	84%	98%	86%	95%	87%
$22.50	94%	85%	98%	87%	95%	88%
$23.00	94%	86%	98%	87%	95%	88%
$23.50	94%	86%	98%	87%	96%	88%
$24.00	95%	86%	98%	87%	96%	88%
$24.50	95%	87%	98%	88%	96%	89%
$25.00	95%	87%	98%	90%	96%	89%
$25.50	95%	88%	98%	91%	97%	89%
$26.00	95%	89%	98%	91%	97%	89%
$26.50	96%	89%	98%	91%	97%	89%
$27.00	96%	89%	98%	91%	97%	90%
$27.50	96%	90%	98%	91%	97%	90%
$28.00	96%	90%	98%	91%	97%	90%
$28.50	96%	90%	98%	92%	97%	90%
$29.00	96%	90%	98%	92%	97%	91%
$29.50	96%	91%	98%	93%	97%	91%
$30.00	97%	91%	98%	93%	97%	91%
$30.50	97%	91%	98%	93%	97%	91%
$31.00	97%	91%	98%	93%	97%	91%
$31.50	97%	92%	98%	93%	98%	91%
$32.00	97%	92%	98%	94%	98%	92%

To gain inspection station owners' perspective on a reasonable OBD inspection fee, ERG asked station owners what they think their customers would be willing to pay and what fee price would cover costs of offering emissions testing. Table VIII-14 and Table VIII-15 summarize the responses to these questions.

Table VIII-14. What Are Customers Willing to Pay?

	HGB/DFW	El Paso	ARR	All Areas
Count	688	49	73	810
25th percentile	$20.00	$20.00	$18.50	$20.00
50th percentile (median)	$25.00	$25.00	$20.00	$25.00
75th percentile	$35.00	$30.00	$25.00	$33.00
Average	$28.18	$23.52	$22.81	$27.42

Table VIII-15. What Revenue Covers Costs?

	HGB/DFW	El Paso	ARR	All Areas
Count	662	49	70	781
25th Percentile	$20.00	$20.00	$18.00	$20.00
50th percentile (median)	$27.50	$26.00	$24.98	$25.50
75th Percentile	$35.00	$30.00	$28.50	$35.00
Average	$29.86	$25.68	$24.79	$29.15

Across all program areas, survey respondents indicated that, on average, a fee of $29.15 would allow revenue to cover costs, while customers would be willing to pay about $27.50. Compared to the cost analysis results in Table VIII-13 these two prices indicate that about 88% or 89% of stations across all four program areas could cover both equipment and building costs with the lower $27.50 price. Further, between 88% and 90% of stations would be able to cover costs if the price were $29.00.

The median response for both questions across all regions was very similar: station owners thought customers would be willing to pay a median of $25.00, while the median amount that stations could cover costs was a $25.50 fee. Considering the results in Table VIII-13 again, between 86% and 88% of stations could break even with the median fee price of $25.00.

ERG compared the break-even rates of the four program areas to growth rates in the number of stations by program area going back from 2012 to 2018, as shown in Table VIII-16.

again, between 86% and 88% of stations could break even with the median fee price of $25.00.

ERG compared the break-even rates of the four program areas to growth rates in the number of stations by program area going back from 2012 to 2018, as shown in Table VIII-16.

Table VIII-16. Break-Even Rates and Percent Change in Number of Stations

Program Area	Metric	2012	2014	2016	2018
ARR	Break-even rate	59.0%	63.0%	79.0%	77.0%
ARR	% change in stations	4.1%	1.2%	0.5%	1.7%
El Paso	Break-even rate	78.0%	71.0%	85.0%	84.0%
El Paso	% change in stations	0.5%	3.4%	-3.3%	8.2%
HGB/DFW	Break-even rate	79.0%	80.0%	91.0%	89.0%
HGB/DFW	% change in stations	9.2%	4.7%	8.7%	7.5%

There are no recorded years where station growth is greater than 5% when the break-even rate is below 77.5%. Station growth is mixed when the break-even rate is between 77.5% and 87.5%, with some program areas seeing modest growth and others actually seeing a decrease in stations. When the break-even rate is above 87.5% is when station growth is higher than 5%. ERG recommends that the target break-even rate be around 87.5%. A range of 85% to 89% is used in determining the fee recommendation.

As shown in the first two rows of data in Table VIII-13, this break-even rate range of 85% to 89% corresponds to a fee range of $15.00 to $17.00 in order to cover all costs excluding buildings for stations in the HGB and DFW program areas, $12.00 to $14.00 for El Paso stations, and $12.50 to $14.50 for ARR stations. However, in order to also cover building costs, ERG incorporated the median monthly rent and divided by the 25th percentile throughput (as a lower representation of throughput) to estimate a portion of the fee needed to cover building costs. This analysis is shown in Table VIII-17.

Table VIII-17. Additional Fee to Cover Building Cost

Variable	HGB/DFW	El Paso	ARR
Fee for about 85% of stations to break even based on equipment costs only	$15.00	$12.00	$12.50
Fee for about 89% of stations to break even based on equipment costs only	$17.00	$14.00	$14.50
Building space—monthly rent for bay space	$315	$488	$492
25th percentile throughput	62	83	84
Additional fee amount to cover building costs	$5.00	$6.00	$6.00
Fee for about 85% of stations to break even based on equipment and building costs	$20.00	$18.00	$18.50
Fee for about 89% of stations to break even based on equipment and building costs	$22.00	$20.00	$20.50

Based on these results, ERG recommends a single OBD emissions inspection fee for all program areas between $18.00 and $22.00. This fee range includes the median cost paid for an OBD emissions inspection across the 22 states with OBD emissions inspections ($20), but it is under the median fee that emissions inspection stations indicated would cover their costs in the survey ($25.50). Toward the higher end of the range, this could result in many new stations joining the inspection market, particularly in El Paso.

H. RECOMMENDATIONS FOR FUTURE SURVEY EFFORTS

ERG recommends that the TCEQ consider the following changes for future survey efforts:

- Revise relevant survey questions (OBD-only versus ASM-OBD, equipment costs, estimates of testing times, etc.) to reflect the transition to only OBD inspections in all program areas.
- Consider additional validation and instruction regarding total square footage estimates. Some stations may be entering footage per bay rather than per station and many stations entering very large values.
- For question 19, include a new financing option for emissions analyzers. Vendors started offering monthly rentals in January 2020.
- Consider additional validation on the equipment, building, and other cost questions to ensure data quality.
- Consider offering a Spanish language version of the survey so that Spanish-only speakers have easy access to the survey and do not feel excluded from the process.
- Consider removing validation on the question asking the year the station began offering emissions inspections. Nearly 10% did not respond and another 25% chose options for years before the inspection program began in that program area.
- Address the potential impacts of COVID-19 on the next survey's responses.

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APPENDIX A. SURVEY INSTRUMENTS

This appendix includes the program area-specific survey instruments that were sent to stations. The electronic survey was a single survey using the same questions, programmed to ask the program area-specific questions based on the responding station's location (e.g., if a station was from the El Paso or ARR program area, a value of $11.50 would appear for questions 26 and 27). ERG programmed skip logic into the survey, so stations would not see questions that did not apply to them (e.g., if a test-only respondent replied "no other services" in question 9, the electronic survey would automatically skip them to question 13 as outlined in the paper survey).

The surveys in this appendix have been slightly reformatted from the mailed versions to improve their accessibility.

HGB/DFW Survey

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

2020 Vehicle Emissions Inspection Program Fee Survey

Conducted by Eastern Research Group, Inc.

The Texas Commission on Environmental Quality (TCEQ) is required by state statute to review the fee established for inspecting motor vehicle emissions every two years. The TCEQ has contracted with Eastern Research Group, Inc. (ERG) to conduct a survey to evaluate the costs associated with vehicle emissions inspections.

The purpose of this survey is to collect data regarding costs and revenues in the Texas inspection and maintenance (I/M) program. The information collected will be used to make improvements to the I/M program and establish a fee that provides a reasonable rate of return on an investment for inspection station owners and the lowest necessary cost of inspection for motorists.

You can help improve Texas air quality and support testing stations like yours by sharing your experiences with the AirCheckTexas Vehicle Emissions Inspection Program. Your participation is crucial to the success of this survey. The more surveys returned, the more information that will be available for ERG to develop an accurate assessment. Please do your part and complete and return the survey in the enclosed stamped envelope as soon as possible.

- This survey is voluntary. It should take about 10 to 15 minutes to complete.
- Please do not write your name on the survey. Responses will be compiled by Eastern Research Group, Inc. (ERG), a TCEQ contractor. Any published results of this survey will be summarized in a manner that does not allow identification of individual stations, such as a percentage or an average.
- If you own or operate more than one emissions testing station, please answer the questions only for the station to which the survey was sent.
- If you have any questions or comments about this study, we would be happy to talk with you. You can email ERG at fee-survey@erg.com or call us toll free at 1-888-254-0818.
- Please return your completed survey in the postage-paid envelope provided. If the envelope has been misplaced, please mail the form to:

  Eastern Research Group, Inc.
  Attn: TCEQ Fee Survey
  110 Hartwell Avenue
  Lexington, MA 02421

  You can also complete the survey online at: www.tceqsurvey.com

Need help or have questions about completing this survey? → Please email ERG at fee-survey@erg.com or call 1-888-254-0818.

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SURVEY INSTRUCTIONS

If you own or operate more than one station that offers motor vehicle emissions inspections, answer the questions below only for the station to which the survey was sent. Please complete one survey for each physical location.

If you do not know the answer to a particular question, please consult with other members of your organization.

If you have any questions while completing the survey, please contact the survey helpline at fee-survey@erg.com or 1-888-254-0818.

Please use blue or black ink. Use an X inside the box or color the box fully to mark your selections.

PART I – GENERAL STATION INFORMATION

1 Does this station offer motor vehicle emissions inspections? ***Mark*** **X** ***ONE box only***.

☐ Yes - *Go to* **1b**

☐ No - *You have completed the survey. Please mail the questionnaire to us in the enclosed pre-paid envelope. Thank you.*

1b Identify the type of motor vehicle emissions inspections offered at your station. ***Mark*** **X** ***ONE box only***.

☐ Full service – ASM (Acceleration Simulation Mode) and OBD (On-Board Diagnostics)

☐ OBD only

2 In what year did this station first offer motor vehicle emissions inspection testing? ☐

3 In calendar year 2019, did this station have more than one station ID?

☐ Yes – *Please list other station IDs used at this location*: ☐

☐ No

4 What are the typical operating hours for performing emissions inspections at this station? Circle AM or PM. Please indicate any days that the station is closed.

Day	Time Open		Time Closed	Circle if Closed
Monday	☐ am / pm	to	☐ am / pm	Closed
Tuesday	☐ am / pm		☐ am / pm	Closed
Wednesday	☐ am / pm		☐ am / pm	Closed
Thursday	☐ am / pm		☐ am / pm	Closed
Friday	☐ am / pm		☐ am / pm	Closed
Saturday	☐ am / pm		☐ am / pm	Closed
Sunday	☐ am / pm		☐ am / pm	Closed

5 What is the approximate total square footage of this station? ☐ sq. ft.

6 How many emissions inspection bays do you currently have at this station? If zero, please enter 0.

☐ Bays used **EXCLUSIVELY** for **emissions testing ONLY**

☐ Bays used for **emissions testing AND OTHER USES (safety testing, repairs, etc.) (If > 0, please answer 6b)**

6b For emissions inspection bays also used for other purposes, on average, what percent of their use is for emissions testing?

☐ percent (%) of time that emissions bays with other uses are used for emissions testing

PART II - THE EMISSIONS INSPECTION PROCESS

7 On average, how long does it take to perform the following ***emissions*** tests (exclude safety test time)?

On-Board Diagnostics (OBD) ☐ minutes

Two Speed Idle (TSI) ☐ minutes

Acceleration Simulation Mode (ASM) ☐ minutes

PLEASE CONTINUE ON NEXT PAGE →

8 On average, how much additional time is spent with each inspection customer (for example, explaining the emissions inspection process, reasons for failure and/or recommended repairs)?

[ ] additional minutes spent with emissions inspection customer

PART III – OTHER STATION SERVICES

9 In addition to emissions and safety testing, check the box that best describes other services offered at your station.

Mark [X] ONE box only.

- [ ] No other services – *Go to* **13**
- [ ] Repair services only – *Go to* **10**
- [ ] Non-repair services only – *Continue to* **9b then skip to 13**
- [ ] Repair services and non-repair services – *Continue to* **9b**

9b Which non-repair services do you offer at your station? ***Mark [X] ALL that apply.***

- [ ] Regular maintenance (oil, transmission, AC, brakes, exhaust, etc.)
- [ ] Gas service station
- [ ] Tire sales and service
- [ ] Glass repair/replacement
- [ ] Paint or body work
- [ ] Car wash or auto detailing
- [ ] Car sales (new or used)
- [ ] Auto, truck, or trailer rentals
- [ ] Auto parts & accessories sales or installation
- [ ] Towing & emergency services
- [ ] Food, drink, or convenience store
- [ ] Other *If other, please describe services other than those selected above*

PART IV - REPAIR SERVICE REVENUE: [If this station does not offer repair services, go to Question 12.]

10 What proportion of the repair revenues for this station result directly from failed emission inspections? ***Mark [X] ONE box only.***

- [ ] 0%- *Go to* **13**
- [ ] 1-20%
- [ ] 21-40%
- [ ] 41-60%
- [ ] 61-80%
- [ ] 81-100%

11 In any given month, what is the typical number of repair jobs from failed emissions tests?

[ ] repair jobs

12 What is a typical repair cost for an emission test failure?

$[ ] , [ ] [ ] [ ] .00 per repair for a failed emission test

PART V - YOUR EMISSIONS INSPECTORS

13 How many emissions inspectors currently work at this station? Please do NOT include employees who do not conduct emissions inspections.

[ ] Full-time emissions inspectors (Inspectors working 40 hours or more per week, should be considered full-time.)

[ ] Part-time emissions inspectors **(If > 0, please answer 13b)**

13b On average, about how many hours per week does each part-time emissions inspector work? [ ] hours/week

14 Of the number of inspectors that work **FULL TIME**, how many spend...?

76-100% of their time performing emissions inspections:..... [ ] inspectors

51-75% of their time performing emissions inspections:..... [ ] inspectors

26-50% of their time performing emissions inspections:..... [ ] inspectors

0-25% of their time performing emissions inspections:..... [ ] inspectors

15 Of the number of inspectors that work **PART TIME**, how many spend...?

76-100% of their time performing emissions inspections:..... [ ] inspectors

51-75% of their time performing emissions inspections:..... [ ] inspectors

26-50% of their time performing emissions inspections:..... [ ] inspectors

0-25% of their time performing emissions inspections:..... [ ] inspectors

PLEASE CONTINUE ON NEXT PAGE →

16 How do you typically pay your emissions inspectors? What is the current average hourly wage and/or per test amount paid?

- ☐ Hourly wage or salary → $☐☐☐.☐☐ per hour
- ☐ Per emissions test → $☐☐☐.☐☐ per test
- ☐ Hourly wage or salary + per emissions test *(Please enter dollar amounts in the corresponding spaces above.)*

17 How many emissions inspectors receive benefits (e.g., health care, paid leave, etc.)?

- ☐ Full-time emissions inspectors
- ☐ Part-time emissions inspectors

18 Does this station incur costs specifically for training employees to conduct emissions inspections?

- ☐ Yes – *Go to* **18b**
- ☐ No – *Go to* **19**

18b For calendar year 2019, please tell us the total dollar amount your station spent on:

Certified Vehicle Emissions Inspector training application fees and renewal fees	$☐,☐☐☐.00
Food, lodging and travel costs for employees attending inspector training courses	$☐.☐☐☐.00
Wages paid to employees for their time attending inspector training courses	$☐,☐☐☐.00
Wages paid to employees for their time on-the-job training specific to emissions testing	$☐,☐☐☐.00
Other emissions training costs (continuing education, training materials, etc.)	$☐,☐☐☐.00

If appropriate, please provide a brief description of your OTHER training expenses:

PART VI - EMISSIONS TESTING EQUIPMENT, BUILDING AND OTHER COSTS

19 Please tell us about the certified emissions testing analyzers that you currently have at this station. For each one, please indicate the number of years it has been owned and provide your best estimate of the cost, including installation. Please also identify the option that best describes how the purchase was financed.

Equipment Type	Number of Years Owned	Approximate Cost, including Installation	How did you finance the purchase?	If lease or loan…	
				Lease/Loan term (years)	Interest rate (%)
☐ OBD-only ☐ ASM	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
☐ OBD-only ☐ ASM	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
☐ OBD-only ☐ ASM	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
☐ OBD-only ☐ ASM	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
☐ OBD-only ☐ ASM	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %

20 Do you have a maintenance package for your emissions testing equipment?

- ☐ Yes. - *Go to* **20b**
- ☐ No. - *Go to* **21**

20b What is the maintenance package cost for the emissions testing equipment? Please circle the time frame.

$☐☐,☐☐☐.00 per month/quarter/year

PLEASE CONTINUE ON NEXT PAGE →

21 During the last year, what costs did you incur for repairs to your emissions testing equipment that were not covered by a service contract or maintenance package?

$☐☐,☐☐☐.00

22 Other than maintenance or repairs to emissions testing equipment you entered in the previous question, please tell us about other costs you have specific to vehicle emissions inspections.

Item	Cost	Frequency of expense (circle one)
a. Dedicated phone line or internet	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
b. (If full service station) Calibration gases/Wands/Probes/Hoses	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
c. Gas cap tester kits	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
d. Printer paper and ink/toner cartridges	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
e. Other *Please describe:*	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time

23 Have you ever gotten rid of emissions testing equipment that you no longer needed?

☐ Yes. - *Go to* **23b**

☐ No. - *Go to* **24**

☐ Not sure. - *Go to* **24**

23b Please tell us about any certified emissions testing analyzers you have gotten rid of that you no longer needed. For each one, please indicate the number of years the equipment was owned and how you got rid of it. Please also indicate the revenue from its sale AND/OR the cost to dispose of it.

	Type of Analyzer No Longer Needed	# of Years Owned	If you got rid the analyzer for free	If you **SOLD** this analyzer, please indicate	If you **PAID** to get rid of this analyzer, please indicate
			Check here	**YOUR REVENUE**	**YOUR COST**
1	☐ OBD-only ☐ ASM	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
2	☐ OBD-only ☐ ASM	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
3	☐ OBD-only ☐ ASM	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
4	☐ OBD-only ☐ ASM	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**

24 Did you ever add or acquire building space (i.e., bay space) in order to perform vehicle emissions testing at this station?

☐ Yes.

☐ No.

25 Did you purchase or do you rent/lease the building space for this station?

☐ Purchase. What was the approximate purchase price? **$☐,☐☐☐,☐☐☐.00**

☐ Rent/Lease. What is the approximate monthly rent? **$☐,☐☐☐,☐☐☐.00**

PLEASE CONTINUE ON NEXT PAGE →

PART VII – ADDITIONAL INFORMATION

26 Other than free retests on vehicles that failed previously at your station, do you ever offer emissions tests at no charge **OR** charge less than $18.50 for an OBD emissions test or $24.50 for an ASM emissions test? ***Mark X ALL that apply***.

- ☐ No - *Go to* **27**
- ☐ Yes, we sometimes offer emissions tests for **FREE**. - *If selected, please answer* **26b**
- ☐ Yes, we sometimes offer emissions tests for **less than $18.50 (OBD)/$24.50 (ASM)**. – *If selected, please answer* **26c**

26b This station offers emissions tests at no charge for: ***Mark X ALL that apply***.

- ☐ Friends and Family.
- ☐ Employees.
- ☐ Active or Veteran Military personnel.
- ☐ Members of our customer loyalty program.
- ☐ Customers getting retests just outside 15 days of their initial failed inspection.
- ☐ Customers who failed an emissions test at another station and had repairs performed at THIS station.
- ☐ Customers who cannot afford an inspection.
- ☐ General customer satisfaction at owner's or manager's discretion.
- ☐ Other reasons – please describe.

26c What is the lowest fee that you charge for an emissions test?

$☐☐.☐☐

27 In your opinion, does the $18.50 OBD test and $24.50 ASM test fee cover your costs of offering emissions testing at this station?

- ☐ Yes. - *Go to* **28**
- ☐ No. - *Go to* **27b**

27b Please tell us the extent to which you agree or disagree with the following statements?

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	N/A
I do not conduct enough emissions inspections because there are too many stations performing inspections.	O	O	O	O	O	O
I pay for emissions inspection bay/building space, but it is underutilized for emissions testing or cannot easily be used for other purposes.	O	O	O	O	O	O
I must pay an emissions inspector to be on site, and it is costly because it is difficult to task them with other work when they are not performing inspections.	O	O	O	O	O	O
I must pay my inspectors a high salary/rate because their primary job function is one that demands a higher salary than emissions inspectors.	O	O	O	O	O	O
My testing equipment is frequently in need of repair, and the downtime hurts my ability to break even.	O	O	O	O	O	O
The extra time I spend with customers during emissions inspections is costly.	O	O	O	O	O	O
Costs associated with testing have increased over the years and now our costs exceed the revenue from the test fee.	O	O	O	O	O	O
All the costs simply add up to more than the fee, but I decide to offer testing because it is important to my business in other ways.	O	O	O	O	O	O

Please describe any other reasons that the emissions inspection fee does not cover your costs.

28 We value your expertise! Thinking about the emissions inspection fee separate from the $7.00 safety inspection fee, please answer the following questions. Remember, your recommendation should NOT include the $7.00 safety portion of the inspection.

a What vehicle emissions inspection fee do you think your customers would be willing to pay? $☐☐.☐☐

b What vehicle emissions inspection fee would allow your revenue to cover your costs? $☐☐.☐☐

END

Thank you for completing this survey.
We are interested in your feedback! If you have suggestions for improving this survey, please note them below.

Please make a photocopy of this form for your records.
Please return the completed original questionnaire in the postage-paid envelope provided.
If the envelope has been misplaced, please mail the form to:
Eastern Research Group, Inc., Attn: TCEQ Fee Survey, 110 Hartwell Avenue, Lexington, MA 02421.

El Paso / ARR Survey

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

2020 Vehicle Emissions Inspection Program Fee Survey

Conducted by Eastern Research Group, Inc.

The Texas Commission on Environmental Quality (TCEQ) is required by state statute to review the fee established for inspecting motor vehicle emissions every two years. The TCEQ has contracted with Eastern Research Group, Inc. (ERG) to conduct a survey to evaluate the costs associated with vehicle emissions inspections.

The purpose of this survey is to collect data regarding costs and revenues in the Texas inspection and maintenance (I/M) program. The information collected will be used to make improvements to the I/M program and establish a fee that provides a reasonable rate of return on an investment for inspection station owners and the lowest necessary cost of inspection for motorists.

You can help improve Texas air quality and support testing stations like yours by sharing your experiences with the AirCheckTexas Vehicle Emissions Inspection Program. Your participation is crucial to the success of this survey. The more surveys returned, the more information that will be available for ERG to develop an accurate assessment. Please do your part and complete and return the survey in the enclosed stamped envelope as soon as possible.

- This survey is voluntary. It should take about 10 to 15 minutes to complete.
- Please do not write your name on the survey. Responses will be compiled by Eastern Research Group, Inc. (ERG), a TCEQ contractor. Any published results of this survey will be summarized in a manner that does not allow identification of individual stations, such as a percentage or an average.
- If you own or operate more than one emissions testing station, please answer the questions only for the station to which the survey was sent.
- If you have any questions or comments about this study, we would be happy to talk with you. You can email ERG at fee-survey@erg.com or call us toll free at 1-888-254-0818.
- Please return your completed survey in the postage-paid envelope provided. If the envelope has been misplaced, please mail the form to:

  Eastern Research Group, Inc.
  Attn: TCEQ Fee Survey
  110 Hartwell Avenue
  Lexington, MA 02421

  You can also complete the survey online at: www.tceqsurvey.com

Need help or have questions about completing this survey? → Please email ERG at fee-survey@erg.com or call 1-888-254-0818.

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SURVEY INSTRUCTIONS

If you own or operate more than one station that offers motor vehicle emissions inspections, answer the questions below only for the station to which the survey was sent. Please complete one survey for each physical location.

If you do not know the answer to a particular question, please consult with other members of your organization.

If you have any questions while completing the survey, please contact the survey helpline at fee-survey@erg.com or 1-888-254-0818.

Please use blue or black ink. Use an X inside the box or color the box fully to mark your selections.

PART I – GENERAL STATION INFORMATION

1 Does this station offer motor vehicle emissions inspections? ***Mark*** ☒ ***ONE box only***.

☐ Yes - *Go to* **2**

☐ No - *You have completed the survey. Please mail the questionnaire to us in the enclosed pre-paid envelope. Thank you.*

2 In what year did this station first offer motor vehicle emissions inspection testing? ☐

3 In calendar year 2019, did this station have more than one station ID?

☐ Yes – *Please list other station IDs used at this location*: ☐

☐ No

4 What are the typical operating hours for performing emissions inspections at this station? Circle AM or PM. Please indicate any days that the station is closed.

Day	Time Open		Time Closed	Circle if Closed
Monday	☐ am / pm	to	☐ am / pm	Closed
Tuesday	☐ am / pm		☐ am / pm	Closed
Wednesday	☐ am / pm		☐ am / pm	Closed
Thursday	☐ am / pm		☐ am / pm	Closed
Friday	☐ am / pm		☐ am / pm	Closed
Saturday	☐ am / pm		☐ am / pm	Closed
Sunday	☐ am / pm		☐ am / pm	Closed

5 What is the approximate total square footage of this station? ☐ sq. ft.

6 How many emissions inspection bays do you currently have at this station? If zero, please enter 0.

☐ Bays used **EXCLUSIVELY** for **emissions testing ONLY**

☐ Bays used for **emissions testing ANDOTHE OTHER USES (safety testing, repairs, etc.) (If > 0, please answer 6b)**

6b For emissions inspection bays also used for other purposes, on average, what percent of their use is for emissions testing?

☐ percent (%) of time that emissions bays with other uses are used for emissions testing

PART II - THE EMISSIONS INSPECTION PROCESS

7 On average, how long does it take to perform the following ***emissions*** tests (exclude safety test time)?

On-Board Diagnostics (OBD) ☐ minutes

Two Speed Idle (TSI) ☐ minutes

Acceleration Simulation Mode (ASM) ☐ minutes

8 On average, how much additional time is spent with each inspection customer (for example, explaining the emissions inspection process, reasons for failure and/or recommended repairs)?

☐ additional minutes spent with emissions inspection customer

PLEASE CONTINUE ON NEXT PAGE →

PART III – OTHER STATION SERVICES

9 In addition to emissions and safety testing, check the box that best describes other services offered at your station.
***Mark* [X] *ONE box only*.**

- ☐ No other services – *Go to* **13**
- ☐ Repair services only – *Go to* **10**
- ☐ Non-repair services only – *Continue to* **9b then skip to 13**
- ☐ Repair services and non-repair services – *Continue to* **9b**

9b Which non-repair services do you offer at your station? ***Mark* [X] *ALL that apply*.**

- ☐ Regular maintenance (oil, transmission, AC, brakes, exhaust, etc.)
- ☐ Gas service station
- ☐ Tire sales and service
- ☐ Glass repair/replacement
- ☐ Paint or body work
- ☐ Car wash or auto detailing
- ☐ Car sales (new or used)
- ☐ Auto, truck, or trailer rentals
- ☐ Auto parts & accessories sales or installation
- ☐ Towing & emergency services
- ☐ Food, drink, or convenience store
- ☐ Other *If other, please describe services other than those selected above*

PART IV - REPAIR SERVICE REVENUE: [If this station does not offer repair services, go to Question 12.]

10 What proportion of the repair revenues for this station result directly from failed emission inspections? ***Mark* [X] *ONE box only*.**

- ☐ 0%- *Go to* **13**
- ☐ 1-20%
- ☐ 21-40%
- ☐ 41-60%
- ☐ 61-80%
- ☐ 81-100%

11 In any given month, what is the typical number of repair jobs from failed emissions tests?
☐ repair jobs

12 What is a typical repair cost for an emission test failure?
$☐ **,** ☐☐☐ **.00** per repair for a failed emission test

PART V - YOUR EMISSIONS INSPECTORS

13 How many emissions inspectors currently work at this station? Please do NOT include employees who do not conduct emissions inspections.

☐ Full-time emissions inspectors (Inspectors working 40 hours or more per week, should be considered full-time.)
☐ Part-time emissions inspectors **(If > 0, please answer 13b)**

13b On average, about how many hours per week does each part-time emissions inspector work? ☐ hours/week

14 Of the number of inspectors that work **FULL TIME**, how many spend...?

76-100% of their time performing emissions inspections:..... ☐ inspectors
51-75% of their time performing emissions inspections:..... ☐ inspectors
26-50% of their time performing emissions inspections:..... ☐ inspectors
0-25% of their time performing emissions inspections:..... ☐ inspectors

15 Of the number of inspectors that work **PART TIME**, how many spend...?

76-100% of their time performing emissions inspections:..... ☐ inspectors
51-75% of their time performing emissions inspections:..... ☐ inspectors
26-50% of their time performing emissions inspections:..... ☐ inspectors
0-25% of their time performing emissions inspections:..... ☐ inspectors

PLEASE CONTINUE ON NEXT PAGE →

16 How do you typically pay your emissions inspectors? What is the current average hourly wage and/or per test amount paid?

- ☐ Hourly wage or salary → $☐☐☐.☐☐ per hour
- ☐ Per emissions test → $☐☐☐.☐☐ per test
- ☐ Hourly wage or salary + per emissions test *(Please enter dollar amounts in the corresponding spaces above.)*

17 How many emissions inspectors receive benefits (e.g., health care, paid leave, etc.)?

- ☐ Full-time emissions inspectors
- ☐ Part-time emissions inspectors

18 Does this station incur costs specifically for training employees to conduct emissions inspections?

- ☐ Yes – *Go to* **18b**
- ☐ No – *Go to* **19**

18b For calendar year 2019, please tell us the total dollar amount your station spent on:

Certified Vehicle Emissions Inspector training application fees and renewal fees	$☐,☐☐☐.00
Food, lodging and travel costs for employees attending inspector training courses	$☐.☐☐☐.00
Wages paid to employees for their time attending inspector training courses	$☐,☐☐☐.00
Wages paid to employees for their time on-the-job training specific to emissions testing	$☐,☐☐☐.00
Other emissions training costs (continuing education, training materials, etc.)	$☐,☐☐☐.00

If appropriate, please provide a brief description of your OTHER training expenses:

PART VI - EMISSIONS TESTING EQUIPMENT, BUILDING AND OTHER COSTS

19 Please tell us about the certified emissions testing analyzers that you currently have at this station. For each one, please indicate the number of years it has been owned and provide your best estimate of the cost, including installation. Please also identify the option that best describes how the purchase was financed.

Equipment Type	Number of Years Owned	Approximate Cost, including Installation	How did you finance the purchase?	If lease or loan… Lease/Loan term (years)	If lease or loan… Interest rate (%)
TSI-OBD	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
TSI-OBD	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
TSI-OBD	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
TSI-OBD	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %
TSI-OBD	☐ years	$☐☐,☐☐☐.00	☐ Paid cash ☐ Lease-to-purchase ☐ Loan from bank	☐	☐ %

20 Do you have a maintenance package for your emissions testing equipment?

- ☐ Yes. - *Go to* **20b**
- ☐ No. - *Go to* **21**

20b What is the maintenance package cost for the emissions testing equipment? Please circle the time frame.

$☐☐,☐☐☐.00 per month/quarter/year

PLEASE CONTINUE ON NEXT PAGE →

21 During the last year, what costs did you incur for repairs to your emissions testing equipment that were not covered by a service contract or maintenance package?

$☐☐,☐☐☐.00

22 Other than maintenance or repairs to emissions testing equipment you entered in the previous question, please tell us about other costs you have specific to vehicle emissions inspections.

Item	Cost	Frequency of expense (circle one)
a. Dedicated phone line or internet	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
b. (If full service station) Calibration gases/Wands/Probes/Hoses	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
c. Gas cap tester kits	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
d. Printer paper and ink/toner cartridges	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time
e. Other *Please describe:*	**$☐☐☐,☐☐☐.00**	Monthly / Annually / One-time

23 Have you ever gotten rid of emissions testing equipment that you no longer needed?

☐ Yes. - *Go to* **23b**

☐ No. - *Go to* **24**

☐ Not sure. - *Go to* **24**

23b Please tell us about any certified emissions testing analyzers you have gotten rid of that you no longer needed. For each one, please indicate the number of years the equipment was owned and how you got rid of it. Please also indicate the revenue from its sale AND/OR the cost to dispose of it.

	Type of Analyzer No Longer Needed	# of Years Owned	If you got rid the analyzer for free	If you **SOLD** this analyzer, please indicate	If you **PAID** to get rid of this analyzer, please indicate
			Check here	YOUR REVENUE	YOUR COST
1	TSI-OBD	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
2	TSI-OBD	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
3	TSI-OBD	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**
4	TSI-OBD	☐	☐	**$☐☐,☐☐☐.00**	**$☐☐,☐☐☐.00**

24 Did you ever add or acquire building space (i.e., bay space) in order to perform vehicle emissions testing at this station?

☐ Yes.

☐ No.

25 Did you purchase or do you rent/lease the building space for this station?

☐ Purchase. What was the approximate purchase price? **$☐,☐☐☐,☐☐☐.00**

☐ Rent/Lease. What is the approximate monthly rent? **$☐,☐☐☐,☐☐☐.00**

PLEASE CONTINUE ON NEXT PAGE →

PART VII – ADDITIONAL INFORMATION

26 Other than free retests on vehicles that failed previously at your station, do you ever offer emissions tests at no charge **OR** charge less than $11.50 for an emissions test? ***Mark X ALL that apply***.

- ☐ No - *Go to* **27**
- ☐ Yes, we sometimes offer emissions tests for **FREE**. - *If selected, please answer* **26b**
- ☐ Yes, we sometimes offer emissions tests for **less than $11.50**. – *If selected, please answer* **26c**

26b This station offers emissions tests at no charge for: ***Mark X ALL that apply***.

- ☐ Friends and Family.
- ☐ Employees.
- ☐ Active or Veteran Military personnel.
- ☐ Members of our customer loyalty program.
- ☐ Customers getting retests just outside 15 days of their initial failed inspection.
- ☐ Customers who failed an emissions test at another station and had repairs performed at THIS station.
- ☐ Customers who cannot afford an inspection.
- ☐ General customer satisfaction at owner's or manager's discretion.
- ☐ Other reasons – please describe.

26c What is the lowest fee that you charge for an emissions test?

$☐☐.☐☐

27 In your opinion, does the $11.50 fee cover your costs of offering emissions testing at this station?

- ☐ Yes. - *Go to* **28**
- ☐ No. - *Go to* **27b**

27b Please tell us the extent to which you agree or disagree with the following statements?

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	N/A
I do not conduct enough emissions inspections because there are too many stations performing inspections.	O	O	O	O	O	O
I pay for emissions inspection bay/building space, but it is underutilized for emissions testing or cannot easily be used for other purposes.	O	O	O	O	O	O
I must pay an emissions inspector to be on site, and it is costly because it is difficult to task them with other work when they are not performing inspections.	O	O	O	O	O	O
I must pay my inspectors a high salary/rate because their primary job function is one that demands a higher salary than emissions inspectors.	O	O	O	O	O	O
My testing equipment is frequently in need of repair, and the downtime hurts my ability to break even.	O	O	O	O	O	O
The extra time I spend with customers during emissions inspections is costly.	O	O	O	O	O	O
Costs associated with testing have increased over the years and now our costs exceed the revenue from the test fee.	O	O	O	O	O	O
All the costs simply add up to more than the fee, but I decide to offer testing because it is important to my business in other ways.	O	O	O	O	O	O

Please describe any other reasons that the emissions inspection fee does not cover your costs.

28 We value your expertise! Thinking about the emissions inspection fee separate from the $7.00 safety inspection fee, please answer the following questions. Remember, your recommendation should NOT include the $7.00 safety portion of the inspection.

a What vehicle emissions inspection fee do you think your customers would be willing to pay? $☐☐.☐☐

b What vehicle emissions inspection fee would allow your revenue to cover your costs? $☐☐.☐☐

END

Thank you for completing this survey.
We are interested in your feedback! If you have suggestions for improving this survey, please note them below.

Please make a photocopy of this form for your records.
Please return the completed original questionnaire in the postage-paid envelope provided.
If the envelope has been misplaced, please mail the form to:
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