



**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.**

**June 30, 2016**



**ERG NO. 0345.00.007**

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**June 30, 2016**

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## EXECUTIVE SUMMARY

### A. BACKGROUND

This analysis assesses the adequacy of the vehicle emissions inspection fee in the AirCheckTexas motor vehicle emissions inspection and maintenance (I/M) program areas — that is, 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. This analysis evaluates the AirCheckTexas motor vehicle emissions inspection fee in the 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 and safety and emissions inspections; however, this analysis 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 is capped at \$18.50 and \$24.50 for on-board diagnostic (OBD) and accelerated simulation mode (ASM) inspections, respectively, 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 fee charged to customers, broken down into the safety inspection cost (\$7.00) and emissions inspection cost.

**Table ES-1. Safety and Emissions Testing Fees**

Program Area	Safety Inspection Test Fee	Emissions Inspection Test Fee (Maximum)	Total Inspection Fee (Maximum)
ARR	\$7.00	\$11.50	<b>\$18.50</b>
El Paso	\$7.00	\$11.50	<b>\$18.50</b>
HGB/DFW (OBD test)	\$7.00	\$18.50	<b>\$25.50</b>
HGB/DFW (ASM test)	\$7.00	\$24.50	<b>\$31.50</b>

In 2001, the 77<sup>th</sup> Texas Legislature required the Texas Commission on Environmental Quality (TCEQ) to review the fees established for the motor vehicle emissions inspection program at least biennially. This review was performed by ERG in 2005, 2007, 2012, and 2014 (ERG, 2005, 2007, 2012, 2014) and by E.H. Pechan & Associates, Inc., in 2009 (Pechan, 2009). For consistency, the surveys for this analysis 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 2016, 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 varied or were skipped based on the geographical program area and whether or not the station performed repairs); in content, it was similar to the 2014 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 765 electronic survey responses and 11 paper surveys.

The TCEQ sent most communications regarding the survey 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 March 1, 2016, a week before the survey start date. An invitation bulletin containing the survey's URL ([www.tceqsurvey.com](http://www.tceqsurvey.com)) was sent on March 8, 2016. Additionally, over the duration of the survey period, the TCEQ sent five 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. One reminder email was sent to stations with email addresses if they did not complete a response by March 30, 2016. Responses were accepted until April 19, 2014.

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

As of February 29, 2016, the TCEQ emissions inspection database identified 4,888 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 4,888 vehicle emissions inspection stations in the TCEQ emissions inspection database by

program area and station type. ERG received 776 survey responses<sup>1</sup> during the survey period, of which 767 were in-scope (i.e., public stations that indicated they offer motor vehicle emissions inspections), equaling a 16 percent response rate; 9 respondents stated that they did not offer vehicle emissions inspections. Table ES- 3 shows the distribution of the 776 survey responses from active public stations by program area and station type.<sup>2</sup>

**Table ES-2. Texas Emissions Inspection Stations in the TCEQ Database by Area and Station Type (February 2016)**

Program Area	Test-Only	Test-and-Repair	Total Stations
ARR	104	306	<b>410</b>
El Paso	72	143	<b>215</b>
HGB/DFW	1,553	2,710	<b>4,263</b>
<b>Total</b>	<b>1,729</b>	<b>3,159</b>	<b>4,888</b>

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

Program Area	Test-Only	Test-and-Repair	All Responses	In-Scope* Responses
ARR	18	63	81	80
El Paso	11	26	37	37
HGB/DFW	154	504	658	650
<b>Total</b>	<b>183</b>	<b>593</b>	<b>776</b>	<b>767</b>

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

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. Table ES- 4 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 percent, compared to 15 percent in the 2014 TCEQ Vehicle Emissions Inspection Program Test Fee Analysis.

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

Program Area	Test-Only	Test-and-Repair	Total*
ARR	17%	21%	20%

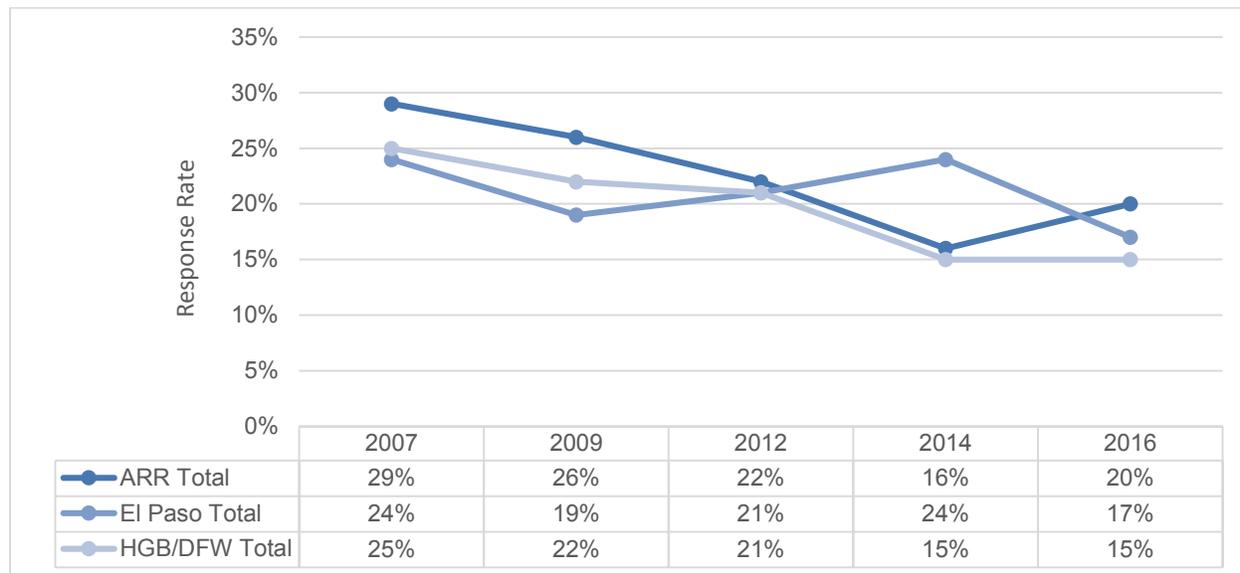
<sup>1</sup> There were two responses from stations servicing government fleets (in addition to the 776 responses); however, these are not included in any tables or calculations throughout the report.

<sup>2</sup> For in-scope responses, station type was determined using the response to survey question 8 (“In addition to emissions and safety testing, check the box that best describes other services offered at your station”) where “No other services” and “Non-repair services” indicate a test-only facility and “Repair services only” and “Repair services and non-repair services” indicate a test- and-repair facility. For out-of-scope responses, station type was inferred from the TCEQ emissions inspection database.

Program Area	Test-Only	Test-and-Repair	Total*
El Paso	15%	18%	17%
HGB/DFW	10%	19%	15%
<b>Total</b>	<b>11%</b>	<b>19%</b>	<b>16%</b>

\*Response rates were calculated as: (Surveys Received) ÷ (Total Active Stations).

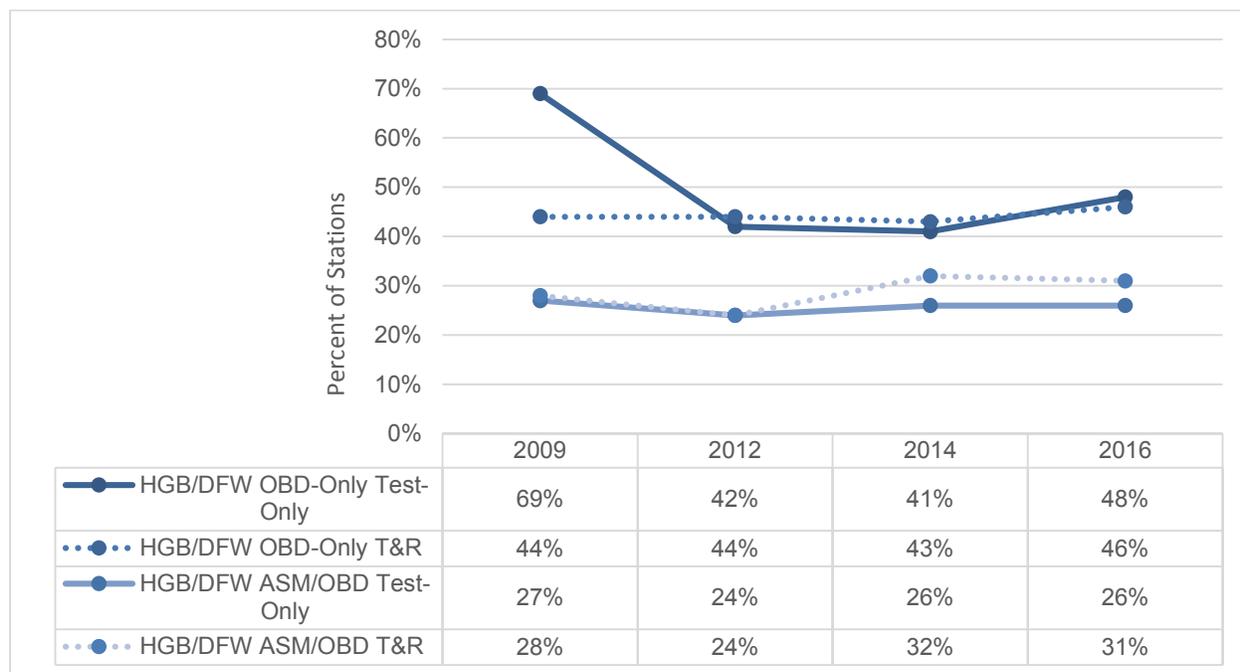
**Figure ES-1. Historical Response Rates by Area**



### C. FINDINGS

As shown in Figure ES- 2, in the HGB/DFW program areas, 26 percent of test- only and 31 percent of test- and- repair stations that perform both ASM and OBD inspections and 48 percent of test- only and 46 percent of test- and- repair stations that are OBD- only reported the fee covering their costs. As shown in Figure ES- 3, among test- and- repair and test- only respondents in El Paso and ARR, between 22 and 27 percent of stations reported the fee covering their costs. These represent small to moderate increases in the number of stations that reported fees covering costs in 2014.

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



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

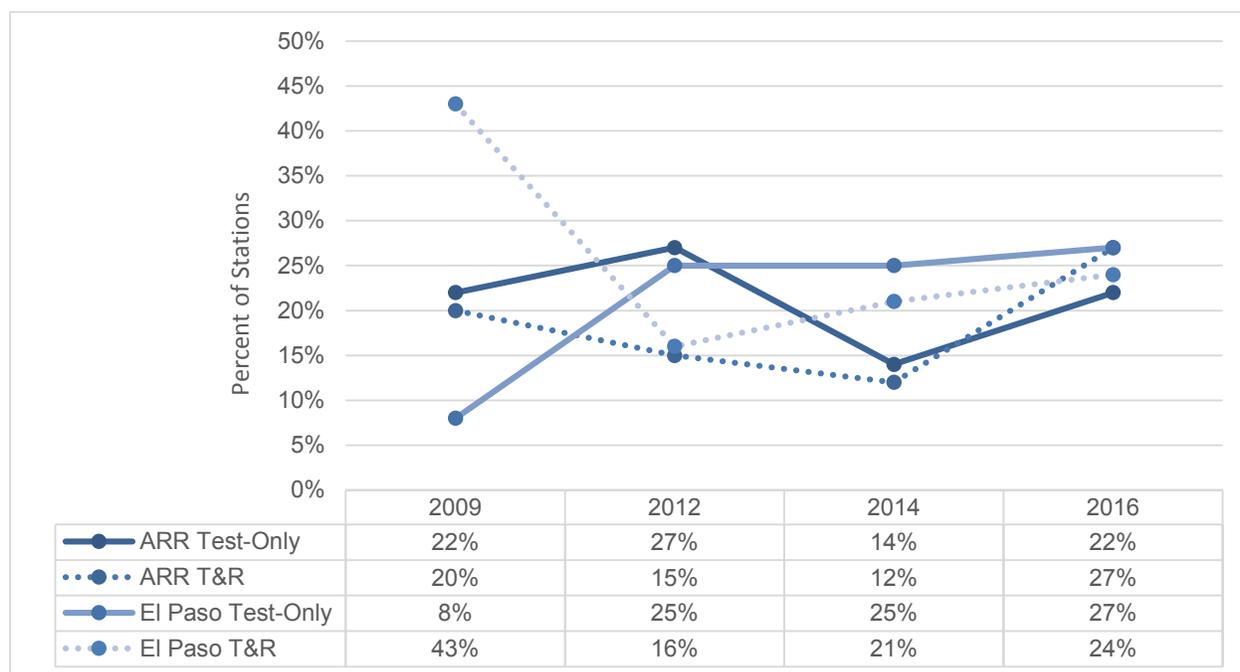
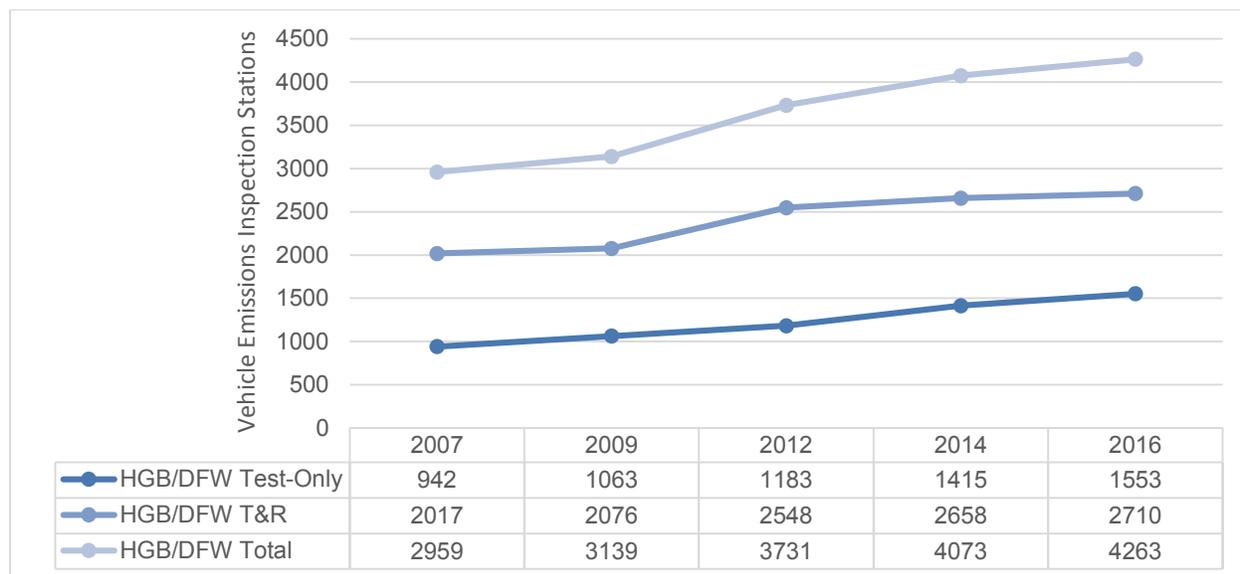
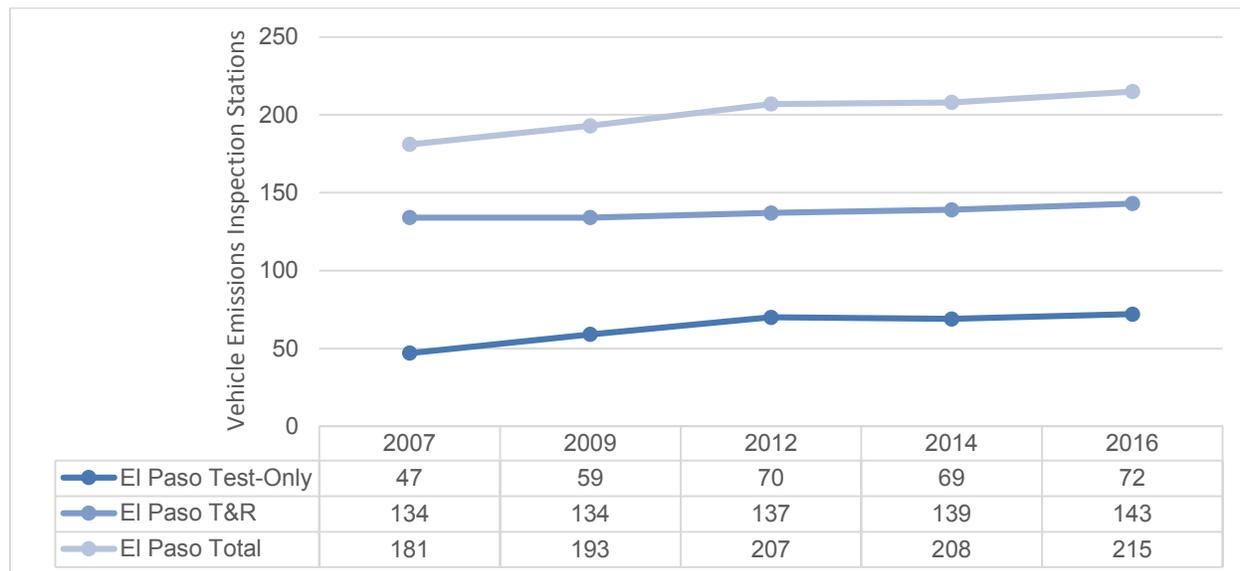


Figure ES- 4, Figure ES- 5, and Figure ES- 6 summarize the station counts for HGB/DFW, El Paso, and ARR, respectively, based on data from the TCEQ Vehicle Identification Database (VID) for 2007, 2009, 2012, 2014, and 2016. The number of stations increased by 190 (8 percent) in HGB/DFW, by seven (3 percent) in El Paso, and by five (1 percent) in ARR from 2014 to 2016. 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.

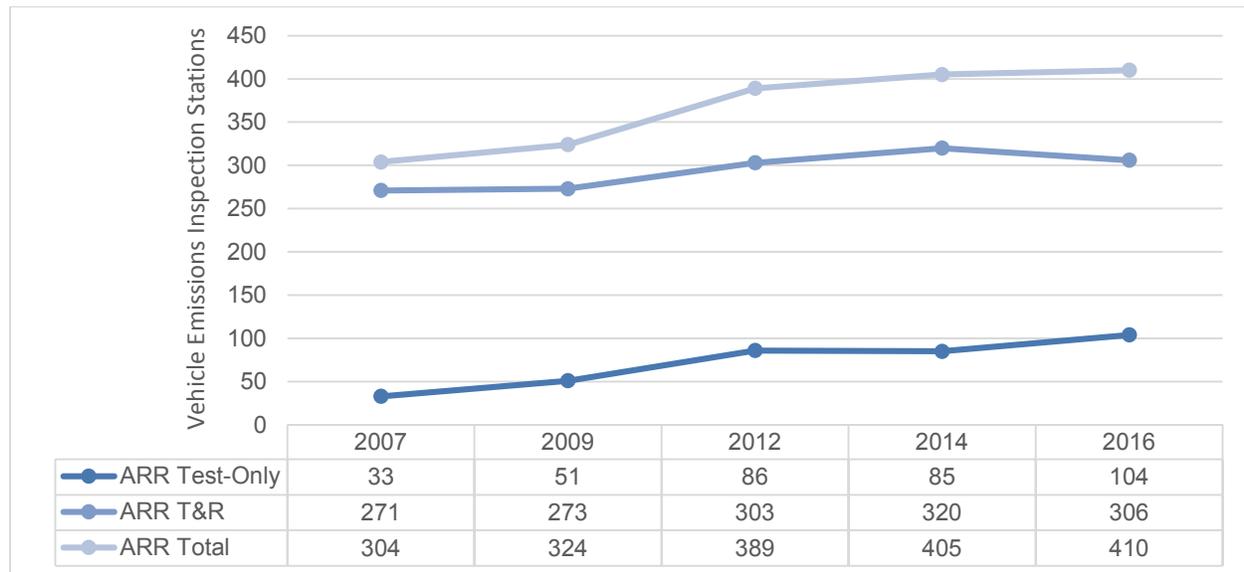
**Figure ES-4. Number of Inspection Stations in HGB/DFW Program Areas, 2007 to 2016**



**Figure ES-5. Number of Inspection Stations in El Paso Program Area, 2007 to 2016**



**Figure ES-6. Number of Inspection Stations in ARR Program Area, 2007 to 2016**



The break-even cost model used a combination of survey and non-survey data to calculate the number of emissions inspections a station must perform in a month for net revenue to equal total costs. In the break-even cost model summarized in Table ES- 5, 90 to 93 percent of stations in HGB/DFW (both test types) have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs. In El Paso and ARR as a whole, 77 to 85 percent of stations have sufficient throughput to generate emissions inspection revenues that meet or exceed variable and fixed costs.

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

	ARR	El Paso	HGB/DFW, OBD-Only	HGB/DFW, ASM/OBD
<b>Break-Even Number of Tests (per Month)</b>				
Including equipment costs	68	59	20	63
Including equipment and building costs	71	60	20	68
<b>Percent of Stations At/Above Break-Even Number</b>				
Including equipment costs	79%	85%	91%	93%
Including equipment and building costs	77%	85%	90%	92%

The summary of the percent of stations breaking even since 2012, shown below in Table ES- 6, compares 2016 percentages of stations breaking even to those of the past. The HGB/DFW program areas have had a consistent number of break- even tests for both OBD- only stations (19 to 20) and ASM/OBD stations (63 to 66), with 91 to 93

percent of stations across both models breaking even. Likewise, the El Paso program area has had a consistent number of break-even tests (58 to 62) and consistent percent of stations (85 to 86 percent) breaking even from 2012 to 2016. The break-even point in ARR was 67 in 2014 and 68 in 2016 — much lower than in 2012 (81 tests). Part of this difference in the model can be attributed to a much higher maintenance agreement cost being reported by respondents in 2012 (\$2,400 per year compared to about \$1,800 per year in 2014 and 2016). Another reason is the higher percent of two-speed idle (TSI) tests relative to OBD tests performed in 2012, which typically require more labor time.

**Table ES-6. Summary of Break-Even Number of Inspections from 2012 to 2016 in All Program Areas, Excluding Building Costs**

	Break-Even Tests (2012)	Percent of Stations Breaking Even (2012)	Break-Even Tests (2014)	Percent of Stations Breaking Even (2014)	Break-Even Tests (2016)	Percent of Stations Breaking Even (2016)
ARR	81	74%	67	77%	68	79%
El Paso	58	86%	62	86%	59	85%
HGB/DFW (OBD-only)	19	92%	21	91%	20	91%
HGB/DFW (ASM/OBD)	65	92%	66	91%	63	93%

The model station analysis created program area-specific small, medium, and large throughput stations representative of stations in the 25<sup>th</sup>, 50<sup>th</sup> (median), and 75<sup>th</sup> percentiles, respectively, based on emissions inspection throughput. As shown in Table ES- 7, small, medium, and large throughput stations in HGB/DFW (both testing types), El Paso, and ARR all generate enough revenue from emissions inspections to recoup costs. The cost model analyses showed that a model small station (based on testing throughput) had revenues exceed costs by \$31 while all other model station sizes across all program areas had revenues exceed costs by least \$220 per month.

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

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
Small station net revenue	\$874	\$1,024	\$759	\$2,572
Small station total costs	\$843	\$803	\$478	\$1,566
Small stations net revenue – total cost	\$31	\$220	\$281	\$1,006
Medium station net revenue	\$1,587	\$1,714	\$1,406	\$4,176
Medium station total costs	\$1,147	\$1,031	\$648	\$1,928
Medium station net revenue – total cost	\$440	\$682	\$758	\$2,248
Large station net revenue	\$2,944	\$2,795	\$1,998	\$6,301
Large station total costs	\$1,726	\$1,388	\$803	\$2,406
Large station net revenue – total cost	\$1,218	\$1,406	\$1,195	\$3,894

## I. INTRODUCTION

### A. BACKGROUND

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

Originally, the State of Texas issued inspection stickers to vehicles that successfully passed inspection. However, in accordance with House Bill 2305, passed by the 83<sup>rd</sup> Texas legislative session in 2013, the state stopped issuing inspection stickers on March 1, 2015. Instead, it requires that vehicles only be registered if they pass an inspection test. This new system is known as the “Two Steps, One Sticker” program, and ensures that passing an emissions inspection test is a prerequisite for registering a motor vehicle. As part of this change, stations no longer collect the state’s portion of the emissions inspection fee; however, the net emissions inspection fees collected by stations were not affected by this change.

Inspection stations in these program areas must offer both safety- only and safety and emissions inspections; however, this analysis 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 is capped at \$24.50 per ASM) inspection and \$18.50 per OBD 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 fee charged to customers at the inspection station, broken down into the safety inspection and the emissions inspection fee.

**Table I-1. Safety and Emissions Testing Fees**

Program Area	Safety Inspection Test Fee	Emissions Inspection Test Fee (Maximum)	Total Inspection Fee (Maximum)	State Administration Fee (Paid by Customer to State)
ARR	\$7.00	\$11.50	<b>\$18.50</b>	\$4.50
El Paso	\$7.00	\$11.50	<b>\$18.50</b>	\$2.50
HGB/DFW (OBD test)	\$7.00	\$18.50	<b>\$25.50</b>	\$8.50
HGB/DFW (ASM test)	\$7.00	\$24.50	<b>\$31.50</b>	\$2.50

In 2001, the 77<sup>th</sup> 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 full-service (offering ASM and OBD inspections) or OBD-only (offering only OBD inspections). OBD-only stations are limited to 150 per month. This analysis aggregates the data collected from the HGB and DFW program areas in assessing the fee; however, within the HGB/DFW program areas, this analysis assesses the fee for OBD-only stations as well as ASM/OBD stations. As summarized in Table I-2, ASM and 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 ARR 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.

Vehicle emissions inspections began in the El Paso area on January 1, 2007, using 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.

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

Program Area	Tests Performed	I/M Program Start Date
ARR	OBD and TSI	September 1, 2005
El Paso	OBD and TSI	January 1, 2007
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)

The TCEQ regularly performs a vehicle emissions inspection program test fee analysis every two years. The analysis was carried out by ERG in 2005, 2007, 2012, and 2014 (ERG, 2005, 2007, 2012, 2012) 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.

## B. REPORT ORGANIZATION

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

Chapter III (ARR), Chapter IV (El Paso), and Chapter V (HGB/DFW) 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 test- and- repair (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 are limited to 150 per month, whereas ASM/OBD stations are not capped. Chapter VI presents the cost model analyses for the following four geographic area/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 industry as a whole, 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 analysis. 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 models analyses, the median is typically preferred to the average because the average is often heavily influenced by a few extreme values or outliers.
- The 25<sup>th</sup> percentile (also known as the 1<sup>st</sup> quartile) is the value below which 25 percent of the observations fall (i.e., 25 percent of values are below this value).
- The 50<sup>th</sup> percentile (also known as the median [see above] or 2<sup>nd</sup> quartile) is the value below which 50 percent of the observations fall.
- The 75<sup>th</sup> percentile (also known as the 3<sup>rd</sup> quartile) is the value below which 75 percent of the observations fall (i.e., 25 percent of values are above this value).
- The interquartile range is the 25<sup>th</sup> percentile value to 75<sup>th</sup> percentile value. In short, it is the range of the middle half (50 percent) of the data where 25 percent of data is higher than the upper end of the range and 25 percent of the data is lower than the lower end of the range.

## II. ANALYSIS METHODS SUMMARY

Beginning in March 2016, ERG conducted a five-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 develop 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

After reviewing the 2012 and 2014 survey instruments, ERG developed a draft questionnaire designed to elicit data analogous to those from previous survey years to allow for time-trend comparisons. The most noteworthy changes included the addition of a question on the average length of time it takes to perform emissions testing (by test type: OBD, TSI, ASM) and the removal of a question regarding the number of free retests performed in the previous two months on vehicles that initially fail inspection. This year's survey also requested per-test wage information for compensation paid to inspectors in lieu of or in addition to an hourly rate or salary, as well as verbatim details on the types of non-repair services offered, if applicable. Other changes included slight question wording modifications and minor question reordering to accommodate an improved survey flow.

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<sup>3</sup> for stations requesting one. The 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 program areas were asked if they offer OBD-only or full service inspections (both 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 questions were answered appropriately.

## B. SAMPLE DESIGN

The universe for this survey was active vehicle emissions inspection stations in the four AirCheckTexas program areas. The TCEQ provided ERG with the database of all 4,888 of these stations;<sup>4</sup> all of them were invited to participate in the survey.

## C. DATA COLLECTION METHODS

Like the 2014 survey, the 2016 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 emissions analyzer notification bulletins. These bulletins are transmitted to the station's emission analyzer (i.e., testing equipment) during regular electronic communications with the TCEQ VID; they can be displayed onscreen and can also be printed and given to the station manager. The timing of a notification's arrival at any specific inspection station depended on when the TCEQ transmitted its bulletin and whether the analyzer had a successful communication with the VID.

The TCEQ sent advance notice of the survey's launch with a pre-notification bulletin to inform station personnel of the coming survey and explain its importance. This bulletin was sent on March 1, 2016, one week before the survey launch. A formal

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

<sup>4</sup> These 4,888 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.

invitation containing the survey's URL ([www.tceqsurvey.com](http://www.tceqsurvey.com)) was also sent via TCEQ analyzer bulletin on March 8, 2016. The TCEQ also sent three reminder bulletins over the survey period, requesting that stations complete the survey online or contact ERG's telephone or email hotline to get a paper survey.

New to this year's survey effort was a single additional communication: a reminder, emailed on March 31 (in the third week of the survey) to stations that had not yet submitted a response and had provided an email address at the time of station enrollment. While survey responses were requested by April 8, 2016, they were accepted until April 19, 2016, to accommodate any 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 43 calls and 17 emails. Among these hotline inquiries, 20 requested paper versions of the survey, 15 were associated with difficulties accessing the survey such as typing its URL into a search engine, and two indicated they would not take the survey. ERG also accepted surveys by fax and email.

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

#### D. RESPONSE RATE

The first completed surveys were received on March 8, 2016, and the final response was recorded on April 19. During this period, 776 responses were received,<sup>5</sup> only 11 of which were submitted as paper surveys. Of the 776 responses, 9 were ineligible (i.e., out of scope) as they did not offer motor vehicle emissions inspections. The remaining 767 responses were in-scope (i.e., public stations that offer motor vehicle emissions inspections). The overall response rate among public stations was 16 percent, which is

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<sup>5</sup> There were two responses from stations servicing government fleets (in addition to the 776 responses); however, these are not included in any tables or calculations throughout the report.

slightly higher than the previous TCEQ vehicle emissions inspection program test fee analysis.

Table II- 1 shows the breakdown of the 4,888 vehicle emissions inspection stations (excluding fleet and government stations) identified in the TCEQ vehicle emissions inspection database by program area and station type. Table II- 2 shows the breakdown of the 776 survey responses from active public stations by program area and station type.<sup>6</sup>

**Table II-1. Texas Emissions Inspection Stations in the TCEQ Database by Area/Station Type (March 1, 2016)**

Program Area	Test-Only	Test-and-Repair	Total
ARR	104	306	<b>410</b>
El Paso	72	143	<b>215</b>
HGB/DFW	1,553	2,710	<b>4,263</b>
<b>Total</b>	<b>1,729</b>	<b>3,159</b>	<b>4,888</b>

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

Program Area	Test-Only	Test-and-Repair	All Responses	In-scope* Responses
ARR	18	63	81	80
El Paso	11	26	37	37
HGB/DFW	154	504	658	650
<b>Total</b>	<b>183</b>	<b>593</b>	<b>776</b>	<b>767</b>

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

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. 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.

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<sup>6</sup> Station type for in- scope facilities was determined by responses to survey question 8, 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
ARR	17%	21%	20%
El Paso	15%	18%	17%
HGB/DFW	10%	19%	15%
<b>Total</b>	11%	19%	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 nor remove any extreme values. Such outliers do not often affect the median, which is used in the cost model. ERG did perform some data cleaning to change blank or “missing” survey fields to zero and change illogical zeros to missing values when the responses indicated that the latter would be more correct. Other data changes were minor.<sup>7</sup>

Except as described above and in footnote 7, 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 large data set typically have little to no impact on the median.

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<sup>7</sup> For example, eight nonzero wage values below \$7.25 were recoded to \$7.25 for consistency with Texas’ minimum wage. Three stations’ estimates of monthly repair jobs were recoded to “missing” where they were inconsistent with the reported revenue from such repairs. Five units were imputed for maintenance costs based on best professional judgement using other stations’ reported cost per unit. Finally, missing information about the facility type was inferred from the TCEQ emissions inspection database.

### III. HGB/DFW SURVEY RESULTS

This section of the report describes the survey responses for test-only and T&R stations in the HGB/DFW program area. (The survey instrument itself can be found in Appendix A of this report.) Survey responses are not explained for basic questions about the station or information that is not highly relevant to the analysis of the emissions inspection fee. The information in this section's tables was obtained from stations that responded to the 2016 survey. 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 percent.

In some instances, this section separately analyzes responses from stations that perform OBD inspections only and full-service stations that perform both ASM and OBD inspections. OBD-only stations have a cap of 150 emissions inspections per month.

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.

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

Day	Median Open Time	Median Close Time	Median Hours Open	Number Open	Number Closed
<b>Test-Only</b>					
<b>OBD-Only</b>					
Monday	8:00am	6:00pm	9	56	1
Tuesday	8:00am	6:00pm	9	57	0
Wednesday	8:00am	6:00pm	9	57	0
Thursday	8:15am	6:00pm	9	56	1
Friday	8:00am	6:00pm	9	57	0
Saturday	8:30am	5:00pm	8	48	9
Sunday	9:00am	5:00pm	8	11	46
<b>ASM/OBD</b>					
Monday	8:00am	6:00pm	10	94	0
Tuesday	8:00am	6:00pm	10	94	0
Wednesday	8:00am	6:00pm	10	94	0
Thursday	8:00am	6:00pm	10	93	1
Friday	8:00am	6:00pm	10	94	0
Saturday	8:00am	5:00pm	9	92	2
Sunday	9:00am	5:00pm	8	23	71
<b>Test-and-Repair</b>					
<b>OBD-Only</b>					
Monday	8:00am	6:00pm	10	337	0
Tuesday	8:00am	6:00pm	10	337	0
Wednesday	8:00am	6:00pm	10	334	3
Thursday	8:00am	6:00pm	10	336	1
Friday	8:00am	6:00pm	10	336	1
Saturday	8:00am	4:45pm	8	248	89
Sunday	9:00am	5:00pm	8	21	316
<b>ASM/OBD</b>					
Monday	8:00am	6:00pm	10	162	0
Tuesday	8:00am	6:00pm	10	162	0
Wednesday	8:00am	6:00pm	10	162	0
Thursday	8:00am	6:00pm	10	161	1
Friday	8:00am	6:00pm	10	161	1
Saturday	8:00am	5:00pm	9	136	26
Sunday	9:00am	5:00pm	7.3	25	137

This year’s survey asked respondents to estimate the average length of time it takes to conduct emissions testing, by test type. Figure III- 1 shows the distribution of survey responses regarding testing times (in minutes) for OBD tests and ASM tests. No

stations reported testing times greater than 60 minutes. The median length of the OBD test is 15 minutes, while the median length of the ASM test is 25 minutes.

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

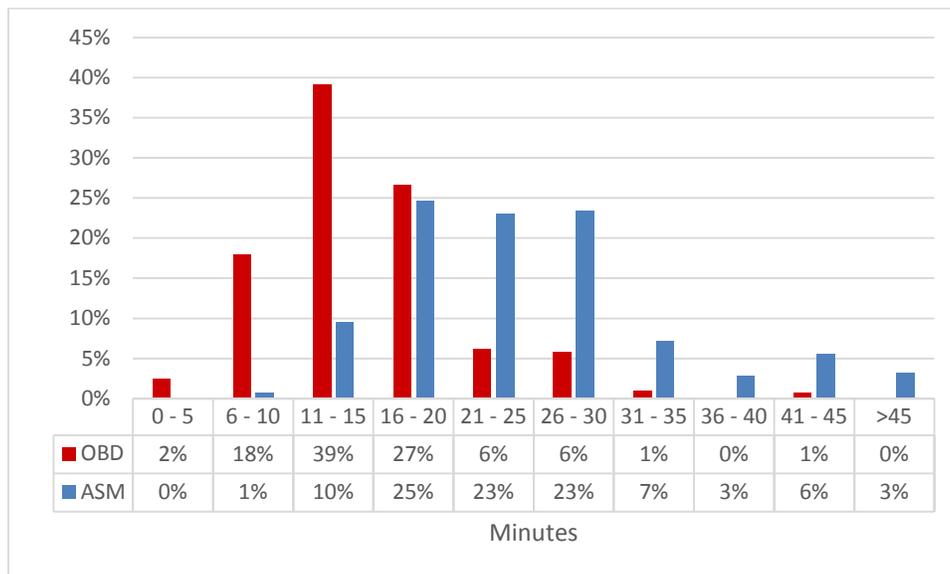


Table III- 2 summarizes responses to survey question 14, regarding items acquired in the station’s transition to offering emissions inspections; the responses here give a sense of what to include in the analytical cost model. Stations reported purchasing emissions inspection equipment more than anything else. Few stations of either station type reported purchasing additional land. As a result, in the analytical model, ERG included emissions testing equipment and tools or other equipment purchases, provided model results both with and without building space purchases, and did not include the cost of land acquired.

**Table III-2. Items Added or Acquired to Initiate Emissions Testing — HGB/DFW**

Station and Test Type	Item Acquired	Number of Responses		
		Yes	No	Total
<b>Test-Only</b>				
OBD-only	Emissions testing equipment	47	10	57
	Tools and other equipment	26	31	57
	Building space	21	36	57
	Land	4	53	57
ASM/OBD	Emissions testing equipment	81	13	94
	Tools and other equipment	63	31	94
	Building space	44	50	94
	Land	13	81	94
<b>Test-and-Repair</b>				
OBD-only	Emissions testing equipment	304	33	337
	Tools and other equipment	162	175	337
	Building space	77	260	337
	Land	27	310	337
ASM/OBD	Emissions testing equipment	152	10	162
	Tools and other equipment	106	56	162
	Building space	61	101	162
	Land	30	132	162

Survey question 14 also addressed emissions- test- related costs of purchasing or acquiring space and equipment, summarized in Table III- 3. Respondents at ASM/OBD stations reported paying a median value of \$40,000 for emissions inspection equipment; respondents at OBD- only stations paid a median of \$8,600 to \$9,000. A single new certified ASM/OBD analyzer ranges in price from \$25,500 to \$37,995 (TCEQ, 2013), so the reported values may be a slightly high estimate, or may indicate that stations are purchasing multiple analyzers to increase their maximum throughput (e.g., a certified OBD- only analyzer in addition to an ASM/OBD analyzer). A single new certified OBD analyzer typically ranges in price from \$7,195 to \$7,495, which coincides well with the reported survey values.

The certified analyzer purchase and maintenance costs are major differences in the cost structure between an OBD- only and an ASM/OBD station. However, as mentioned above, OBD- only stations are more limited in their revenue stream because they have a cap of 150 emissions inspections per month. While fewer OBD- only respondents reported purchasing additional building space, ASM/OBD stations typically spent more acquiring building space than did OBD- only stations. This was true for both test- only and T&R stations. The wide range of responses, as evidenced by the interquartile ranges, suggests that the medians are likely to be more representative of a typical station’s expenditures than the average values.

**Table III-3. Costs of Added or Acquired Items — HGB/DFW**

Station and Test Type	Item Acquired	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>						
OBD-only	Emissions testing equipment	\$7,000	\$8,600	\$18,000	\$12,776	43
	Tools and other equipment	\$250	\$1,000	\$2,000	\$2,762	25
	Building space	\$760	\$1,000	\$6,875	\$13,806	16
	Land	\$400	\$10,000	\$35,000	\$15,133	3
ASM/OBD	Emissions testing equipment	\$20,000	\$40,000	\$60,000	\$43,487	75
	Tools and other equipment	\$1,000	\$2,000	\$5,000	\$4,130	56
	Building space	\$3,000	\$27,000	\$100,000	\$75,319	39
	Land	\$30,000	\$67,500	\$200,000	\$144,042	12
<b>Test-and-Repair</b>						
OBD-only	Emissions testing equipment	\$6,000	\$9,000	\$12,000	\$12,267	283
	Tools and other equipment	\$500	\$1,000	\$5,000	\$3,898	148
	Building space	\$1,500	\$6,000	\$25,000	\$48,142	67
	Land	\$6,750	\$50,000	\$100,000	\$83,763	20
ASM/OBD	Emissions testing equipment	\$23,000	\$40,000	\$49,000	\$39,830	145
	Tools and other equipment	\$2,000	\$4,000	\$10,000	\$9,480	97
	Building space	\$5,000	\$20,000	\$100,000	\$129,506	53
	Land	\$25,000	\$60,000	\$200,000	\$129,481	23

Table III- 4 and Table III- 5 summarize the results from survey question 5, which inquired about the number of emissions inspection bays at each station and the uses for those bays. Table III- 4 shows how many bays are used exclusively for emissions testing, while Table III- 5 shows the number of bays used for emissions testing in addition to other uses. The majority of stations in the HGB/DFW program areas, both full-service and OBD- only test- only and T&R stations, have one bay used exclusively for emissions testing, and either zero, one, or two bays for testing and other uses. Therefore, in the cost model, ERG assumed one piece of testing equipment (one OBD analyzer at OBD- only stations and one ASM/OBD analyzer at ASM/OBD stations) and one bay.

**Table III-4. Number of Bays Used Exclusively for Testing — HGB/DFW**

Station Type and Test Type	Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	0	9	15.8%
	1	42	73.7%
	2	4	7.0%
	3	1	1.8%
	6	1	1.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	0	6	6.4%
	1	62	66.0%
	2	21	22.3%
	3	4	4.3%
	4	1	1.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	0	66	19.6%
	1	258	76.6%
	2	10	3.0%
	3	1	0.3%
	6	1	0.3%
	10	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	0	13	8.0%
	1	134	82.7%
	2	15	9.3%
	<b>Total</b>	<b>162</b>	<b>82.7%</b>

**Table III-5. Number of Bays Used for Testing and Other Uses — HGB/DFW**

Station and Test Type	Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	0	39	68.4%
	1	16	28.1%
	2	2	3.5%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	0	71	75.5%
	1	15	16.0%
	2	7	7.4%
	3	1	1.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	0	215	63.8%
	1	93	27.6%
	2	16	4.7%
	3	6	1.8%
	4	1	0.3%
	5	1	0.3%
	7	2	0.6%
	8	1	0.3%
	10	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	0	108	66.7%
	1	42	25.9%
	2	9	5.6%
	3	1	0.6%
	4	2	1.2%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

Survey question 7 asked about the average hourly wages (unloaded) paid to emissions inspectors, as well as per- test commissions paid (if any). 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- 6 summarizes the responses regarding wages, by type. Overall, median reported hourly wages for emissions inspectors were very similar across OBD- only (\$10 to \$12) and ASM/OBD (\$10 to \$11) stations. These values are consistent with the \$10.80 and \$12.39 hourly wages shown for the Houston and Dallas–Fort Worth areas, respectively, for level 1 auto service technicians and mechanics, as reported by the Foreign Labor Certification Data Center (FLC, 2016).

**Table III-6. Current Wages Paid to Emissions Inspectors,  
 Hourly (\$/hr.) and Per-Test — HGB/DFW**

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Hourly/Salary</b>					
<b>Test-Only</b>					
OBD-only	\$9	\$10	\$12	\$11.44	34
ASM/OBD	\$9	\$10	\$12	\$15.75	69
<b>Test-and-Repair</b>					
OBD-only	\$10	\$12	\$15	\$13.11	246
ASM/OBD	\$10	\$11	\$14	\$12.01	129
<b>Per-Test</b>					
<b>Test-Only</b>					
OBD-only	\$4	\$10	\$13	\$9.56	21
ASM/OBD	\$1	\$2	\$5	\$4.08	24
<b>Test-and-Repair</b>					
OBD-only	\$3	\$6	\$11	\$7.83	91
ASM/OBD	\$1	\$2.28	\$7	\$4.84	50

Table III- 7 and Table III- 8 summarize the answers to survey question 6, which asked respondents how many full- and part-time inspectors were employed at their stations. The majority of respondents reported employing one, two, or three inspectors at their station. The highest number of inspectors a test- only station reported employing was 21, while one T&R station reported employing 51 inspectors.

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

Station and Test Type	Number	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	1	29	50.9%
	2	16	28.1%
	3	5	8.8%
	4	3	5.3%
	5	1	1.8%
	6	2	3.5%
	8	1	1.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	1	17	18.1%
	2	34	36.2%
	3	12	12.8%
	4	13	13.8%
	5	8	8.5%
	6	8	8.5%
	12	1	1.1%
	21	1	1.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>

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

Station and Test Type	Number of Inspectors	Number of Respondents	Percent
<b>Test-and-Repair</b>			
OBD-only	1	81	24.0%
	2	122	36.2%
	3	65	19.3%
	4	32	9.5%
	5	16	4.7%
	6	7	2.1%
	7	3	0.9%
	8	2	0.6%
	9	2	0.6%
	10	2	0.6%
	12	1	0.3%
	13	1	0.3%
	14	1	0.3%
	18	1	0.3%
	24	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	1	15	9.3%
	2	47	29.0%
	3	44	27.2%
	4	25	15.4%
	5	13	8.0%
	6	8	4.9%
	7	1	0.6%
	8	1	0.6%
	10	1	0.6%
	11	1	0.6%
	12	1	0.6%
	20	2	1.2%
	23	1	0.6%
	24	1	0.6%
	51	1	0.6%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

Table III- 9, Table III- 10, and Table III- 11 provide information about the number of inspectors, 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 38.6 percent and 63.8 percent of OBD-only test-only and T&R stations, respectively, had more than one

inspector working full- time, and 56.4 percent and 74.7 percent of ASM/OBD test- only and T&R stations, respectively, had more than one inspector working full- time.

The survey results also indicate that OBD- only stations are more likely to use part- time inspectors than ASM/OBD stations. This is most likely due to the increasing number of OBD- only stations in the HGB/DFW program areas. As a result, the cost model assumes all inspectors receive benefits. This could result in a slight overestimate of the break- even number of stations, as some stations hire part- time workers, who may not receive benefits.

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

Station and Test Type	Number of FT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	1	35	61.4%
	2	13	22.8%
	3	2	3.5%
	4	3	5.3%
	5	2	3.5%
	6	1	1.8%
	8	1	1.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	0	2	2.1%
	1	39	41.5%
	2	23	24.5%
	3	10	10.6%
	4	9	9.6%
	5	5	5.3%
	6	4	4.3%
	10	1	1.1%
	21	1	1.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>

\*Full-time employees who perform 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 FT Inspectors	Number of Respondents	Percent
<b>Test-and-Repair</b>			
OBD-only	0	3	0.9%
	1	119	35.3%
	2	100	29.7%
	3	54	16.0%
	4	26	7.7%
	5	16	4.7%
	6	6	1.8%
	7	2	0.6%
	8	2	0.6%
	9	2	0.6%
	10	2	0.6%
	12	1	0.3%
	13	1	0.3%
	14	1	0.3%
	18	1	0.3%
	24	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	0	2	1.2%
	1	39	24.1%
	2	45	27.8%
	3	33	20.4%
	4	17	10.5%
	5	11	6.8%
	6	5	3.1%
	7	1	0.6%
	8	1	0.6%
	10	1	0.6%
	11	1	0.6%
	12	1	0.6%
	19	1	0.6%
	20	1	0.6%
	23	1	0.6%
	24	1	0.6%
	50	1	0.6%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

\*Full-time employees who perform 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 PT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	0	49	86.0%
	1	6	10.5%
	2	2	3.5%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	0	51	54.3%
	1	31	33.0%
	2	8	8.5%
	3	1	1.1%
	4	2	2.1%
	5	1	1.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	0	277	82.2%
	1	45	13.4%
	2	14	4.2%
	3	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	0	110	67.9%
	1	35	21.6%
	2	14	8.6%
	3	1	0.6%
	4	1	0.6%
	5	1	0.6%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

\*Part-time employees who perform inspections as all or part of their duties.

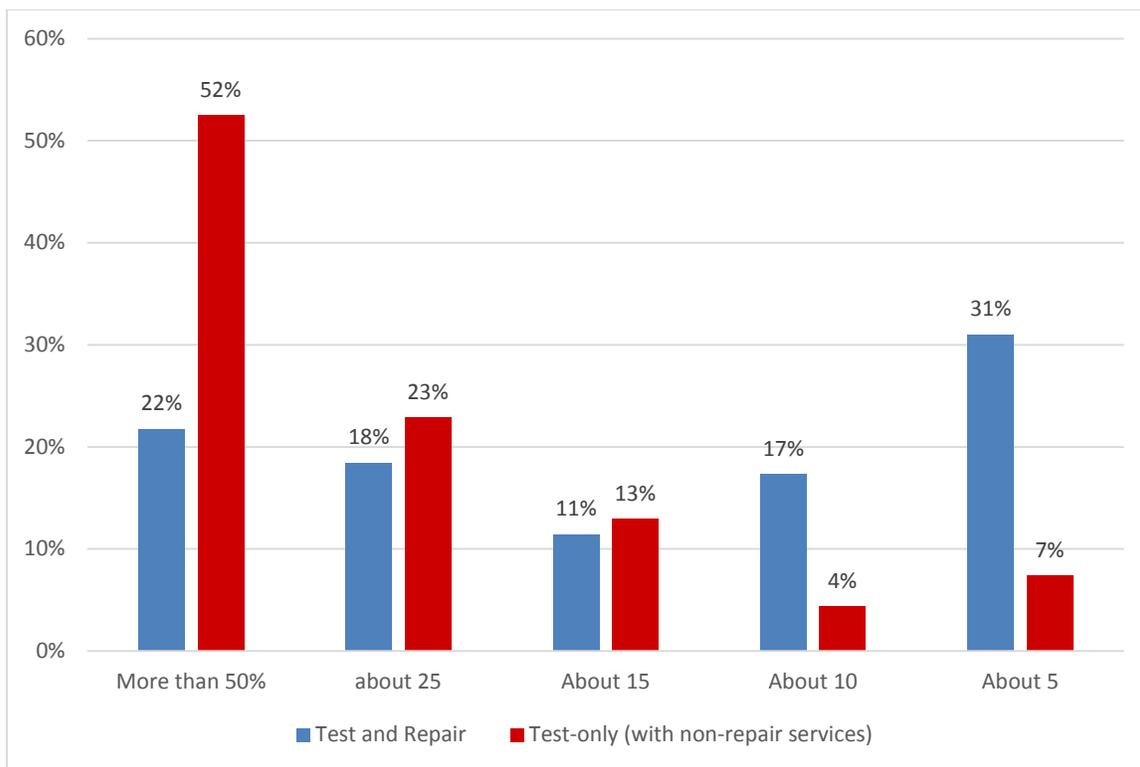
To explore the extent to which stations offering other services focus on services other than emissions inspections, survey questions 9 and 10 asked how much time inspectors spend performing emissions inspections. Table III- 12 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full- time inspector spending at least half- time conducting inspections. Fewer than half of test- only stations offer non- repair services (typically general maintenance services such as oil changes and filter replacements), but the majority of those that do offer these services have at least one full- time inspector working at least half- time conducting inspections. Over half of T&R stations offer both repair and non- repair services in addition to emissions testing. Not quite half of T&R stations have at least one full- time inspector conducting inspections at least half- time.

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

Station Type	All Stations		Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 50% of the Time		Number of Inspectors	
	Count	Percent of Station Type	Count	Percent of Station Type	Full-Time	Part-Time
<b>Test-Only</b>	<b>151</b>	—	—	—	<b>334</b>	<b>73</b>
No other services	89	59%	NA	NA	172	36
Non-repair services	62	41%	45	73%	162	37
<b>Test-and-Repair</b>	<b>499</b>	—	<b>222</b>	<b>44%</b>	<b>1415</b>	<b>151</b>
Repair services only	244	49%	103	42%	646	67
Repair and non-repair services	255	51%	119	47%	769	84
<b>Total</b>	<b>650</b>	—	—	—	<b>1749</b>	<b>224</b>

Figure III- 2 shows the distribution of full-time inspectors by percent of time doing inspections. For T&R, this shows that labor is not only for inspections. Thus, ERG assumed that inspectors are doing other work when not inspecting vehicles, and this time does not have to be included in the cost model (i.e., this justifies only including incremental inspection time).

**Figure III-2. Full-Time Inspectors\* by Percent of Time Spent Doing Inspections — HGB/DFW**



\*Full-time employees who perform inspections as all or part of their duties.

Survey questions 11 through 13 addressed the revenue stream for T&R stations generated from repairs to vehicles that failed emissions inspections. These questions were applicable only to T&R stations; consequently, the results in Table III- 13, Table III- 14, and Table III- 15 represent only T&R stations. Table III- 13 shows that the majority of stations reported that less than 10 percent of their income was generated from repairs following failed emissions inspections.

**Table III-13. Percentage of Repair Revenues Resulting from Failed Emissions Inspections — HGB/DFW**

Test Type	Percentage	Number of Respondents	Percent	
OBD-only	0% — perform inspections only	23	6.8%	
	Less than 10%	260	77.2%	
	About 25%	45	13.4%	
	About 50%	5	1.5%	
	About 75%	1	0.3%	
	Between 75% and 95%	1	0.3%	
	Missing	2	0.6%	
	<b>Total</b>		<b>337</b>	<b>100.0%</b>
ASM/OBD	0% - perform inspections only	20	12.3%	
	Less than 10%	118	72.8%	
	About 25%	19	11.7%	
	About 50%	3	1.9%	
	More than 95%	1	0.6%	
	Missing	1	0.6%	
	<b>Total</b>		<b>162</b>	<b>100.0%</b>

Table III- 14 shows that the number of reported repair jobs from failed emissions inspections is similar between ASM/OBD stations (median = 5) and OBD- only stations (median = 4). However, the higher average for ASM stations suggests that there are more ASM failures than OBD failures. Figure III- 3 is a histogram showing the distribution of repair jobs from failed inspections at ASM/OBD and OBD- only stations, respectively. Among the stations indicating an average number of repair jobs above the 75<sup>th</sup> percentile (10), most report averaging between 12 and 60 repair jobs per month. However, two reported an average of 200 and another reported an average of 700 repair jobs per month. These high values result in a much higher average relative to the median; it is possible that these stations misinterpreted the question and included repair jobs unrelated to failed emissions tests in their responses.

**Table III-14. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests — HGB/DFW**

Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
ASM-OBD	2	5	10	15.5	135
OBD-only	2	4	5	5.9	306

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

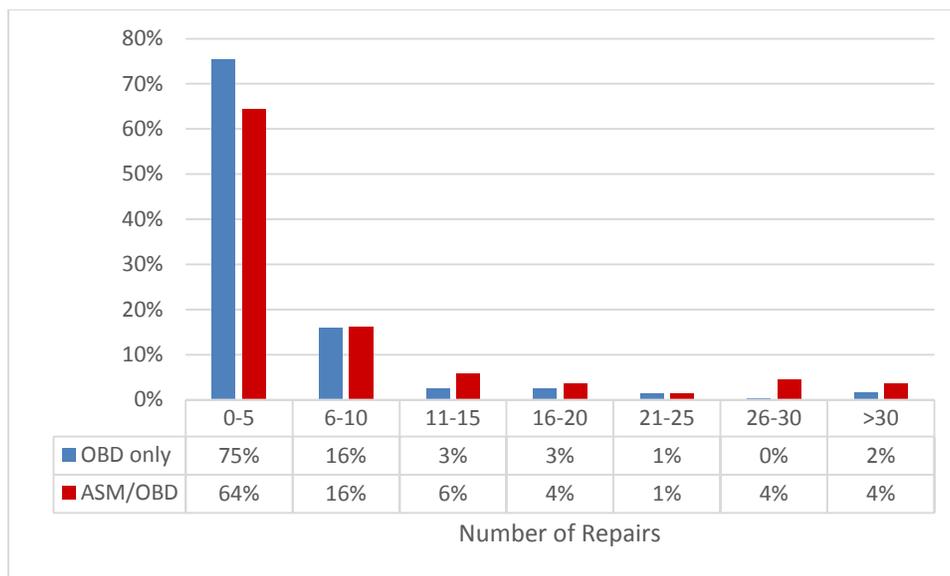
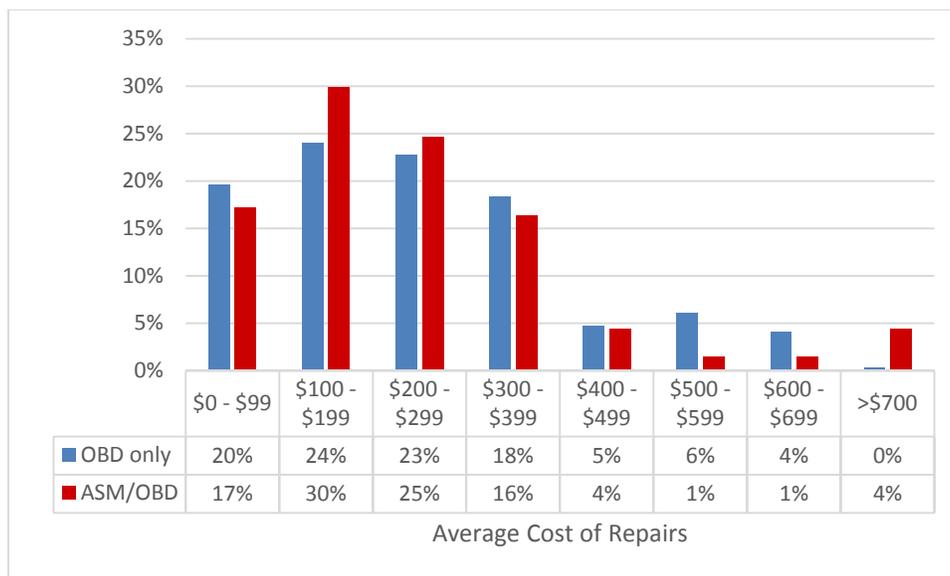


Table III- 15 shows that the average cost of a repair following a failed emissions inspection at OBD- only stations was \$224 with a median of \$200; for ASM/OBD stations, the average was \$270, also with a median of \$200. Figure III- 4 illustrates the distribution of responses regarding average cost 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-15. Typical Repair Costs for an Emissions Test Failure — HGB/DFW**

Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
OBD-only	\$100	\$200	\$300	\$224	295
ASM-OBD	\$100	\$200	\$300	\$270	134

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



Survey question 15 asked stations how they financed their purchase of emissions inspection equipment. As shown in Table III- 16, OBD- only stations paid cash more often than ASM/OBD stations (52.8 percent for T&R OBDs and 50.9 percent for test- only OBDs vs. 35.8 percent for T&R ASM/OBDs and 24.5 percent for test- only ASM/OBDs). This is expected, because certified ASM/OBD analyzers are typically four to five times more expensive than certified OBD- only analyzers. For the cost model, while a slight majority paid cash, it is assumed that stations have a financing mechanism (loan or lease- to- purchase agreement) for acquiring inspection equipment, so the survey results from questions 16 and 17 (regarding financing details for these arrangements) are used in the model.

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

Station and Test Type	Finance Type	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	Paid cash	29	50.9%
	Lease-to-purchase agreement arranged with vendor	14	24.6%
	Bank loan	9	15.8%
	<i>Missing</i>	5	8.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	Paid cash	23	24.5%
	Lease-to-purchase agreement arranged with vendor	28	29.8%
	Bank loan	32	34.0%
	<i>Missing</i>	11	11.7%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	Paid cash	178	52.8%
	Lease-to-purchase agreement arranged with vendor	95	28.2%
	Bank loan	54	16.0%
	<i>Missing</i>	10	3.0%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	Paid cash	58	35.8%
	Lease-to-purchase agreement arranged with vendor	49	30.2%
	Bank loan	51	31.5%
	<i>Missing</i>	4	2.5%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

Survey questions 16 and 17 further inquired about the financing details for those 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 stations and 4 years for OBD- only stations. The interquartile range for these data is also narrow (4 to 5 years), indicating that the middle half of stations have very similar loan terms. Figure III- 5 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**

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	3	4	5	4.9	17
ASM/OBD	5	5	7	7.0	52
<b>Test-and-Repair</b>					
OBD-only	3	4	5	5.7	124
ASM/OBD	5	5	10	9.1	84

**Figure III-5. Distribution of the Lease-to-Purchase or Bank Loan Term (Years) — HGB/DFW**

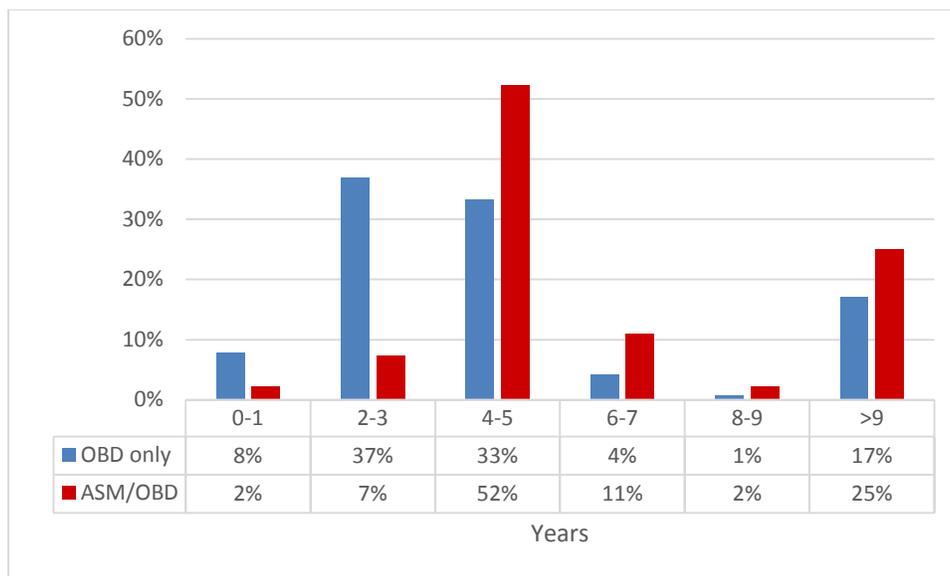
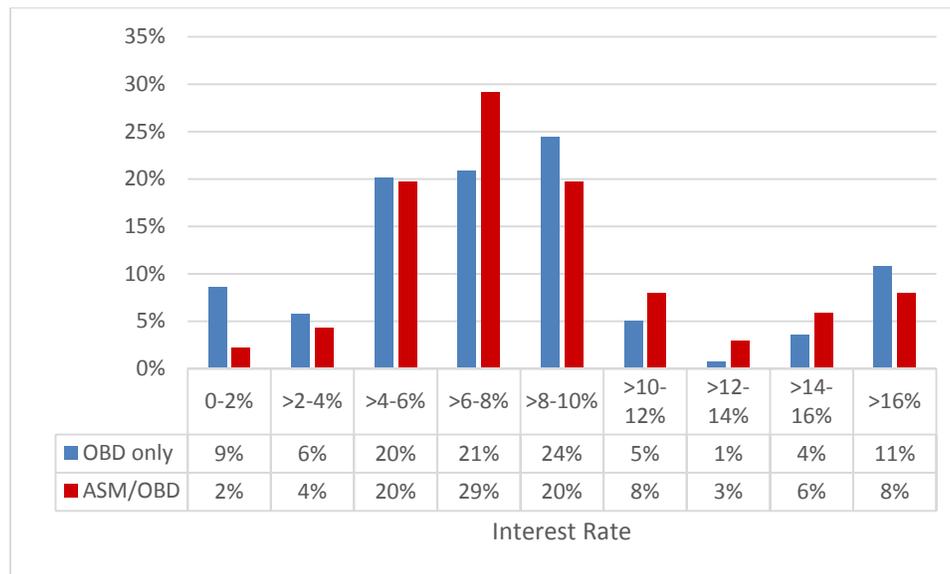


Table III- 18 summarizes the survey responses regarding lease- to- purchase or bank loan interest rates, showing that these rates were relatively similar for ASM/OBD stations and OBD- only stations. Figure III- 6 presents the distributions of these interest rates for test- only and T&R stations combined.

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

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	6%	10%	12%	10.4%	17
ASM/OBD	6%	8%	10%	9.6%	51
<b>Test-and-Repair</b>					
OBD-only	5.5%	8%	10%	8.8%	122
ASM/OBD	6%	8%	11%	9.4%	86

**Figure III-6. Distribution of the Interest Rates for Lease-to-Purchase or Bank Loan — HGB/DFW**



The survey also addressed the annual maintenance costs for all stations. Among test-only stations, 44 (46.8 percent) with ASM/OBD analyzers and 22 (38.6 percent) with OBD-only analyzers confirmed that they have a maintenance plan. Among T&R stations, 62 (38.3 percent) with ASM/OBD analyzers and 111 (32.9 percent) with OBD-only analyzers confirmed that they have a maintenance plan.

Table III- 19 summarizes the responses to survey question 19, showing that ASM/OBD stations reported paying a much higher annual maintenance cost (\$4,605 median for test- only and \$3,671 median for T&R) than did OBD- only stations (\$904 for test- only and \$864 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	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	\$805	\$904	\$1,200	\$1,239	22
ASM/OBD	\$3,820	\$4,605	\$5,572	\$5,262	44
<b>Test-and-Repair</b>					
OBD-only	\$786	\$864	\$1,000	\$1,132	111
ASM/OBD	\$2,000	\$3,671	\$4,800	\$3,768	62

Additionally, the survey asked stations with maintenance agreements about extra maintenance costs they incurred that were not covered by their agreement. As shown

in Table III- 20, these additional costs were again much higher for ASM/OBD stations (medians of \$795 and \$2,000 for T&R and test- only stations, respectively) than for OBD- only stations (medians of \$200 and \$500 for T&R and test- only stations, respectively). The higher median maintenance costs for ASM/OBD stations are not surprising as they have more equipment to maintain. Based on this survey information, the cost model assumes that all stations have an annual maintenance package with additional expenses outside the package.

**Table III-20. Extra Maintenance Costs for Stations with Maintenance Plans (2015) — HGB/DFW**

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	\$0	\$500	\$1,000	\$641	19
ASM/OBD	\$1,000	\$2,000	\$4,000	\$3,471	43
<b>Test-and-Repair</b>					
OBD-only	\$0	\$200	\$500	\$415	107
ASM/OBD	\$400	\$795	\$1,500	\$1,238	64

Survey questions 24 and 25 asked stations whether they offer reduced-fee and/or free emissions inspections (other than performing obligatory free retests after a vehicle failed inspection at their station). As illustrated in Table III- 21, ASM/OBD stations were slightly more likely to have provided free emissions inspections at some point (21.3 percent for test- only stations and 19.8 percent for T&R stations) than OBD- only stations (17.5 percent for test- only stations and 17.8 percent for T&R stations). Common reasons for providing free retests included a “no pass- no pay” policy, providing free inspections to preferred customers, providing free inspections to low-income customers, and honoring competitor coupons.

**Table III-21. Free Emissions Tests (Except Free Retests) – HGB/DFW**

Station and Test Type	Free Tests Ever Given?	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	Yes	10	17.5%
	No	46	80.7%
	<i>Missing</i>	1	1.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	Yes	20	21.3%
	No	71	75.5%
	<i>Missing</i>	3	3.2%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	Yes	60	17.8%
	No	271	80.4%
	<i>Missing</i>	6	1.8%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	Yes	32	19.8%
	No	127	78.4%
	<i>Missing</i>	3	1.9%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

Table III- 22 shows, across station and testing types, similar rates of having ever charged a reduced fee (less than \$18.50 [OBD] or \$24.50 [ASM]) outside of free retests for a previously failed vehicle. Percentages range from 7 percent among test- only OBD only stations to 9.6 percent at test- only ASM/OBD stations. 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 sufficiently high. As shown in Table III- 23, the median reduced fee charged was \$13 for OBD tests and \$20 for ASM tests.

**Table III-22. Reduced Fee Emissions Tests (Less than \$18.50 [OBD] or \$24.50 [ASM]) — HGB/DFW**

Station and Test Type	Charged Less than \$18.50 (OBD) or \$24.50 (ASM)?	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	Yes	4	7.0%
	No	53	93.0%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	Yes	9	9.6%
	No	83	88.3%
	<i>Missing</i>	2	2.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	Yes	30	8.9%
	No	306	90.8%
	<i>Missing</i>	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	Yes	14	8.6%
	No	146	90.1%
	<i>Missing</i>	2	1.2%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

**Table III-23. Typical Reduced Fees Charged (Less Than \$18.50 (OBD) or \$24.50 (ASM)) — HGB/DFW**

Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
OBD-Only	\$10	\$13	\$15	\$11.66	54
ASM/OBD	\$18.50	\$20	\$20	\$17.18	23

Survey question 21 asked respondents about emissions testing equipment that they had decommissioned after owning it for its entire useful life. Table III- 24 summarizes the results regarding whether the stations had ever decommissioned such equipment. For both test- only and T&R stations, the majority of respondents had not decommissioned emissions testing equipment that they had owned for its entire useful life.

**Table III-24. Stations That Decommissioned Emissions  
 Testing Equipment — HGB/DFW**

Station and Test Type	Ever Decommissioned Equipment?	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	Yes	8	14.0%
	No	45	78.9%
	<i>Missing</i>	4	7.0%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	Yes	14	14.9%
	No	74	78.7%
	<i>Missing</i>	6	6.4%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	Yes	66	19.6%
	No	268	79.5%
	<i>Missing</i>	3	0.9%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	Yes	24	14.8%
	No	135	83.3%
	<i>Missing</i>	3	1.9%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

Survey question 22 inquired about the number of years the decommissioned equipment was owned and the cost to the station of decommissioning the equipment. The responses to these questions are summarized in Table III- 25 and Table III- 26, respectively. Though the sample sizes here are small, the results show that test- only stations tend to own equipment longer before decommissioning than T&R stations, with OBD- only stations owning equipment longer than full- service stations. As shown in Table III- 26, T&R stations had higher decommissioning costs, with ASM/OBD stations being the highest based on averages. This is consistent with the notion that an ASM analyzer (requiring a dynamometer) has added challenges for decommissioning.

It should be noted that, due to the small number of responses to the questions regarding decommissioned equipment, these results are not likely to be particularly representative of the industry as a whole. Further, it is possible that some stations sell used or barely working equipment so, in the absence of additional information, neither a cost nor a revenue is being used in the cost model at this time.

**Table III-25. Years Decommissioned Equipment Was Owned — HGB/DFW**

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	7	13.5	18	13.0	8
ASM/OBD	5	8	10	7.6	13
<b>Test-and-Repair</b>					
OBD-only	6	10	13	9.3	63
ASM/OBD	5	6.5	10.5	8.0	24

**Table III-26. Cost to Decommission Equipment — HGB/DFW**

Station and Test Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
OBD-only	\$0	\$750	\$7,000	\$3,821	7
ASM/OBD	\$1,000	\$2,500	\$8,000	\$6,142	12
<b>Test-and-Repair</b>					
OBD-only	\$100	\$2,250	\$7,000	\$5,467	58
ASM/OBD	\$200	\$8,000	\$16,750	\$9,402	24

The final question of the survey asked respondents whether the fee for emissions inspections covered their costs associated with emissions inspections. As presented in Table III- 27, the majority of respondents answered “no,” with ASM/OBD stations responding “no” more often than OBD- only stations. This is expected, as costs tend to be higher for ASM/OBD stations than for OBD- only stations. 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-27. Does Fee Cover Emissions Testing Costs? — HGB/DFW**

Station and Test Type	Fee Covers Testing Costs?	Number of Respondents	Percent
<b>Test-Only</b>			
OBD-only	Yes	27	47.4%
	No	29	50.9%
	<i>Missing</i>	1	1.8%
	<b>Total</b>	<b>57</b>	<b>100.0%</b>
ASM/OBD	Yes	24	25.5%
	No	68	72.3%
	<i>Missing</i>	2	2.1%
	<b>Total</b>	<b>94</b>	<b>100.0%</b>
<b>Test-and-Repair</b>			
OBD-only	Yes	156	46.3%
	No	180	53.4%
	<i>Missing</i>	1	0.3%
	<b>Total</b>	<b>337</b>	<b>100.0%</b>
ASM/OBD	Yes	50	30.9%
	No	112	69.1%
	<b>Total</b>	<b>162</b>	<b>100.0%</b>

#### IV. EL PASO SURVEY RESULTS

This section of the report 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 of this report.) Survey responses are not explained for basic questions about the station or information that is not highly relevant to the analysis of the emissions inspection fee. The information in this section’s tables was obtained from stations that responded to the 2016 survey. 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 percent. As noted in Chapter II, 11 test-only stations in El Paso submitted the survey, compared to 26 T&R stations that responded, so caution should be taken in assessing these data due to the small sample size.

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, although a higher percentage of T&R stations are closed on the weekends.

**Table IV-1. Hours of Operation — El Paso**

Day	Median Open Time	Median Close Time	Median Hours Open	Number Open	Number Closed
<b>Test-Only</b>					
Monday	8:00am	6:00pm	9.3	11	0
Tuesday	8:00am	6:00pm	9.3	11	0
Wednesday	8:00am	6:00pm	9.3	11	0
Thursday	8:00am	6:00pm	9.3	11	0
Friday	8:00am	6:00pm	9.3	11	0
Saturday	8:30am	4:00pm	7.3	11	0
Sunday	.	.	.	0	11
<b>Test-and-Repair</b>					
Mon	8:00am	6:00pm	9.45	26	0
Tue	8:00am	6:00pm	9.45	26	0
Wed	8:00am	6:00pm	9.45	26	0
Thu	8:00am	6:00pm	9.45	26	0
Fri	8:00am	6:00pm	9.45	26	0
Sat	8:00am	5:00pm	9	25	1
Sun	9:00am	5:45pm	9	4	22

This year’s survey asked respondents to estimate the average length of time it takes to conduct emissions testing, by test type. Figure IV- 1 shows the distribution of survey responses regarding testing times (in minutes) for OBD tests and TSI tests. No stations reported testing times greater than 45 minutes. The median length of the OBD and TSI tests is 15 minutes.

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

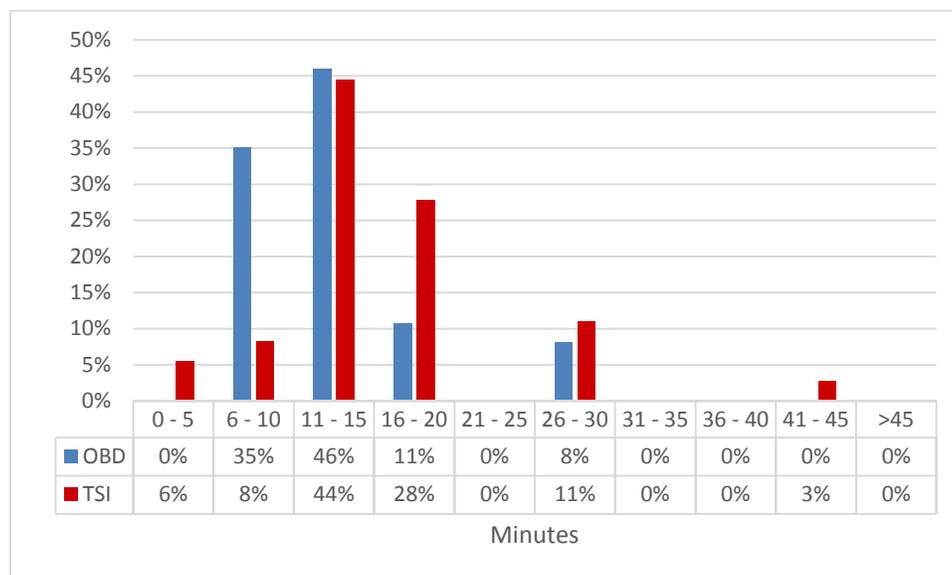


Table IV- 2 summarizes responses to survey question 14, regarding items acquired in the station’s transition to offering emissions inspections. The majority of stations that provided a response to the question reported purchasing emissions inspection equipment or tools and other equipment. About half of respondents reported purchasing building space. Fewer respondents among both station types reported purchasing additional land. As a result, in the analytical model, ERG included emissions testing equipment and tools or other equipment purchases, provided model results both with and without building space purchases, and did not include the cost of land acquired.

**Table IV-2. Items Added or Acquired to Initiate Emissions Testing — El Paso**

Item Acquired	Number of Responses		
	Yes	No	Total
<b>Test-Only</b>			
Emissions testing equipment	10	1	11
Tools and other equipment	8	3	11
Building space	6	5	11
Land	2	9	11
<b>Test-and-Repair</b>			
Emissions testing equipment	21	5	26
Tools and other equipment	21	5	26
Building space	10	16	26
Land	3	23	26

Survey question 14 also addressed emissions- test- related costs of purchasing or acquiring space and equipment. Table IV- 3 summarizes the survey findings, showing a median purchase price of emissions inspection equipment of \$15,000 for test- only stations and \$13,500 for T&R stations. These values for emissions inspection equipment are slightly lower than the price for a single new certified TSI/OBD analyzer, which typically ranges from \$15,495 to \$15,995 (TCEQ, 2016). Due to a skewed distribution of reported costs for the purchase of building space, the average purchase price of building space for T&R stations (\$44,000) is much higher — than the median purchase price (\$6,000); thus, the median value is probably more representative of a typical station’s expenditures for building space when preparing to start inspection operations.

**Table IV-3. Costs of Added or Acquired Items — El Paso**

Item Acquired	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
Emissions testing equipment	\$14,000	\$15,000	\$15,000	\$13,550	10
Tools and other equipment	\$1,250	\$4,250	\$5,500	\$4,650	8
Building space	\$700	\$1,900	\$12,000	\$6,950	6
Land	\$200	\$125,100	\$250,000	\$125,100	2
<b>Test-and-Repair</b>					
Emissions testing equipment	\$9,250	\$13,500	\$15,000	\$12,826	20
Tools and other equipment	\$550	\$2,500	\$5,000	\$3,443	20
Building space	\$3,500	\$6,000	\$50,000	\$44,000	9
Land	\$1,500	\$140,000	\$290,000	\$143,833	3

Table IV- 4 and Table IV- 5 summarize the results from survey question 5, regarding the number of emissions inspection bays at each station and the uses for those bays. Table IV- 4 shows how many bays in the station are used exclusively for emissions

testing, while Table IV- 5 counts the bays used for emissions testing and other work. The majority of stations in El Paso, both test- only and T&R, have one bay each used exclusively for emissions testing. About one- third of test- only stations have one other bay, and half of T&R stations have at least one other bay used for emissions testing and other work. Therefore, in the cost model, ERG assumed one piece of testing equipment based on one bay.

**Table IV-4. Number of Bays Used Exclusively for Testing — El Paso**

Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>		
0	3	27.3%
1	8	72.7%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
0	3	11.5%
1	21	80.8%
2	2	7.7%
<b>Total</b>	<b>3</b>	<b>100.0%</b>

**Table IV-5. Number of Bays Used for Testing and Other Uses — El Paso**

Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>		
0	7	63.6%
1	4	36.4%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
0	13	50.0%
1	12	46.2%
3	1	3.8%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

Survey question 7 asked about average hourly wages (unloaded) paid to emissions inspectors, as well as per- test commissions paid (if any). 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- 6 summarizes the responses regarding these wages, by type. Median hourly wages at test- only stations (\$9.25) are just slightly higher than at T&R stations (\$9.00). These values are slightly less than the \$9.33 average hourly wage for level 1 auto service technicians and mechanics reported for the El Paso area by the Foreign Labor Certification Data Center (FLC, 2016). 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.

**Table IV-6. Current Wages Paid to Emissions Inspectors, Hourly (\$/hr.) and Per-Test — El Paso**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Hourly/Salary</b>					
Test-only	\$8	\$9.25	\$11	\$9.69	8
Test-and-repair	\$8.50	\$9	\$10.50	\$10.24	19
<b>Per-Test</b>					
Test-only	\$0.50	\$5	\$9	\$4.83	3
Test-and-repair	\$4.43	\$7.50	\$13.25	\$8.84	4

Table IV- 7, Table IV- 8, and Table IV- 9 summarize the answers to survey question 6, which asked respondents how many full- or part- time inspectors are employed at their stations. A “full- time inspector” is a full- time employee qualified to perform inspections. Full- time inspectors may spend all, some, or just a little of their work time doing inspections. A “part- time inspector” is a part- time employee qualified to do inspections, who likewise may spend only some working time doing inspections. The majority of respondents reported employing one, two, or three inspectors at their stations. The highest number of inspectors a test- only station reported employing was six, while the highest number a T&R station reported was nine.

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

Number of Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
1	5	45.5%
2	3	27.3%
3	2	18.2%
6	1	9.1%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
1	8	30.8%
2	8	30.8%
3	5	19.2%
4	1	3.8%
5	3	11.5%
9	1	3.8%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

These tables show that El Paso–area stations tend to hire more full- time than part- time emissions inspectors. Only 9 percent of test- only stations reported having any part- time inspectors, compared to 19 percent of T&R stations.

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

Number of FT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
1	6	54.5%
2	3	27.3%
3	1	9.1%
6	1	9.1%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
1	10	38.5%
2	9	34.6%
3	3	11.5%
5	3	11.5%
9	1	3.8%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

\*Full-time employees who perform inspections as all or part of their duties.

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

Number of PT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
0	10	90.9%
2	1	9.1%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
0	21	80.8%
1	4	15.4%
2	1	3.8%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

\*Part-time employees who perform inspections as all or part of their duties.

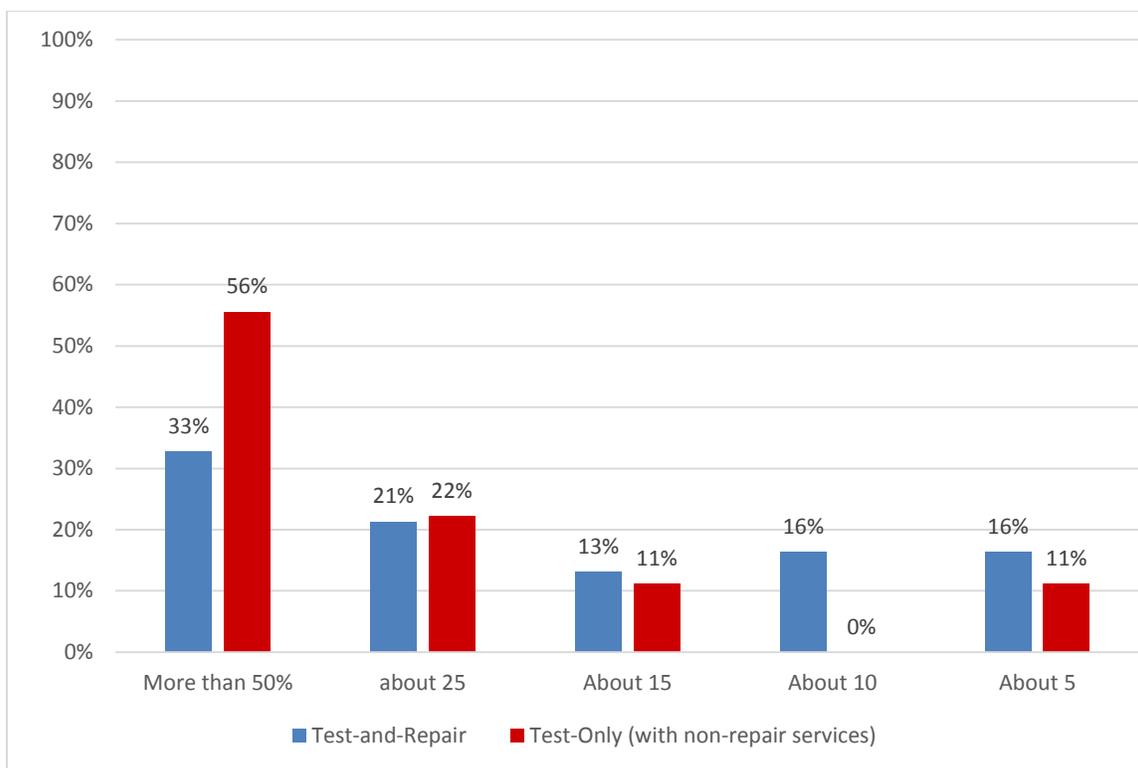
To explore the extent to which stations offering other services focus on services other than emissions inspections, survey questions 9 and 10 asked how much time inspectors spend performing emissions inspections. Table IV- 10 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full- time inspector spending at least half- time conducting inspections. Nearly two- thirds of test- only stations do not offer other non- repair services, and the majority of those that do have at least one full- time inspector working at least half- time conducting inspections. Over half of T&R stations offer both repair and non- repair services in addition to emissions testing. About 75 percent of T&R stations have at least one full- time inspector conducting inspections at least half- time.

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

Station Type	All Stations		Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 50% of the Time		Number of Inspectors	
	Count	Percent of Station Type	Count	Percent of Station Type	Full-Time	Part-Time
<b>Test-Only</b>	<b>11</b>	—	—	—	<b>21</b>	<b>2</b>
No other services	7	64%	NA	NA	12	2
Non-repair services	4	36%	3	75%	9	0
<b>Test-and-Repair</b>	<b>26</b>	—	<b>16</b>	<b>62%</b>	<b>61</b>	<b>6</b>
Repair services only	15	58%	11	73%	29	2
Repair and non-repair services	11	42%	5	45%	32	4
<b>Total</b>	<b>37</b>	—	—	—	<b>82</b>	<b>8</b>

Figure IV- 2 shows the distribution of full- time inspectors by percent of time doing inspections. For T&R, this shows that labor is not only for inspections. Thus, ERG made the assumption that inspectors are doing other work when not inspecting vehicles, and this time does not have to be included in the cost model (i.e., this justifies only including inspection time).

**Figure IV-2. Full-Time Inspectors\* by Percent of Time Spent Doing Inspections — El Paso**



\*Full-time employees who perform inspections as all or part of their duties.

Survey questions 11 through 13 addressed the revenue stream for T&R stations generated from repairs to vehicles that failed emissions inspections. These questions were applicable only to T&R stations; consequently, the results in Table IV- 11 to Table IV- 13 represent only T&R stations.

As Table IV- 11 shows, over half of the stations reported that less than 10 percent of their income came from failed emissions repairs; meanwhile, 11.5 percent of the stations reported that about 50 percent of their revenue was generated from repairs following failed emissions inspections.

**Table IV-11. Percentage of Repair Revenues Resulting from Failed Emissions Inspections — El Paso**

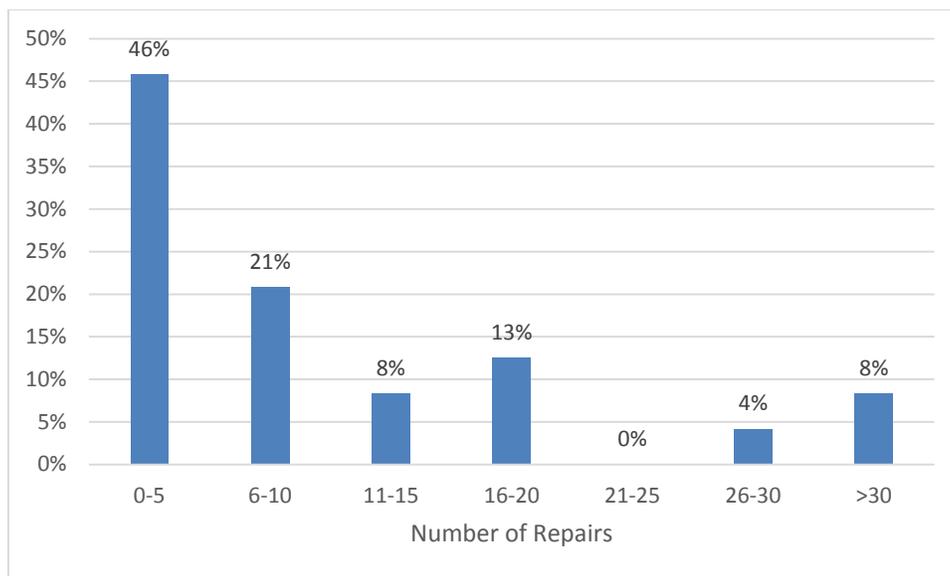
Percentage	Number of Respondents	Percent
0% — perform inspections only	1	3.8%
Less than 10%	14	53.8%
About 25%	8	30.8%
About 50%	3	11.5%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

Table IV- 12 shows that the average number of repair jobs per month is 12.4, while the median is 6.5 repair jobs per month. The interquartile range is fairly wide, such that the middle half of the data falls between 2.5 and 17.5 repair jobs per month from failed emissions tests. Figure IV- 3 shows the distribution of the responses in a histogram. Table IV- 13 shows that the average cost of such a repair was \$109, with a median value of \$100. Figure IV- 4 shows the distribution of these responses in a histogram. 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 as discussed in Section VIII.D.

**Table IV-12. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests — El Paso**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
2.5	6.5	17.5	12.4	24

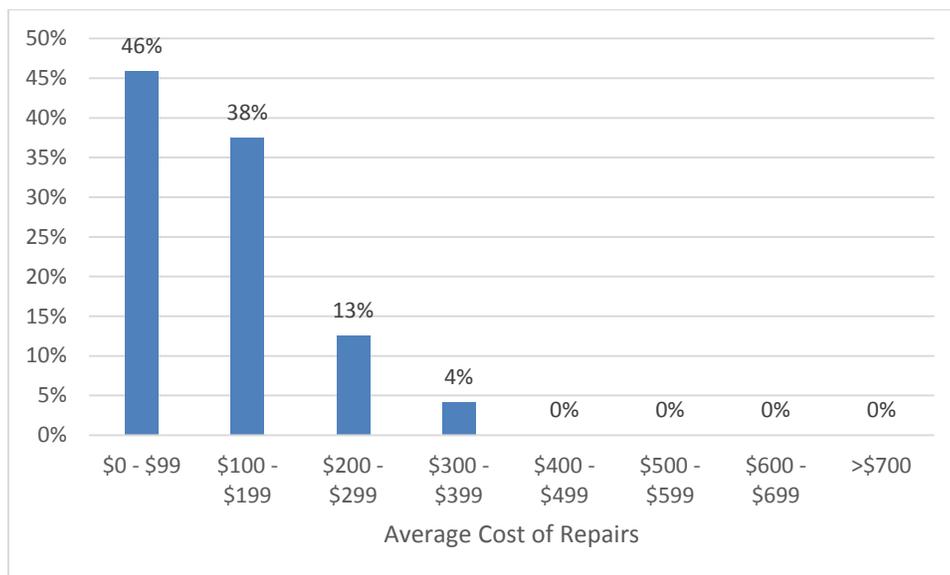
**Figure IV-3. Distribution of Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests — El Paso**



**Table IV-13. Typical Repair Costs for an Emissions Test Failure — El Paso**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
\$62.50	\$100	\$127.50	\$109	24

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



Survey question 15 asked stations how they financed their purchase of emissions inspection equipment. Of the test-only stations that responded, 27.3 percent reported

paying cash, 45.5 percent financed with lease- to- purchase agreements, and 27.3 percent took out a loan from the bank. As shown in Table IV- 14, in the case of T&R station respondents, 34.6 percent paid with cash, another 42.3 percent financed with lease- to- purchase agreements, and 23.1 percent took out loans from the bank. 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 results from survey questions 16 and 17 (regarding financing details for these arrangements) are used in the model.

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

Station and Finance Type	Number of Respondents	Percent
<b>Test-Only</b>		
Paid cash	3	27.3%
Lease-to-purchase agreement arranged with vendor	5	45.5%
Loan from bank	3	27.3%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Paid cash	9	34.6%
Lease-to-purchase agreement arranged with vendor	11	42.3%
Loan from bank	6	23.1%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

Table IV- 15 shows that the average lease- to- purchase or bank loan term is 4.7 years for test- only stations and 5.4 years for T&R stations, both with a median of 5 years. Figure IV- 5 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**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	4	5	5	4.7	7
Test-and-repair	4	5	5	5.4	14

**Figure IV-5. Distribution of Lease-to-Purchase or Bank Loan Term (Years) — El Paso**

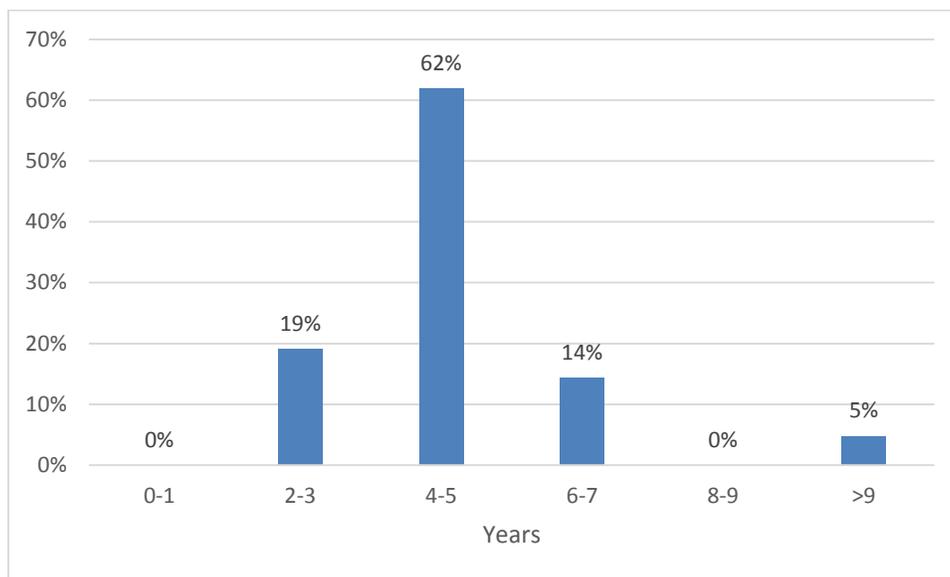


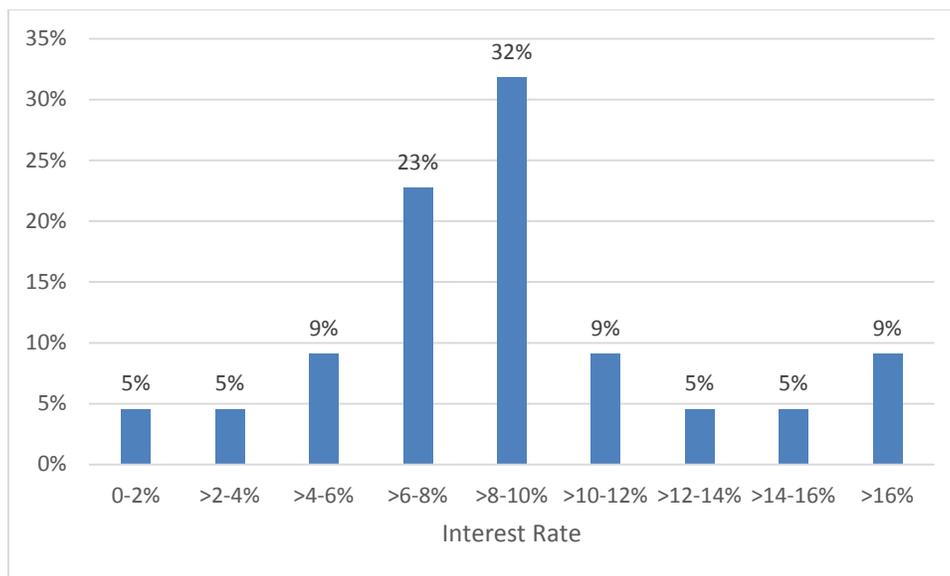
Table IV- 16 shows the lease- to- purchase or bank loan interest rates asked about in survey question 17. Test- only stations reported a 6.4 percent and 6.0 percent average and median, respectively, while the average and median reported values for T&R stations were 11.1 percent and 10.0 percent, respectively.

Figure IV- 6 shows the distribution of these loan terms for test- only and T&R stations combined.

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

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	3.8%	6.0%	10.0%	6.4%	7
Test-and-repair	8.0%	10.0%	13.0%	11.1%	15

**Figure IV-6. Distribution of the Interest Rates for Lease-to-Purchase or Bank Loan — El Paso**



The survey also addressed the annual maintenance costs for all stations. Table IV- 17 summarizes the answers to survey question 19, which show a median cost of roughly \$2,000 annually for a maintenance package for both test- only and T&R stations. Of the 26 T&R survey respondents, 10 (38 percent) confirmed they have a maintenance plan, and of the 11 test- only respondents, three (27 percent) confirmed they have a maintenance plan.

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

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$1,200	\$2,000	\$3,000	\$2,067	3
Test-and-repair	\$2,000	\$2,001	\$2,700	\$3,770	10

Additionally, the survey asked stations with maintenance agreements about extra maintenance costs they incurred that were not covered by their agreement. Table IV- 18 shows the median reported value of these costs was \$550 annually for T&R stations and \$0 annually for test- only stations. The cost model assumes that all stations have an annual maintenance package with additional expenses outside the package.

**Table IV-18. Extra Maintenance Costs for Stations with Maintenance Plans (2015) — El Paso**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$0	\$0	\$200	\$67	3
Test-and-repair	\$200	\$550	\$850	\$820	10

Survey questions 24 and 25 asked stations whether they offer reduced-fee and/or free emissions inspections (other than performing free retests of vehicles that failed initial inspection at their station). Table IV-19 and Table IV-20 show that one test-only station reported providing a free test (other than free retests after an initial failure at their station), and no stations reported providing a reduced fee (under \$11.50) test. Similarly, only two T&R stations reported providing free emissions inspections (other than free retests after an initial failure at their station), and only one provided tests at reduced fees. The stations reported that not charging for failed emissions inspections was the primary reason for providing free emissions inspections. However, it is unclear whether these stations are referring to retests they are required to give within 15 days of a failed inspection (a misinterpretation of the question) or retests outside that window that they are not required to give for free.

**Table IV-19. Free Emissions Tests (Except Free Retests) — El Paso**

Free Tests Ever Given?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	1	9.1%
No	10	90.9%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	2	7.7%
No	24	92.3%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

**Table IV-20. Reduced Fee Emissions Tests (Less Than \$11.50) — El Paso**

Charged Less Than \$11.50?	Number of Respondents	Percent
<b>Test-Only</b>		
No	11	100.0%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	1	3.8%
No	25	96.2%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

As shown in Table IV-21, the one station that reported charging a reduced fee for an emissions inspection reported \$7 as the lowest fee it would ever charge. Though this

information does not feed into the cost model, it is an indicator on the adequacy of the fee.

**Table IV-21. Typical Reduced Fees Charged (Less Than \$11.50) — El Paso**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
\$7	\$7	\$7	\$7	1

Survey question 21 asked respondents about emissions testing equipment that they had decommissioned after owning it for its entire useful life. Table IV- 22 summarizes the results. For both test- only and T&R stations, the majority of respondents had not decommissioned emissions testing equipment that they had owned for its entire useful life.

**Table IV-22. Stations that Decommissioned Emissions Testing Equipment - El Paso**

Ever Decommissioned Equipment?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	1	9.1%
No	9	81.8%
Missing	1	9.1%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	8	30.8%
No	18	69.2%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

Survey question 22 inquired about the number of years the decommissioned equipment was owned and the cost to the station of decommissioning the equipment. The responses to these questions are summarized in Table IV- 23 and Table IV- 24, respectively. It should be noted that, due to the small number of responses to these questions, these results are not likely to be particularly representative of the industry as a whole. Further, it is possible that some stations sell used or barely working equipment, so, in the absence of additional information, neither a cost nor a revenue is being used in the cost model at this time.

**Table IV-23. Years Decommissioned Equipment Was Owned — El Paso**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	4	4	4	4	1
Test-and-repair	5	7.5	11	8.25	8

**Table IV-24. Cost to Decommission Equipment - El Paso**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$10,000	\$10,000	\$10,000	\$10,000	1
Test-and-repair	\$200	\$4,000	\$5,000	\$3,284	6

The final question of the survey asked respondents whether the fee for emissions inspections covers their costs associated with emissions inspections. As shown in Table IV- 25, the majority of the respondents answered “no”; 72.7 percent of test-only stations and 73.1 percent of T&R stations responded that 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-25. Does Fee Cover Emissions Testing Costs? — El Paso**

Fee Covers Testing Costs?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	3	27.3%
No	8	72.7%
<b>Total</b>	<b>11</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	6	23.1%
No	19	73.1%
<i>Missing</i>	1	3.8%
<b>Total</b>	<b>26</b>	<b>100.0%</b>

## V. ARR SURVEY RESULTS

This section of the report 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.) Survey responses are not explained for basic questions about the station or information that is not highly relevant to the analysis of the emissions inspection fee. The information in this section’s tables was obtained from stations that responded to the 2016 survey. 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 percent. As noted in Chapter II, 18 test-only stations in ARR submitted surveys, compared to 62 T&R stations, so caution should be taken in assessing these data due to the small sample size.

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
<b>Test-Only</b>					
Monday	8:00am	6:00pm	9.3	17	1
Tuesday	8:00am	6:00pm	9.5	16	2
Wednesday	8:00am	6:00pm	9.2	18	0
Thursday	8:00am	6:00pm	9.2	18	0
Friday	8:00am	6:00pm	9.2	18	0
Saturday	9:00am	4:00pm	8	17	1
Sunday	10:00am	3:00pm	5	5	13
<b>Test-and-Repair</b>					
Monday	7:30am	6:00pm	10	61	1
Tuesday	7:30am	6:00pm	10	62	0
Wednesday	7:30am	6:00pm	10	62	0
Thursday	7:30am	6:00pm	10	62	0
Friday	7:30am	6:00pm	10	62	0
Saturday	8:00am	5:00pm	8.3	40	22
Sunday	9:00am	5:00pm	8	3	59

This year’s survey asked respondents to estimate the average length of time it takes to conduct emissions testing, by test type. Figure V- 1 shows the distribution of survey

responses regarding testing times (in minutes) for OBD tests and TSI tests. No stations reported testing times greater than 45 minutes. The median length of the OBD test is 15 minutes while the median length of the TSI test is 20 minutes.

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

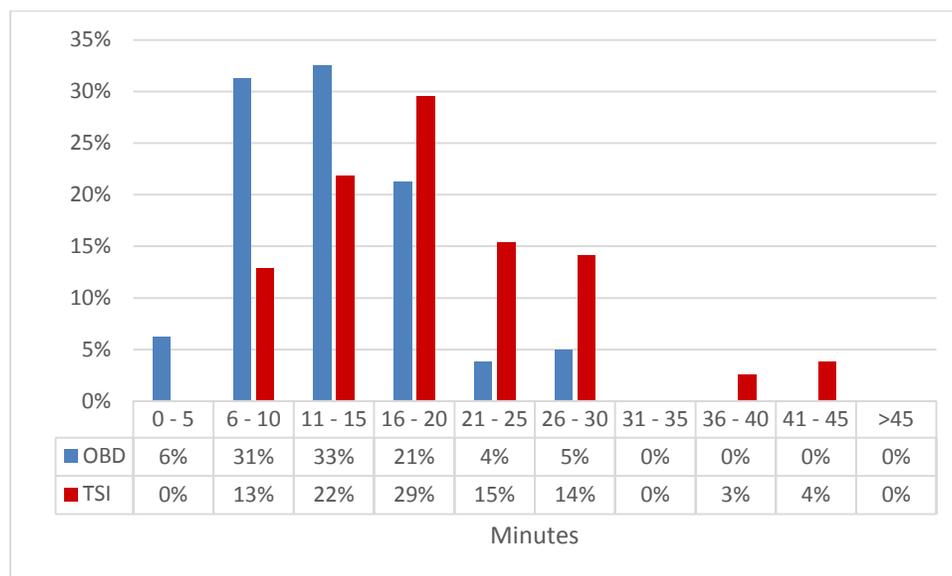


Table V- 2 summarizes responses to survey question 14, regarding items acquired in the station’s transition to offering emissions inspections; the responses here give a sense of what to look at in the analytical cost model. All test- only stations reported purchasing emissions inspection equipment, as did the majority of T&R stations. More than half of stations of either type reported purchasing tools and other equipment, while more test- only stations than T&R stations reported purchasing building space. Less than 15 percent of all stations reported purchasing land. As a result, in the analytical model, ERG included emissions testing equipment and tools or other equipment purchases, provided model results both with and without building space purchases, and did not include the cost of land acquired.

**Table V-2. Items Added or Acquired to Initiate Emissions Testing — ARR**

Item Acquired	Number of Responses		
	Yes	No	Total
<b>Test-Only</b>			
Emissions testing equipment	18	0	18
Tools and other equipment	11	7	18
Building space	14	4	18
Land	5	13	18
<b>Test-and-Repair</b>			
Emissions testing equipment	54	8	62
Tools and other equipment	34	28	62
Building space	11	51	62
Land	6	56	62

Survey question 14 also addressed emissions- test-related costs for purchasing or acquiring space and equipment. Table V- 3 summarizes the survey findings, showing the median costs per station for emissions inspection equipment, tools, other equipment, and building space. The median values of \$16,000 and \$17,000 for emissions inspection equipment (for test- only and T&R stations, respectively) coincide fairly well with the price of a single new certified TSI/OBD analyzer, which typically ranges from \$15,495 to \$15,995 (TCEQ, 2016). As a result of some very high maximum values (e.g., \$150,000 for building space), the average costs for each of these items is significantly higher than the median. Therefore, the median values are probably more representative of a typical station.

**Table V-3. Costs of Added or Acquired Items — ARR**

Item Acquired	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Test-Only</b>					
Emissions testing equipment	\$14,000	\$16,000	\$20,000	\$17,931	17
Tools and other equipment	\$300	\$1,000	\$3,000	\$3,433	11
Building space	\$4,000	\$10,000	\$14,700	\$22,985	13
Land	\$50,000	\$140,000	\$175,000	\$117,570	5
<b>Test-and-Repair</b>					
Emissions testing equipment	\$15,000	\$17,000	\$20,000	\$22,070	51
Tools and other equipment	\$500	\$650	\$5,000	\$4,823	31
Building space	\$2,250	\$6,200	\$53,500	\$49,988	8
Land	\$2,000	\$25,000	\$200,000	\$75,667	3

Table V- 4 and Table V- 5 summarize the results from survey question 5, regarding the number of emissions inspection bays at each station and the uses for those bays. Table V 4 shows how many bays in the station are used exclusively for emissions testing,

while Table V- 5 counts the bays used for emissions testing in addition to other uses. The majority of stations in ARR, both test- only and T&R, have one bay each used exclusively for emissions testing. Most test- only stations (83 percent) and over half of T&R stations do not have any additional bays that are used for testing in addition to other uses. Therefore, in the cost model, ERG assumed one piece of testing equipment based on one bay.

**Table V-4. Number of Bays Used Exclusively for Testing — ARR**

Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>		
1	12	66.7%
2	6	33.3%
<b>Total</b>	18	100.0%
<b>Test-and-Repair</b>		
0	15	24.2%
1	43	69.4%
2	3	4.8%
3	1	1.6%
<b>Total</b>	62	100.0%

**Table V-5. Number of Bays Used for Testing and Other Uses — ARR**

Number of Bays	Number of Respondents	Percent
<b>Test-Only</b>		
0	15	83.3%
1	1	5.6%
2	2	11.1%
<b>Total</b>	18	100.0%
<b>Test-and-Repair</b>		
0	38	61.3%
1	18	29.0%
2	6	9.7%
<b>Total</b>	62	100.0%

Survey question 7 asked about average hourly wages (unloaded) paid to emissions inspectors, as well as per- test commissions paid (if any). 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- 6 summarizes the responses regarding these wages, by type. Median hourly wages are slightly higher at T&R stations (\$12.00) than test- only stations (\$11.00), and the interquartile ranges for these data are also narrow (\$10 to \$12 for test- only and \$10 to \$14 for T&R), indicating that the middle half of stations pay a very similar rate to inspectors. For comparison, the average wage values (\$11.82 for test- only stations and \$12.21 for T&R stations) fall just around the \$11.52 average hourly wage shown for the

ARR area for level 1 auto service technicians and mechanics, as reported by the Foreign Labor Certification Data Center (FLC, 2016).

**Table V-6. Current Wages Paid to Emissions Inspectors,  
 Hourly (\$/hr.) and Per-Test — ARR**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
<b>Hourly/Salary</b>					
Test-only	\$10	\$11	\$12	\$11.82	14
Test-and-repair	\$10	\$12	\$14	\$12.21	50
<b>Per-Test</b>					
Test-only	\$1	\$3.50	\$10	\$6.25	6
Test-and-repair	\$1.50	\$5.13	\$7.50	\$4.83	18

Table V- 7, Table V- 8, and Table V- 9 summarize the answers to survey question 6, which asked respondents how many full- and part- time inspectors were employed at their stations. A “full- time inspector” is a full- time employee qualified to perform inspections. Full- time inspectors may spend all, some, or just a little of their work time doing inspections. A “part- time inspector” is a part- time employee qualified to do inspections, who likewise may spend only some working time doing inspections. The majority of respondents reported employing one, two, or three inspectors at their stations. The highest number of emissions inspectors reported by a test- only station was five; the highest number a T&R station reported was 30.

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

Number of Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
1	5	27.8%
2	4	22.2%
3	2	11.1%
4	5	27.8%
5	2	11.1%
<b>Total</b>	<b>18</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
1	12	19.4%
2	19	30.6%
3	14	22.6%
4	5	8.1%
5	2	3.2%
7	2	3.2%
8	2	3.2%
9	1	1.6%
10	1	1.6%
11	2	3.2%
28	1	1.6%
30	1	1.6%
<b>Total</b>	<b>62</b>	<b>100.0%</b>

The tables show that ARR- area stations tend to employ more full- time than part- time emissions inspectors. This is especially true for T&R stations, only 19.4 percent of which reported having any part- time employees, and those that did had six or fewer. No test- only stations reported employing more than three part- time inspectors. As a result, the cost model assumes all inspectors receive benefits. This could result in a slight overestimate of the break- even number of stations, as some stations hire part- time labor, who may not receive benefits.

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

Number of FT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
0	1	5.6%
1	8	44.4%
2	2	11.1%
3	1	5.6%
4	5	27.8%
5	1	5.6%
<b>Total</b>	18	100.0%
<b>Test-and-Repair</b>		
0	3	4.8%
1	14	22.6%
2	17	27.4%
3	14	22.6%
4	4	6.5%
5	2	3.2%
6	1	1.6%
7	1	1.6%
8	1	1.6%
9	1	1.6%
10	1	1.6%
11	2	3.2%
30	1	1.6%
<b>Total</b>	62	100.0%

\*Full-time employees who perform inspections as all or part of their duties.

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

Number of PT Inspectors	Number of Respondents	Percent
<b>Test-Only</b>		
0	12	66.7%
1	4	22.2%
2	1	5.6%
3	1	5.6%
<b>Total</b>	18	100.0%
<b>Test-and-Repair</b>		
0	50	80.6%
1	8	12.9%
2	2	3.2%
3	1	1.6%
28	1	1.6%
<b>Total</b>	62	100.0%

\*Part-time employees who perform inspections as all or part of their duties.

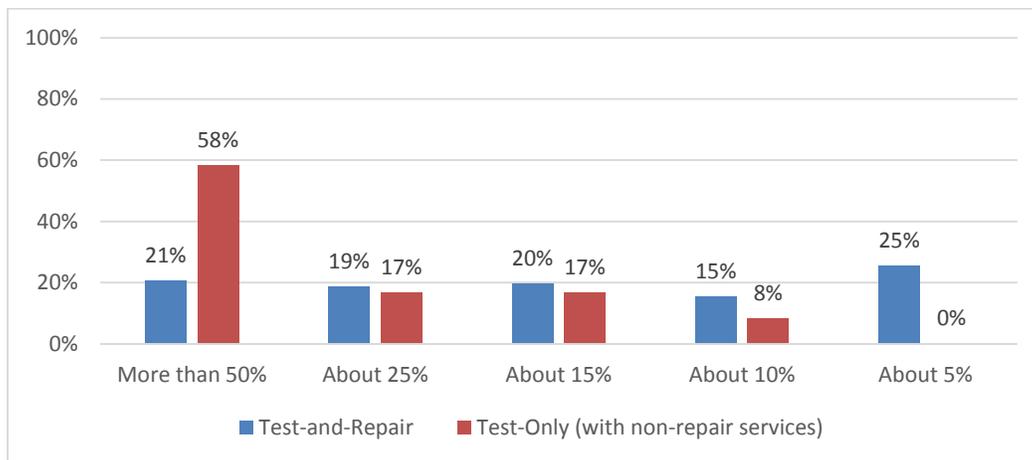
To explore the extent to which stations offering other services focus on services other than emissions inspections, survey questions 9 and 10 asked how much time inspectors spend performing emissions inspections. Table V- 10 shows the number of stations and total numbers of inspectors by services offered, as well as how many of those stations employ at least one full-time inspector spending at least half-time conducting inspections. Nearly three-quarters of test-only stations do not offer other non-repair services, and the majority of those that do have at least one full-time inspector working at least half-time conducting inspections. Over half of T&R stations offer both repair and non-repair services in addition to emissions testing. About half of T&R stations have at least one full-time inspector conducting inspections at least half-time.

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

Station Type	All Stations		Stations Employing at Least One Full-Time Inspector Conducting Inspections at Least 50% of the Time		Number of Inspectors	
	Count	Percent of Station Type	Count	Percent of Station Type	Full-Time	Part-Time
<b>Test-Only</b>	<b>18</b>	—	—	—	<b>40</b>	<b>9</b>
No other services	13	72%	NA	NA	28	7
Non-repair services	5	28%	4	80%	12	2
<b>Test-and-Repair</b>	<b>62</b>	—	<b>30</b>	<b>48%</b>	<b>208</b>	<b>43</b>
Repair services only	23	37%	10	43%	83	6
Repair and non-repair services	39	63%	20	51%	125	37
<b>Total</b>	<b>80</b>	—	—	—	<b>248</b>	<b>52</b>

Figure V- 2 shows the distribution of full- time inspectors by percent of time doing inspections. For T&R, this shows that labor is not only for inspections. Thus, ERG made the assumption that inspectors are doing other work when not inspecting vehicles, and this time does not have to be included in the cost model (i.e., this justifies only including incremental inspection time).

**Figure V-2. Full-Time Inspectors\* by Percent of Time Spent Doing Inspections — ARR**



\*Full-time employees who perform inspections as all or part of their duties.

Survey questions 11 through 13 addressed the revenue stream for T&R stations generated from repairs to vehicles that failed emissions inspections. These survey questions were applicable only to T&R stations; consequently, the results in Table V- 11 to Table V- 13 represent only T&R stations.

As Table V- 11 shows, about 70 percent of stations reported that less than 10 percent of their income came from repairs following failed emissions inspections. Only one station reported generating more than about 25 percent of its income from repairs after failed emissions inspections.

**Table V-11. Percentage of Repair Revenues Resulting from Failed Emissions Inspections — ARR**

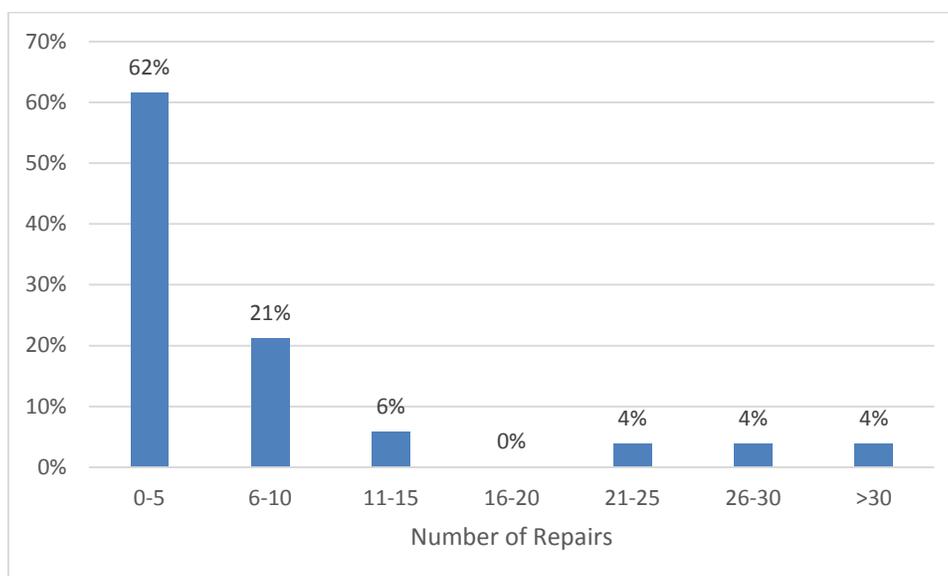
Percentage	Number of Respondents	Percent
0% — perform inspections only	6	9.7%
Less than 10%	44	71.0%
About 25%	10	16.1%
About 50%	1	1.6%
Missing	1	1.6%
Total	62	100.0%

Table V- 12 shows that the average number of repair jobs per month is 11.6 and the median value is 5, and Figure V- 3 shows the distribution of the responses in a histogram. Table V- 13 shows that the average cost of such a repair is about \$208 with a median value of \$200, and Figure V- 4 shows the distribution of these responses in a histogram. This only gives insight into the gross revenue generated by repairs from failed inspections; it does not provide any insight as 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 found in Section VIII.D. Among the stations indicating an average number of repair jobs above the 75th percentile (10), most reported averaging between 15 and 30 repair jobs per month. However, one reported an average of 50 and another reported an average of 200 repair jobs per month. These high values contribute to a much higher average relative to the median. It is possible that these stations misinterpreted the question and responded with their total number of repair jobs per month, including those not related to emissions inspections.

**Table V-12. Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests — ARR**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
2	5	10	11.6	52

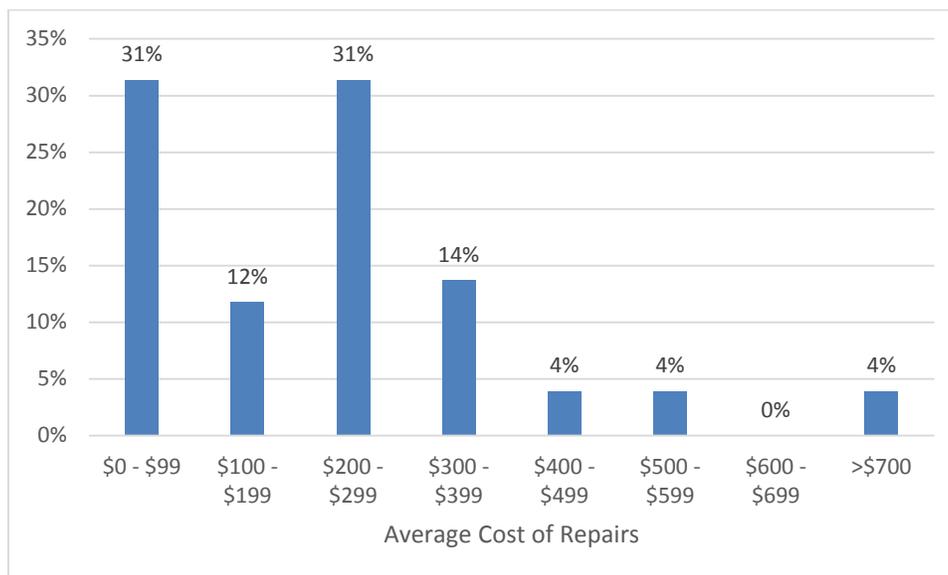
**Figure V-3. Distribution of Typical Number of Repair Jobs per Month Resulting from Failed Emissions Tests — ARR**



**Table V-13. Typical Repair Cost for an Emissions Test Failure — ARR**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
\$55	\$200	\$300	\$208	51

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



Survey question 15 asked stations how they financed their purchase of emissions inspection equipment. Of the test-only stations that responded, 61 percent reported paying cash, 28 percent financed with lease-to-purchase agreements, and 11 percent took out bank loans. In contrast, 52 percent of T&R stations reported paying cash, 26 percent financed with lease-to-purchase agreements, and 16 percent took out loans from the bank. For the cost model, while a slight majority paid cash, it is assumed that stations have a financing mechanism (loan or lease-to-purchase agreement) for acquiring inspection equipment, so the survey results from survey questions 16 and 17 (regarding financing details for these arrangements) are used in the model. This cautiously assumes a higher price of doing business than paying cash; however, it is not substantially higher as stations lose the opportunity of investing that cash.

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

Station and Finance Type	Number of Respondents	Percent
<b>Test-Only</b>		
Paid cash	11	61.1%
Lease-to-purchase agreement arranged with vendor	5	27.8%
Bank loan	2	11.1%
<b>Total</b>	18	100.0%
<b>Test-and-Repair</b>		
Paid cash	32	51.6%
Lease-to-purchase agreement arranged with vendor	16	25.8%
Bank loan	10	16.1%
<i>Missing</i>	4	6.5%
<b>Total</b>	62	100.0%

Table V- 15 shows the typical lease- to- purchase or bank loan terms for test- only and T&R stations combined (due to small sample sizes for each station type). The median term is 5 years and the average is 5.6. The interquartile range for these data is also narrow (4 to 5 years), indicating that the middle half of stations have very similar loan terms. Figure V- 5 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**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
4	5	5	5.6	24

**Figure V-5. Distribution of Lease-to-Purchase or Bank Loan Term (Years) — ARR**

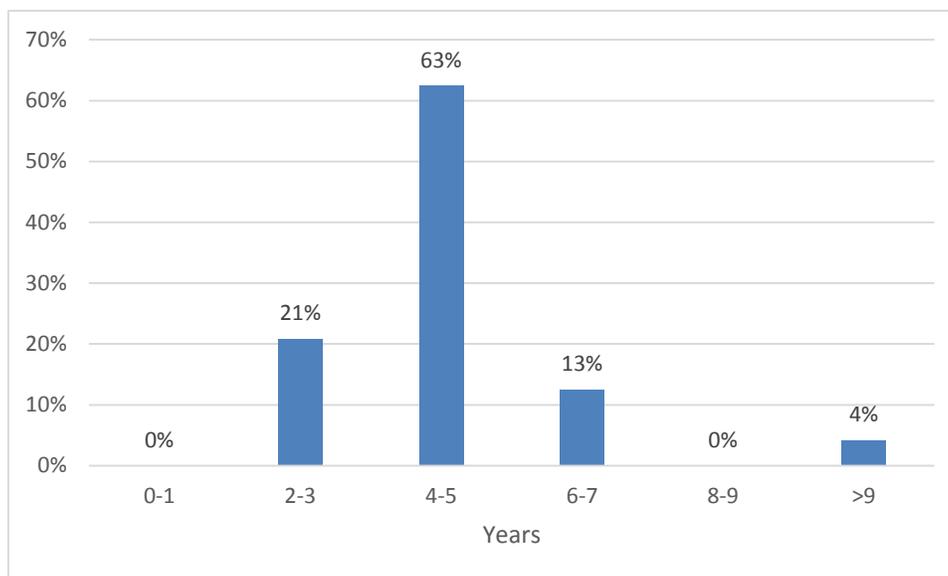
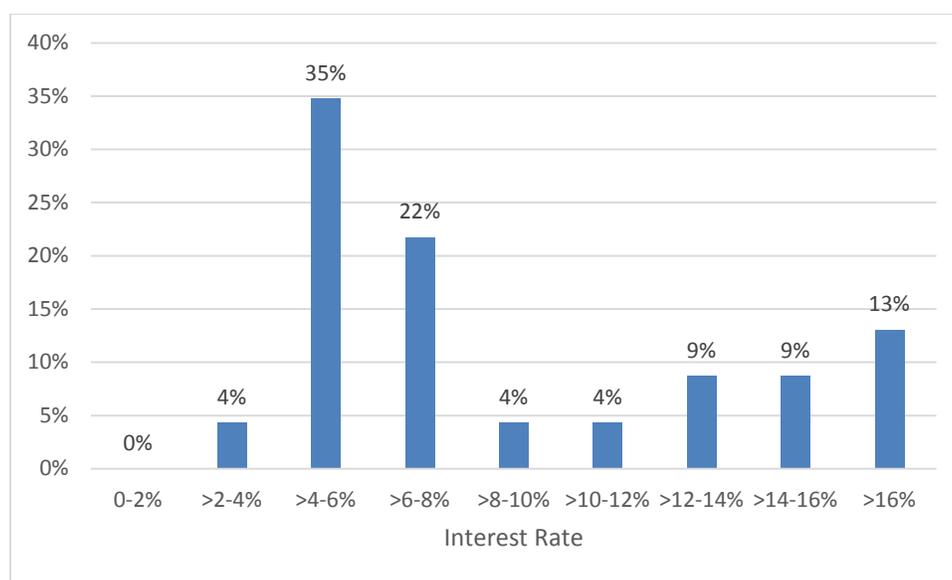


Table V- 16 shows the lease- to- purchase or bank loan interest rates, asked about in survey question 17. Test- only and T&R stations reported median values of 5 percent and 9 percent, respectively. The interquartile range (middle half of the data) is from 4.9 to 7 percent for test- only stations and 6 to 15 percent for T&R stations. Figure V- 6 shows the distribution of these loan interest rates for test- only and T&R stations combined.

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

Station Type	25 <sup>th</sup> Percentile	Median	75 <sup>th</sup> Percentile	Average	Responses
Test-only	4.9%	5.0%	7.0%	5.6%	5
Test-and-repair	6.0%	9.0%	15.0%	11.8%	18

**Figure V-6. Distribution of Interest Rates for Lease-to-Purchase or Bank Loan — ARR**



The survey also addressed the annual maintenance costs for all stations. Table V- 17 summarizes the responses to survey question 19, which show that test- only and T&R stations pay about the same median cost annually for a maintenance package for their emissions inspection equipment — \$1,878 and \$1,809, respectively. Of the 62 T&R survey respondents, 28 (45 percent) confirmed they have a maintenance plan, and of the 18 test- only respondents, 13<sup>8</sup> (72 percent) confirmed they have a maintenance plan (survey question 18).

<sup>8</sup> One station reporting a maintenance plan did not provide cost information for their annual maintenance plan or extra maintenance.

**Table V-17. Annual Maintenance Package Costs — ARR**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$1,680	\$1,878	\$2,400	\$2,139	12
Test-and-repair	\$1,610	\$1,809	\$2,250	\$2,009	28

Additionally, stations that reported purchasing a maintenance agreement also reported any extra maintenance costs not covered by their maintenance agreement. The median reported value of these additional annual costs was \$500 for T&R stations and \$2,000 for test-only stations. Based on this survey information, the cost model assumes that all stations have an annual maintenance package with additional expenses outside the package.

**Table V-18. Extra Maintenance Costs for Stations with Maintenance Plans (2015) — ARR**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$750	\$2,000	\$3,250	\$2,129	12
Test-and-repair	\$297	\$500	\$1,100	\$1,186	27

Survey questions 24 and 25 asked stations whether they offer reduced-fee and/or free emissions inspections (other than performing free retests of vehicles that failed initial inspection at their station). Table V-19 shows that 22.2 percent of test-only stations reported providing free emissions inspections at some point, but Table V-20 shows that none reported having offered emissions inspections at reduced fees (under \$11.50). In comparison, 8.1 percent of T&R stations reported having provided free tests (other than free retests after an initial failure), and none reported offering emissions inspections at reduced fees.

Stations reported several reasons for offering free emissions inspections, including rewarding regular customers and occasional promotions.

**Table V-19. Free Emissions Tests (Except Free Retests) — ARR**

Free Tests Ever Given?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	4	22.2%
No	13	72.2%
Missing	1	5.6%
<b>Total</b>	<b>18</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	5	8.1%
No	57	91.9%
<b>Total</b>	<b>62</b>	<b>100.0%</b>

**Table V-20. Reduced Fee Emissions Tests (Less Than \$11.50) — ARR**

Charged Less Than \$11.50?	Number of Respondents	Percent
<b>Test-Only</b>		
No	18	100.0%
<b>Total</b>	<b>18</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
No	61	98.4%
Missing	1	1.6%
<b>Total</b>	<b>62</b>	<b>100.0%</b>

Again, as shown in Table V- 21, no stations reported ever charging a reduced fee for an emissions inspection (outside of free retests for a previously failed vehicle). 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 sufficiently high.

**Table V-21. Typical Reduced Fees Charged (Less Than \$11.50) — ARR**

25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
\$0	\$0	\$0	\$0	0

Survey question 21 asked respondents about emissions testing equipment that they had decommissioned after owning it for its entire useful life. Table V- 22 summarizes the results regarding whether stations had ever decommissioned such equipment. For both test- only and T&R stations, the majority of respondents had not decommissioned emissions testing equipment that they had owned for its entire useful life.

**Table V-22. Stations That Decommissioned Emissions Testing Equipment — ARR**

Ever Decommissioned Equipment?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	2	11.1%
No	16	88.9%
<b>Total</b>	<b>18</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	3	4.8%
No	58	93.5%
Missing	1	1.6%
<b>Total</b>	<b>62</b>	<b>100.0%</b>

Survey question 22 inquired about the number of years the decommissioned equipment was owned and the cost to the station of decommissioning the equipment. The responses to these questions are summarized in Table V- 23 and Table V- 24, respectively. It should be noted that, due to the small number of responses to these

questions, these results are not likely to be particularly representative of the industry as a whole. Further, it is possible that some stations sell used or barely working equipment, so, in the absence of additional information, neither a cost nor a revenue is being used in the cost model at this time.

**Table V-23. Years Decommissioned Equipment Was Owned — ARR**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	5	7.5	10	7.5	2
Test-and-repair	4	4	10	6	3

**Table V-24. Cost to Decommission Equipment – ARR**

Station Type	25 <sup>th</sup> Percentile	50 <sup>th</sup> Percentile (Median)	75 <sup>th</sup> Percentile	Average	Responses
Test-only	\$0	\$7,000	\$14,000	\$7,000	2
Test-and-repair	\$1,000	\$5,500	\$7,000	\$4,500	3

The final question of the survey asked respondents whether the fee for emissions inspections covers their costs associated with emissions inspections. As illustrated in Table V- 25, the majority of the respondents answered “no”: 77.8 percent of test-only stations and 72.6 percent of T&R stations responded that 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-25. Does Fee Cover Emissions Testing Costs? — ARR**

Fee Covers Testing Costs?	Number of Respondents	Percent
<b>Test-Only</b>		
Yes	4	22.2%
No	14	77.8%
<b>Total</b>	<b>18</b>	<b>100.0%</b>
<b>Test-and-Repair</b>		
Yes	17	27.4%
No	45	72.6%
<b>Total</b>	<b>62</b>	<b>100.0%</b>

## VI. COST MODEL ANALYSES

This chapter presents the results of the “model station” and “break-even” cost analyses performed for four geographic area/test type combinations:

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

This chapter summarizes the results of the break-even and model station analyses, presents the applicable costs and revenues that feed into both of the cost models, and 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 equipment and building costs. As shown in Table VI- 3, between 25 and 43 percent in each program area had incurred building costs due to emissions inspections; thus, the equipment-only scenario is more representative of the industry. Additionally, the bay space is regularly used for safety tests and is thus it is not a definitive incremental cost of performing vehicle emissions inspection testing. Table VI- 1 summarizes the results of the break-even analyses. The proportion of stations that break even according to the model ranges from 90 to 93 percent in the HGB/DFW program areas, and 77 to 85 percent in the El Paso and ARR areas.

The model station analyses include representative small, medium, and large stations solely based on actual emissions inspections throughput from March 1, 2015, to February 29, 2016, for the 4,888 stations in the TCEQ vehicle emissions inspection database. The small station represents a station with emissions inspection throughput at the 25<sup>th</sup> percentile (1<sup>st</sup> quartile), the medium station represents a station with emissions inspection throughput at the 50<sup>th</sup> percentile (median), and the large station represents a station with emissions inspection throughput at the 75<sup>th</sup> percentile (3<sup>rd</sup> quartile).

The net revenue and total costs (fixed and variable) for these model stations are shown in Table VI-2. All station types are shown to have net revenue exceeding total costs. These models do not make a distinction between test- only and T&R stations (as the incremental emissions inspection costs are the same), but this section provides supplementary quantitative and qualitative analysis discussing how the generally higher throughput at test- only stations impacts 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**

	ARR	El Paso	HGB/DFW, OBD-Only	HGB/DFW, ASM/OBD
<b>Break-Even Number of Tests (per Month)</b>				
Including equipment costs	68	59	20	63
Including equipment and building costs	71	60	20	68
<b>Percent of Stations At/Above Break-Even Number</b>				
Including equipment costs	79%	85%	91%	93%
Including equipment and building costs	77%	85%	90%	92%

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

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
Small station net revenue	\$874	\$1,024	\$759	\$2,572
Small station total costs	\$843	\$803	\$478	\$1,566
Small stations net revenue – total cost*	\$31	\$220	\$281	\$1,006
Medium station net revenue	\$1,587	\$1,714	\$1,406	\$4,176
Medium station total costs	\$1,147	\$1,031	\$648	\$1,928
Medium station net revenue – total cost*	\$440	\$682	\$758	\$2,248
Large station net revenue	\$2,944	\$2,795	\$1,998	\$6,301
Large station total costs	\$1,726	\$1,388	\$803	\$2,406
Large station net revenue – total cost*	\$1,218	\$1,406	\$1,195	\$3,894

\*Totals may not be exact due to rounding.

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

Types of Costs Ever Incurred	ARR	El Paso	HGB/DFW, OBD-Only	HGB/DFW, ASM/OBD
Building costs	31%	43%	25%	41%

## 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, the TCEQ, and previous AirCheckTexas fee studies) and median values calculated from survey data provided by respondents from the given geographic 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 T&R and test- only 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, 2003; Cusick, 2012	11 years (from BEA service life estimate for “Service industry machinery, other than wholesale and retail trade”)
Building life: useful life	BEA, 2003; Cusick, 2012	34 years (from BEA estimate of service life for “Other commercial buildings”)
Dedicated telephone line: monthly cost (\$)	ERG, 2007	\$50 (reconfirmed with AT&T for business line cost; AT&T, 2016)
Electricity: monthly cost (\$)	ERG, 2007	\$40 (the TCEQ reconfirmed value in May 2016)
Communication with VID: number of transactions per inspection	Hoffman, 2009	2 (the TCEQ reconfirmed value in May 2016)
Communication with VID: cost per call (\$)	Hoffman, 2009	\$0.21 per call (the TCEQ reconfirmed value in May 2016)
Fringe benefits: % of total compensation	BLS, 2016	Total benefits make up 27.7% of total compensation
Computer ink and paper: cost per inspection (\$)	ERG, 2007	\$0.05 per inspection (the TCEQ reconfirmed value in May 2016)

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

Variable*	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
Building space — median purchase price	\$7,000	\$3,500	\$3,750	\$25,000
Testing equipment — median purchase price	\$16,750	\$14,000	\$8,950	\$40,000
Tools and other equipment — median purchase price	\$700	\$3,000	\$1,000	\$3,000
Maintenance agreement — median annual cost	\$1,827	\$2,000	\$875	\$4,112
Extra maintenance — median annual cost	\$600	\$450	\$200	\$1,000
Inspector wage — median hourly salary	\$11.75	\$9.00	\$12.00	\$10.00
Loan term — median length (years)	5	5	4	5
Loan rate — median amount (percent)	7%	9%	8%	8%
Retest rate for TSI test (percent)	20	20	NA	NA
Retest rate for OBD test (percent)	15	15	15	15
Retest rate for ASM test (percent)	NA	NA	NA	25

\*As was done in previous studies, land purchases were excluded from the survey because only a small number of stations reported incurring such incremental costs to perform emissions inspections.

ERG validated the survey data in Table VI- 5 with publicly available information. According to the Foreign Labor Certification Data Center (FLC, 2016), the average hourly wage for a level 1 auto service technician and mechanic is \$12.39 in Dallas, \$12.13 in Fort Worth, \$10.80 in Houston, \$9.33 in El Paso, and \$11.52 in ARR. These

values are all consistent with the median inspector wages reported by survey respondents (shown in Table VI- 5).

The costs of the certified analyzers and their maintenance agreements are also consistent with publicly available information (TCEQ, 2016). A new certified OBD- only analyzer costs \$7,195; a new certified ASM/OBD analyzer ranges between \$25,500 and \$37,500. As shown in Table VI- 5, the survey median values for stations purchasing certified OBD- only analyzers and ASM/OBD analyzers in the HGB/DFW program areas are reasonably close to the listed prices of the analyzers. 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 \$875), and one for an ASM/OBD analyzer ranges from \$3,998 to \$4,861 annually (survey median value of \$4,112) (TCEQ, 2016). 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, 2013), which is consistent with the survey median values of \$14,000 (El Paso) and \$16,750 (ARR). 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 values of \$2,000 (El Paso) and \$1,827 (ARR) (TCEQ, 2016).

Table VI- 6 presents the net fee by geographic area and test type. Offering emissions inspection is incremental to offering safety inspections; thus, the net revenue calculation only considers the net fee to the customer, 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**

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
<b>Net Fee</b>	\$11.50	\$11.50	\$18.50	\$24.50

The cost model assumes that testing equipment lasts 11 years, as outlined in Table VI- 4, and the equipment is paid off over the entire 11- year period and has no value at the end of the 11 years. Similarly, the cost model assumes that the station pays off the building space over a 34- year period, including interest, and the building space has no value at the end of the 34 years. 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 present the HGB/DFW- areas 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 41 (small throughput station), 76 (medium throughput station), and 108 (large throughput station). These emissions inspection throughputs correspond to the 25<sup>th</sup> percentile, 50<sup>th</sup> percentile (median), and 75<sup>th</sup> percentile of monthly emissions inspections per OBD- only station in the HGB/DFW program areas. As the table shows, the monthly revenues for small, medium, and large stations exceed monthly costs by \$281, \$758, and \$1,195, respectively.

Table VI- 9 presents the HGB/DFW- areas' break- even model analysis for OBD- only stations. This analysis calculates the number of inspections that it takes for revenue to equal costs, and 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 20 inspections per month to break even, and 91 percent of stations perform enough inspections to cover costs that include 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 20 inspections per month to break even, and 90 percent 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		<b>\$18.50</b>
Variable Costs	Cost	Per OBD Test
Communication with VID (cost per call)	\$0.21	\$0.42
Communication with VID (calls per test)	2	
Labor (wage per hour)	\$12.00	\$3.00
Labor (minutes per test)	15	
Fringe benefits (percent of total compensation)*	27.7%	\$1.15
Computer ink and paper (cost per test)	\$0.05	\$0.05
Percent of OBD tests with free retest	5.2%	\$0.24
<b>Total Variable Costs per Test</b>		<b>\$4.86</b>
Fixed Costs	Total	Monthly
Equipment and tools (purchase price)†	\$9,950	\$88.33
Maintenance agreement (annual cost)	\$875	\$72.92
Additional maintenance cost (annual cost)	\$200	\$16.67
Building space (purchase price)‡	\$3,750	\$10.77
Loan period (years)	4	
Loan interest rate (percent)	8.0%	
Dedicated telephone line (monthly cost)		\$50.00
Electricity (monthly cost)		\$40.00
<b>Total Monthly Fixed Costs</b>		<b>\$278.68</b>

\* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits.

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

‡ Assumes total principal and interest paid over life of loan is spread over useful life of 34 years.

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

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month*	41	76	108
Total revenue (# tests × revenue per test)	\$759	\$1,406	\$1,998
Total fixed costs	\$279	\$279	\$279
Total variable costs	\$199	\$369	\$525
Total cost	\$478	\$648	\$803
<b>Net Revenue (Total Revenue – Total Costs)</b>	<b>\$281</b>	<b>\$758</b>	<b>\$1,195</b>

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

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

<b>Item</b>	<b>Equipment Only</b>	<b>Equipment and Building Costs</b>
Fixed cost per month	\$268	\$279
Variable cost per inspection	\$4.86	\$4.86
Net fee (station revenue) per inspection	\$18.50	\$18.50
<b>Break-Even Number of Inspections (Monthly)</b>	<b>20</b>	<b>20</b>
<b>Station At/Above Break-Even Number of Inspections</b>	<b>91%</b>	<b>90%</b>

### 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 are inputs into the model station analysis (Table VI- 11) and break- even analysis (Table V- 12).

Table VI- 11 presents the HGB/DFW- areas 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 138 (small throughput station), 224 (medium throughput station), and 338 (large throughput station). These emissions inspection throughputs correspond to the 25<sup>th</sup> percentile, 50<sup>th</sup> percentile (median), and 75<sup>th</sup> 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 \$1,006, \$2,248, and \$3,894, respectively.

Table VI- 12 presents the HGB/DFW- areas 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, and 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 63 inspections per month to break even, and 93 percent 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 68 inspections per month to break even, and 92 percent of stations perform enough inspections to cover costs.

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

<b>Revenues and Costs</b>		<b>Per ASM Test</b>	<b>Per OBD Test</b>
<b>Station Revenue per Test</b>		\$24.50	\$18.50
<b>Variable Costs</b>			
	<b>Total</b>	<b>Per ASM Test</b>	<b>Per OBD Test</b>
Communication with VID (cost per call)	\$0.21	\$0.42	\$0.42
Communication with VID (calls per test)	2		
Labor (wage per hour)	\$10.00	\$4.17	\$2.50
Labor (minutes per TSI test)	25		
Labor (minutes per OBD test)	15		
Fringe benefits (percent of total compensation)*	27.7%	\$1.59	\$0.96
Computer ink and paper (cost per test)	\$0.05	\$0.05	\$0.05
Percent of TSI tests with free retest	13.2%	\$0.82	
Percent of OBD tests with free retest	5.2%		\$0.20
Percent of tests that are TSI tests	2.4%		
Percent of tests that are OBD tests	97.7%		
Total variable costs per test		\$7.05	\$4.13
<b>Weighted Variable Cost per Test<sup>†</sup></b>	<b>\$4.20</b>		
<b>Fixed Costs</b>			
	<b>Total</b>	<b>Monthly</b>	
Equipment and tools (purchase price) <sup>‡</sup>	\$43,000	\$396.31	
Maintenance agreement (annual cost)	\$4,112	\$342.67	
Additional maintenance cost (annual cost)	\$1,000	\$83.33	
Building space (purchase price) <sup>§</sup>	\$25,000	\$74.55	
Loan period (years)	5		
Loan interest rate (percent)	8.0%		
Dedicated telephone line (monthly cost)		\$50.00	
Electricity (monthly cost)		\$40.00	
<b>Total Monthly Fixed Costs</b>		<b>\$986.86</b>	

\* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits.

† 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.

§ Assumes total principal and interest paid over life of loan is spread over useful life of 34 years.

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

	Small Throughput	Medium Throughput	Large Throughput
Number of inspections per month*	138	224	338
Total Revenue (# tests × revenue per test)	\$2,572	\$4,176	\$6,301
Total fixed costs	\$580	\$941	\$1,419
Total variable costs	\$987	\$987	\$987
Total cost	\$1,566	\$1,928	\$2,406
<b>Net Revenue (Total Revenue – Total Costs)</b>	<b>\$1,006</b>	<b>\$2,248</b>	<b>\$3,894</b>

\* Values represent number of emissions inspections for 25<sup>th</sup> percentile, median, and 75<sup>th</sup> 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	\$912	\$987
Variable cost per inspection	\$4.20	\$4.20
Net fee (station revenue) per inspection	\$18.64	\$18.64
<b>Break-Even Number of Inspections (Monthly)</b>	<b>63</b>	<b>68</b>
<b>Station At/Above Break-Even Number of Inspections</b>	<b>93%</b>	<b>92%</b>

#### 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–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 89 (small throughput station), 149 (medium throughput station), and 243 (large throughput station). These emissions inspection throughputs correspond to the 25<sup>th</sup> percentile, 50<sup>th</sup> percentile (median), and 75<sup>th</sup> percentile of monthly emissions inspections per station in the El Paso area. As the table shows, the monthly revenues for small, medium, and large stations exceed monthly costs by \$220, \$682, and \$1,406, respectively.

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, and 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 59 inspections per month to break even, and 85 percent 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 60 inspections per month to break even, and 85 percent 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
<b>Station Revenue per Test</b>		<b>\$11.50</b>	<b>\$11.50</b>
<b>Variable Costs</b>			
	<b>Cost</b>	<b>Per TSI Test</b>	<b>Per OBD Test</b>
Communication with VID (cost per call)	\$0.21	\$0.42	\$0.42
Communication with VID (calls per test)	2		
Labor (wage per hour)	\$9.00	\$3.00	\$2.25
Labor (minutes per TSI test)	20		
Labor (minutes per OBD test)	15		
Fringe benefits (percent of total compensation)*	27.7%	\$1.15	\$0.86
Computer ink and paper (cost per test)	\$0.05	\$0.05	\$0.05
Percent of TSI tests with free retest	5.6%	\$0.26	
Percent of OBD tests with free retest	4.7%		\$0.17
Percent of tests that are TSI tests	4.3%		
Percent of tests that are OBD tests	95.7%		
Total variable costs per test		\$4.88	\$3.75
<b>Weighted Variable Cost per Test<sup>†</sup></b>	<b>\$3.80</b>		
<b>Fixed Costs</b>			
	<b>Total</b>	<b>Monthly</b>	
Equipment and tools (purchase price) <sup>‡</sup>	\$17,000	\$160.41	
Maintenance agreement (annual cost)	\$2,000	\$166.71	
Additional maintenance cost (annual cost)	\$450	\$37.50	
Building space (purchase price) <sup>§</sup>	\$3,500	\$10.68	
Loan period (years)	5		
Loan interest rate (percent)	9.0%		
Dedicated telephone line (monthly cost)		\$50.00	
Electricity (monthly cost)		\$40.00	
<b>Total Monthly Fixed Costs</b>		<b>\$465.30</b>	

\* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits.

† 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.

§ Assumes total principal and interest paid over life of loan is spread over useful life of 34 years.

**Table VI-14. Model Station Analysis – El Paso**

	<b>Small Throughput</b>	<b>Medium Throughput</b>	<b>Large Throughput</b>
Number of inspections per month*	89	149	243
Total Revenue (# tests × revenue per test)	\$1,024	\$1,714	\$2,795
Total fixed costs	\$465	\$465	\$465
Total variable costs	\$338	\$566	\$923
Total cost	\$803	\$1,031	\$1,388
<b>Net Revenue (Total Revenue – Total Costs)</b>	<b>\$220</b>	<b>\$682</b>	<b>\$1,406</b>

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

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

<b>Item</b>	<b>Equipment Only</b>	<b>Equipment and Building Costs</b>
Fixed cost per month	\$455	\$465
Variable cost per inspection	\$3.80	\$3.80
Net fee (station revenue) per inspection	\$11.50	\$11.50
<b>Break-Even Number of Inspections (Monthly)</b>	59	60
<b>Station At/Above Break-Even Number of Inspections</b>	85%	85%

## 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 are inputs into the model station analysis (Table VI- 17) and break- even analysis (Table VI- 18).

Table VI- 17 presents the ARR- 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 76 (small throughput station), 138 (medium throughput station), and 256 (large throughput station). These emissions inspection throughputs correspond to the 25th percentile, 50th percentile (median), and 75th percentile of monthly emissions inspections per station in the ARR area. As the table shows, the monthly revenues for small, medium, and large stations exceed monthly costs by \$31, \$440, and \$1,218, respectively.

Table VI- 18 presents the ARR- area break- even model analysis. This analysis calculates the number of inspections that it takes for revenue to equal costs, and 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 68 inspections per month to break even, and 79 percent 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 71 inspections per month to break even, and 77 percent of stations perform enough inspections to cover costs.

**Table VI-16. Revenues and Costs — ARR**

Revenues and Costs		Per TSI Test	Per OBD Test
<b>Station Revenue per Test</b>		<b>\$11.50</b>	<b>\$11.50</b>
<b>Variable Costs</b>			
	<b>Cost</b>	<b>Per TSI Test</b>	<b>Per OBD Test</b>
Communication with VID (cost per call)	\$0.21	\$0.42	\$0.42
Communication with VID (calls per test)	2		
Labor (wage per hour)	\$11.75	\$3.92	\$2.94
Labor (minutes per TSI test)	20		
Labor (minutes per OBD test)	15		
Fringe benefits (percent of total compensation)*	27.7%	\$1.50	\$1.12
Computer ink and paper (cost per test)	\$0.05	\$0.05	\$0.05
Percent of TSI tests with free retest	16.1%	\$0.95	
Percent of OBD tests with free retest	7.3%		\$0.33
Percent of tests that are TSI tests	2.2%		
Percent of tests that are OBD tests	97.8%		
Total variable costs per test		\$6.83	\$4.86
<b>Weighted Variable Cost per Test<sup>†</sup></b>	<b>\$4.91</b>		
<b>Fixed Costs</b>			
	<b>Total</b>	<b>Monthly</b>	
Equipment and tools (purchase price) <sup>‡</sup>	\$17,450	\$157.06	
Maintenance agreement (annual cost)	\$1,827	\$152.25	
Additional maintenance cost (annual cost)	\$600	\$50.00	
Building space (purchase price) <sup>§</sup>	\$7,000	\$20.38	
Loan period (years)	5		
Loan interest rate (percent)	7.0%		
Dedicated telephone line (monthly cost)		\$50.00	
Electricity (monthly cost)		\$40.00	
<b>Total Monthly Fixed Costs</b>		<b>\$469.69</b>	

\* Includes paid leave, supplemental pay, insurance, retirement and savings, and legally required benefits.

† 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.

§ Assumes total principal and interest paid over life of loan is spread over useful life of 34 years.

**Table VI-17. Model Station Analysis — ARR**

	Small Throughput	Medium Throughput	Large Throughput
Number of Inspections per month*	76	138	256
Total Revenue (# tests × revenue per test)	\$874	\$1,587	\$2,944
Total fixed costs	\$470	\$470	\$470
Total variable costs	\$373	\$677	\$1,256
Total cost	\$843	\$1,147	\$1,726
<b>Net Revenue (Total Revenue – Total Costs)</b>	<b>\$31</b>	<b>\$440</b>	<b>\$1,218</b>

\* Values represent number of emissions inspections for 25<sup>th</sup> percentile, median, and 75<sup>th</sup> 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	\$449	\$470
Variable cost per inspection	\$4.91	\$4.91
Net fee (station revenue) per inspection	\$11.50	\$11.50
<b>Break-Even Number of Inspections (Monthly)</b>	68	71
<b>Station At/Above Break-Even Number of Inspections</b>	79%	77%

## VII. COMMENTS FROM EMISSIONS INSPECTION SURVEY RECIPIENTS

In the final question of the survey, respondents were asked if they felt the emissions inspection fee covered their costs associated with emissions inspections — and, if not, to explain why not. This section summarizes the respondents’ comments. There were 430 respondents who provided reasons why the fee did not cover their costs. Many gave multiple reasons; each reason was counted independently.

### A. COST FACTORS PREVENTING STATIONS FROM RECOUPING COSTS

Respondents cited a number of reasons for not being able to recoup costs, which are shown in Table VII- 1.

**Table VII-1. Most Frequently Cited Reasons for Not Recouping Costs**

Comment	Number of Responses
Equipment-related cost	230
Costs of labor	215
Rent, building maintenance, and utility costs	87
Phone or Internet costs and the need for a second line	66
Testing supplies or related costs	56
Insurance and tax expenses	46

As indicated above, the most common factor was the high cost of purchasing and/or maintaining the emissions inspection equipment. Table VII- 2 shows the specific reasons station owners cited for high purchasing/maintenance costs.

**Table VII-2. Specific Reasons Purchasing or Maintenance Costs Are Too High**

Comment	Number of Responses
High Initial Investment	52
Slow response time to service calls <sup>9</sup>	27
Cost of calibration gases for ASM analyzers	24
Frequent breakdowns of the equipment	20
Cost of replacement parts	11
High cost of service calls	9

Stations also noted the downtime associated with broken equipment awaiting repairs directly affected their profitability. Several respondents noted that the lack of service providers for certified analyzers gives the one or two service providers a near-monopoly, driving up profits for the manufacturers and giving them less incentive to

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<sup>9</sup> Any unsatisfactory response to a service call by a manufacturer needs to be reported to the Department of Public Safety.

be responsive to service calls. As discussed in Chapter VI, all of these costs were considered in the cost model.

In addition to those respondents providing specific examples, about 10 percent of the stations expressed general dissatisfaction with the fact that the maximum fee associated with the inspections has not increased in many years, despite these rising costs of completing inspections and maintaining the business.

## **B. OTHER FACTORS PREVENTING STATIONS FROM RECOUPING COSTS**

While the cost factors listed above were the most commonly cited reasons that the fee did not cover costs, there were several other notable factors:

- 1. Operational/economic inefficiencies.** Over 30 percent of respondents (136) made comments reflecting operational or economic inefficiencies in conducting inspections, such as the opportunity cost of maintaining a dedicated bay for inspections or having to conduct inspections at a rate they feel is not equivalent to their typical shop rate obtained when using a bay for more extensive, and thus more profitable, repair jobs. Additional time is also required for diagnosing relevant problems and explaining inspection issues to vehicle owners, which takes away from the time that inspectors can be performing inspections or, in some shops, performing repairs. Of the 136 respondents, 34 attributed their inability to recoup costs to the low volume of inspections performed in their shop due to either decreases in ASM testing or too much local competition.
- 2. A fee that is adequate for OBD-only inspections, but not ASM inspections.** Several respondents (30 in total) cited both higher equipment-related costs and a decreasing number of vehicles subject to ASM inspections as reasons why ASM inspections are not profitable.
- 3. Other programmatic or policy-related losses.** Additionally, 11 respondents pointed to conducting free retests on failed vehicles; nine noted the monthly cap on OBD inspections. Some of those stations emphasized that they continue to maintain their ASM equipment despite its expense in order to retain their ability to offer unlimited tests. Four respondents noted that the recent change in regulation (namely the recent “Two Steps, One Sticker” program) resulted in a decrease in their monthly volume of inspections.

## C. OTHER NOTABLE COMMENTS

The following comments do not necessarily relate to why certain stations do not recoup costs; however, they do provide some additional insight into the state of the emissions inspection industry:

1. **The need for a more responsive and efficient system for maintenance.** As in previous surveys, some respondents referenced issues regarding the maintenance services they received and the efficiency, responsiveness, and overall demeanor of the people sent to repair their equipment. Many found issues with the near-monopoly held by the maintenance industry, stating prices for maintenance are high while the quality of service often falls short of expectations.
2. **Only conducting inspections as a courtesy to customers.** A small number of respondents (roughly 6 percent) noted that offering inspections would be more profitable if they conducted more inspection tests, but that there are too many other stations offering inspections or competitors offering lower test fees. However, the survey responses showed that very few stations offered a lower test fee.

## VIII. CONCLUSIONS AND FINDINGS

Of the 4,888 active vehicle emissions inspection stations in the TCEQ emissions inspection database that were invited to participate in the survey, ERG received 776 survey responses during the survey period, of which 767 were in-scope (i.e., public stations that indicated they offer motor vehicle emissions inspections), equaling a 16 percent response rate.

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 perspective of cost models based on survey and non-survey data. Sections VIII.D and VIII.E present two additional 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. Finally, Section VIII.G recommends possible changes to the survey for future data collection efforts.

### A. ADEQUACY OF FEE: WHAT THE RESPONDENTS SAY

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

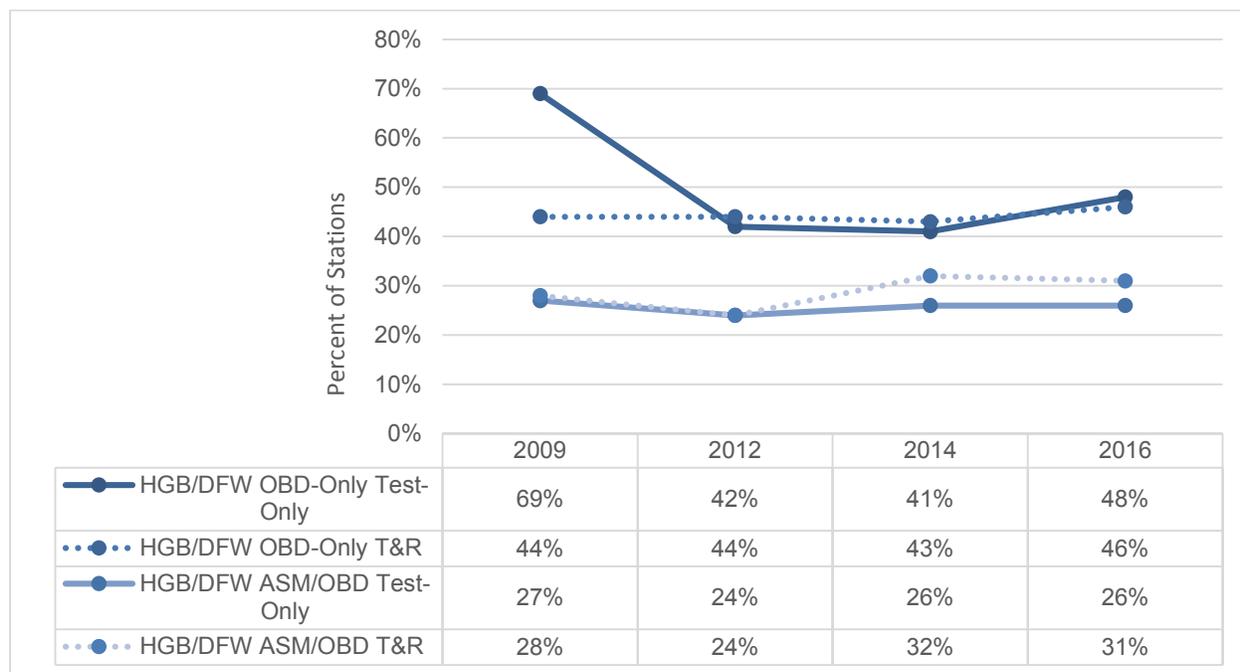
As shown in Figure VIII- 1, among T&R and test-only respondents in the HGB/DFW program areas, 26 percent of test-only and 31 percent of T&R stations that perform both ASM and OBD inspections, and 48 percent of test-only and 46 percent of T&R stations that are OBD-only stations, claim the fee covers their costs. These represent increases since 2014.

Figure VIII- 2 displays similar findings for the El Paso and ARR program areas: between 22 and 27 percent of stations reported the fee covered their costs. These represent small to moderate increases in the number of stations that reported fees covering costs in 2014. Overall, the percentage of stations stating that the fee covers their costs is higher in HGB/DFW program areas than in El Paso and ARR; this could be driven by the higher net fee in the HGB/DFW program areas.

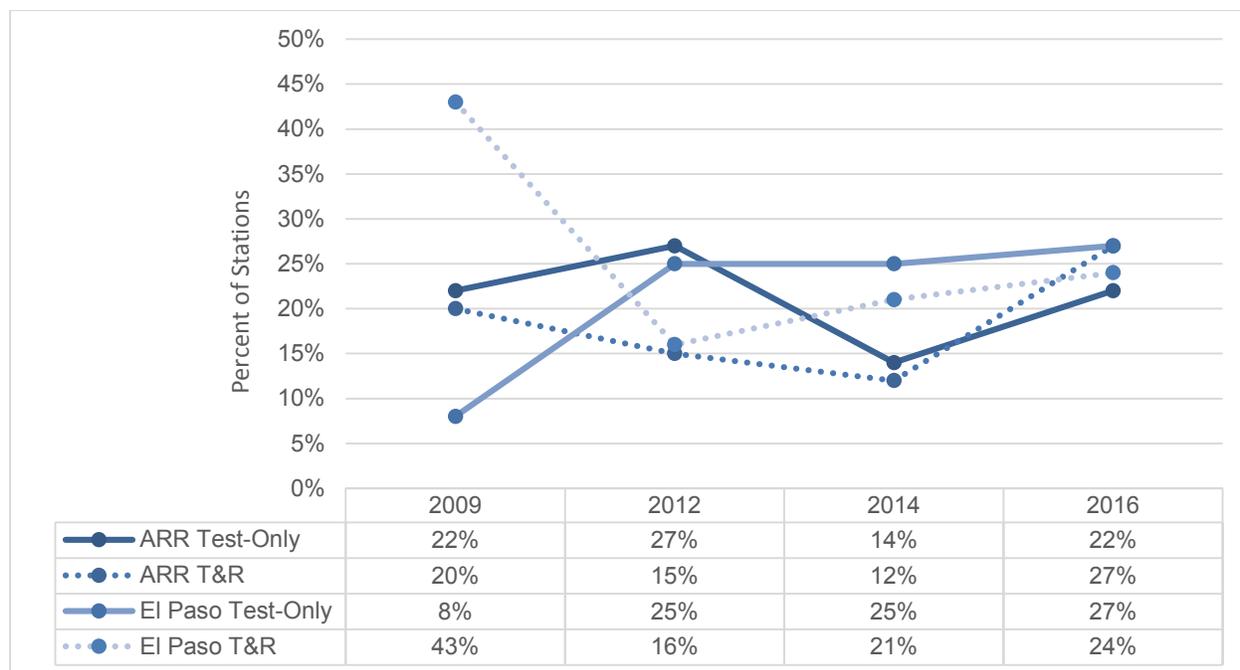
For 2016, the number of stations reporting that the fee covers their costs for test-only and T&R were within 5 percent for all four program areas and test-type breakdowns.

Additionally, in two cases, the percentage was higher for test- only stations, and in two cases, the percentage was higher for T&R stations. There does not appear to be a notable difference between these two different business models in whether the fee covers costs.

**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 FEE: HOW INVESTORS VIEW MARKET

The number of stations joining or leaving the AirCheckTexas 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 to enter the market (in the case of a prospective owner) or whether to 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 additional benefits from performing emissions inspections (e.g., additional repair revenue and more customer volume into their shop) 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 insight into how investors see the market. The counts from prior years' analyses (ERG, 2005, 2007, 2012, 2014; Pechan, 2009) and the counts made in February 2016 for this analysis were used to develop the following comparisons.

Figure VIII- 3 summarizes the station counts for the HGB/DFW program areas from the TCEQ VID in 2007, 2009, 2012, 2014, and 2016. This figure shows an 8 percent increase in the number of stations between the 2012 and 2014 counts, and another 5 percent increase since the 2014 count. This 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 fees are probably adequate in the HGB/DFW program areas.

**Figure VIII-3. Number of Inspection Stations in HGB/DFW Program Areas, 2007 to 2016**

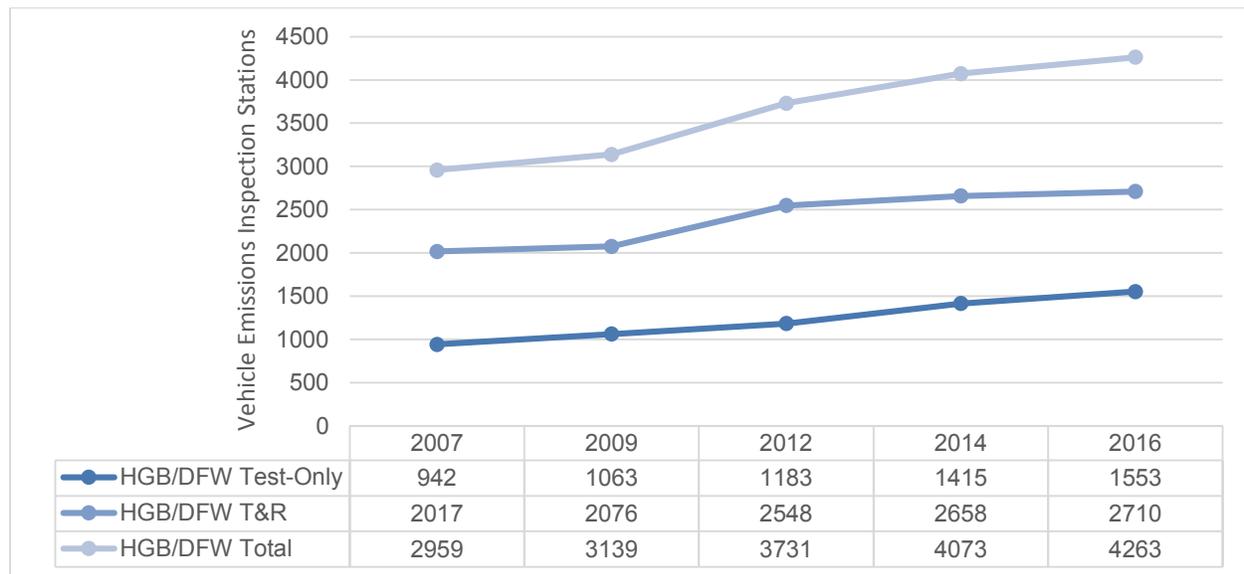


Figure VIII- 4 summarizes the station counts for the El Paso program areas for 2007, 2009, 2012, 2014, and 2016. This figure shows a small increase in the number of stations in the El Paso program area between 2012 and 2016: 8 stations, compared to an increase of 26 stations between 2007 and 2012. The count of test-only stations increased by 3, and the number of T&R stations increased by 4 since 2014. Because the total number of stations did not decrease, the public did not see a reduction in the availability of emissions inspections. 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 of the adequacy of the fee.

**Figure VIII-4. Number of Inspection Stations in El Paso Program Area, 2007 to 2016**

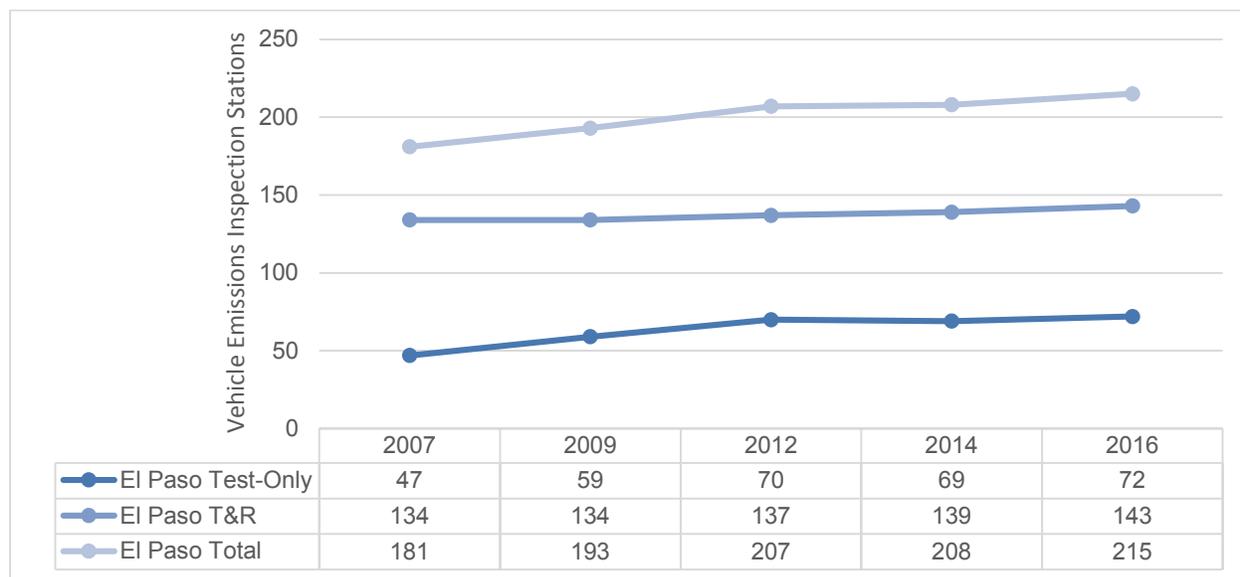
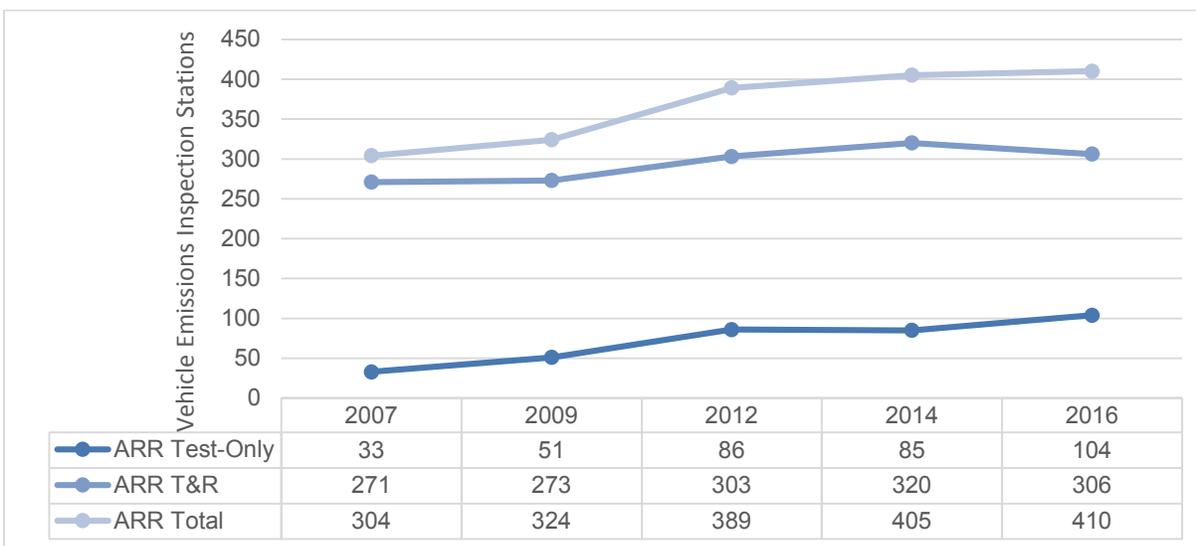


Figure VIII- 5 summarizes the station counts for the ARR program area for 2007, 2009, 2012, 2014, and 2016. This figure shows a small increase in the number of stations in the ARR program area between 2012 and 2016: 21 stations, compared to an increase of 85 stations between 2007 and 2012. The count of test- only stations increased by 19, while the number of T&R stations dropped by 14 since 2014. Because the total number of stations did not decrease, the public did not see a reduction in the availability of emissions inspections. 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 2016**



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

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

In the break- even cost model summarized in Table VIII- 1, 90 to 93 percent of stations 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, 77 to 85 percent of stations 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 both with and without building costs included.

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

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
<b>Break-Even Number of Tests (per Month)</b>				
Including equipment costs	68	59	20	63
Including equipment and building costs	71	60	20	68
<b>Percent of Stations At/Above Break-Even Number</b>				
Including equipment costs	79%	85%	91%	93%
Including equipment and building costs	77%	85%	90%	92%

The summary of the percentage of stations breaking even since 2012, shown below in Table VIII- 2, compares 2016 percentages of stations breaking even to those of the past.<sup>10</sup> The HGB/DFW program areas have had a consistent number of break- even tests for both OBD- only stations (19 to 20) and ASM/OBD stations (63 to 66), with between 91 to 93 percent of stations across both models breaking even. Likewise, the El Paso program area has had a consistent number of break- even tests (58 to 62) and a consistent percentage of stations (85 to 86 percent) breaking even from 2012 to 2016. In 2014 and 2016, the break- even points in ARR were 67 and 68 tests, respectively; however, the ARR break- even point was much higher in 2012 (81 tests). Part of this difference in the model can be attributed to a much higher maintenance agreement cost being reported by respondents in 2012 (\$2,400 per year, compared to about \$1,800 per year in 2014 and 2016).

**Table VIII-2. Summary of Break-Even Number of Inspections from 2012 to 2016 in All Program Areas, Excluding Building Costs**

Program Area	Break-Even Tests (2012)	Percent of Stations Breaking Even (2012)	Break-Even Tests (2014)	Percent of Stations Breaking Even (2014)	Break-Even Tests (2016)	Percent of Stations Breaking Even (2016)
ARR	81	74%	67	77%	68	79%
El Paso	58	86%	62	86%	59	85%
HGB/DFW (OBD-only)	19	92%	21	91%	20	91%
HGB/DFW (ASM/OBD)	65	92%	66	91%	63	93%

Table VIII- 3 shows the percentage of OBD tests performed 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 2016 survey, stations reported a median time of 15 minutes for OBD tests, 20 minutes for TSI tests, and 25 minutes for ASM tests. As a result, one benefit that stations are experiencing is that, because fewer vehicles require TSI or ASM tests due to advanced emissions systems in newer vehicle models, a higher percentage of tests will be OBD tests, reducing the average time and cost of performing a test.

<sup>10</sup> ERG compared past numbers to those found in 2016 primarily because there were two significant revisions to the old cost analysis model. First, ERG had previously assumed an OBD test took 20 minutes, but survey data for 2016 (the first year the question was asked in the survey) generated a median value of 15 minutes. Second, in determining what constitutes a small, medium, and large throughput station, ERG excluded stations that had not yet been open for a full year, as those shops would incorrectly represent a lower average monthly throughput. ERG applied these changes to the 2012 and 2014 survey data to preserve year- to-year comparability.

**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)
ARR	88.1%	95.6%	97.8%
El Paso	88.0%	91.7%	95.7%
HGB/DFW (ASM/OBD)	85.4%	95.2%	97.7%

The model station analysis reveals similar findings. This analysis created program-area specific small, medium, and large throughput stations representative of stations in the 25<sup>th</sup>, 50<sup>th</sup> (median), and 75<sup>th</sup> percentiles, respectively, based on emissions inspection throughput. As shown in Table VIII- 4, small, medium, and large throughput model stations in HGB/DFW (both testing types), El Paso, and ARR all generate enough revenue from emissions inspections to recoup costs.

**Table VIII-4. Total Monthly Costs and Net Revenues at Model Stations (2016)**

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
Small station total revenue	\$874	\$1,024	\$759	\$2,572
Small station total costs	\$843	\$803	\$478	\$1,566
Small stations total revenue *	\$31	\$220	\$281	\$1,006
Medium station total revenue	\$1,587	\$1,714	\$1,406	\$4,176
Medium station total costs	\$1,147	\$1,031	\$648	\$1,928
Medium station net revenue *	\$440	\$682	\$758	\$2,248
Large station total revenue	\$2,944	\$2,795	\$1,998	\$6,301
Large station total costs	\$1,726	\$1,388	\$803	\$2,406
Large station net revenue *	\$1,218	\$1,406	\$1,195	\$3,894

\*Totals may not sum exactly due to rounding.

The small increase in the number of stations in the market, coupled with lower overall testing throughput, may contribute to a lower percentage of stations breaking even. Table VIII- 5 supports this by showing a 20 percent decrease in average monthly throughput per station in ARR between calendar years 2008 and 2015 (2009 and 2016 surveys). As shown above in Figure VIII- 5, the number of stations in ARR has increased by 5 percent from the values reported in the 2012 survey to the 2016 survey (from 389 to 410), and during the same period the throughput has decreased by 4 percent (from 911,455 to 877,146 as shown in Table VIII- 6).

In El Paso, as shown in Table VIII- 5, the number of stations performing inspections has slightly increased from the data reported in the 2012 survey to that reported in the 2016 survey (calendar years 2011 to 2015) from 207 to 215. As shown in Table VIII- 6, during that same period, the total annual throughput has remained relatively

unchanged (with a 0.002 percent increase). This means that the throughput per station, on average, is decreasing and the stations receive less revenue.

**Table VIII-5. Average Monthly Throughput per Station from 2008 to 2015**

Program Area	2008	2011	2013	2015*
HGB/DFW	184	165	148	137
EL Paso	194	188	179	181
ARR	222	195	184	178
<b>Grand Total</b>	<b>187</b>	<b>169</b>	<b>153</b>	<b>143</b>

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

**Table VIII-6. Initial Testing Throughput from 2008 to 2015 in All Program Areas**

Program Area	2008 Total Annual Throughput	2011 Total Annual Throughput	2013 Total Annual Throughput	2015 Total Annual Throughput*
HGB/DFW (overall)	6,912,515	7,402,704	7,240,815	7,027,333
HGB/DFW (ASM tests)	NA	562,642	347,868	138,902
HGB/DFW (OBD tests)	NA	6,840,062	6,892,947	6,862,215
El Paso (overall)	448,442	466,570	446,991	467,653
El Paso (TSI test)	NA	57,283	41,489	19,889
El Paso (OBD tests)	NA	409,287	405,502	447,764
ARR (overall)	861,660	911,455	894,648	877,146
ARR (TSI tests)	NA	61,969	39,421	19,592
ARR (OBD test)	NA	849,486	855,227	857,554
<b>Grand Total</b>	<b>8,222,617</b>	<b>8,780,729</b>	<b>8,582,454</b>	<b>8,372,132</b>

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

The distribution of testing in each program area can provide some insight about how many more or fewer stations might break even if there is a change in the market conditions (e.g., changes in costs or revenues).

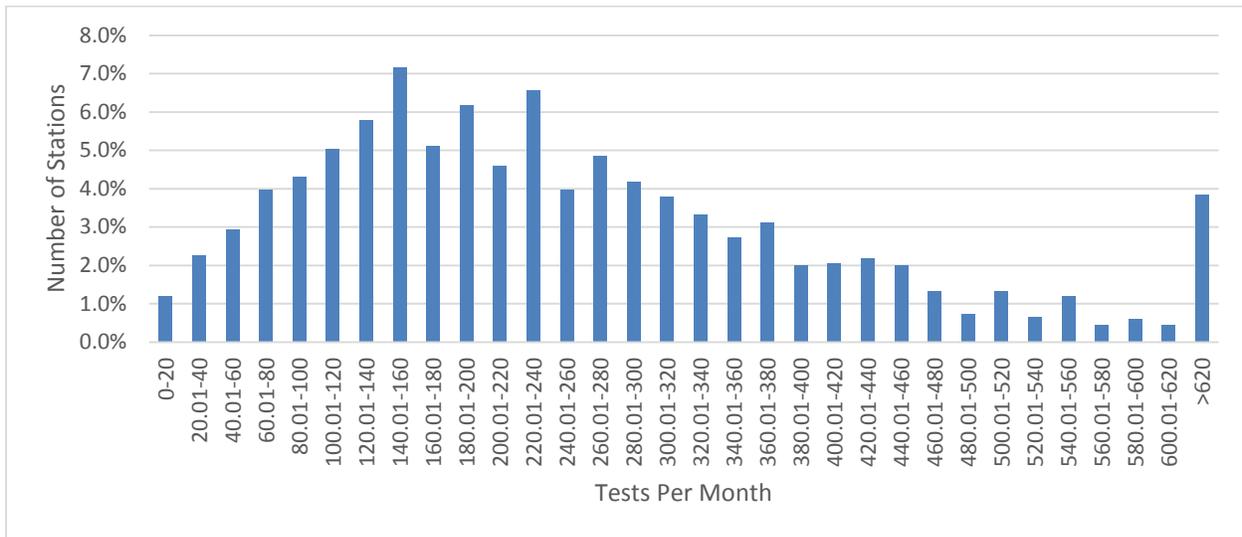
Figure VIII- 6 (HGB/DFW ASM/OBD) and Figure VIII- 7 (HGB/DFW OBD- only) show the distribution of testing throughput for stations (both test- only and T&R) operating an entire year. For HGB/DFW ASM/OBD stations, the break- even number was 63 tests per month. Approximately 7 percent of stations have a monthly throughput between 40 and 80 and are within approximately 20 tests of the break- even number. This suggests that if costs increase, 4 percent of stations in this program area are at greater risk for not breaking even, while 3 percent of stations are more likely to break even if costs decrease. For the HGB/DFW program areas, the break- even analysis showed it took about 20 tests per month for an OBD- only station to break even (see Table VIII- 2). As shown in Figure VIII- 6, approximately 6 percent of stations had a monthly throughput between 15 and 25 and were within 5 tests per month of the break- even number. This

suggests that 3 percent of stations in this program area are at greater risk of not breaking even if costs increase, and 3 percent are more likely to break even if costs decrease.

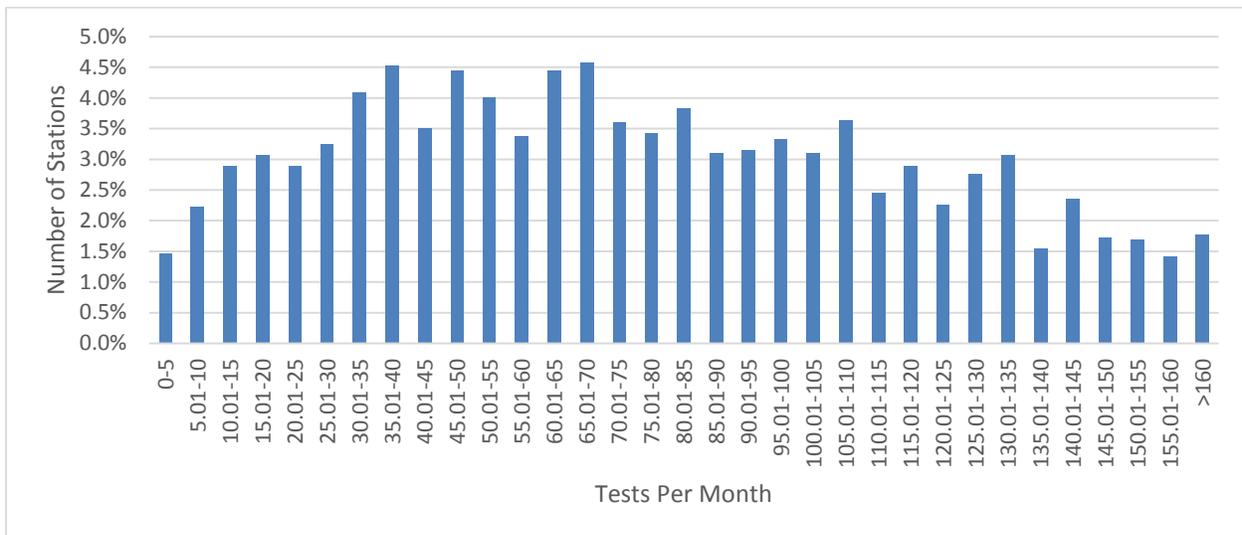
Figure VIII- 8 (El Paso) displays the distribution of stations (both test- only and T&R) testing throughput for those operating an entire year. The break- even analysis showed it took about 59 tests per month for a station to break even in El Paso (see Table VIII- 2). Figure VIII- 8 shows approximately 15 percent of stations are within 20 tests of the break- even number, with 9 percent being higher and 6 percent lower. Thus, if costs were to decrease, a portion of those 6 percent of stations with a monthly throughput between 40 and 60 tests per month of the break- even point may start to break even. Conversely, if costs were to increase, a portion of the 9 percent of stations with a monthly throughput between 60 and 80 tests per month may no longer break even.

Figure VIII- 9 (ARR) shows the distribution of stations (both test- only and T&R) testing throughput for those operating an entire year. In 2016, the break- even analysis showed it took about 68 tests per month for a station to break even in ARR (see Table VIII- 2). Figure VIII- 9 shows about 4 percent of ARR stations had a monthly testing throughput between 50 and 60, and 5 percent of stations had a monthly throughput between 60 and 70. This means if costs were to decrease by a small amount and the break- even number of tests decreased from 68 per month, a portion of these approximately 9 percent of stations may start to break even. Likewise, 5 percent of stations had a monthly throughput between 70 and 80, and 4 percent of stations had a monthly throughput between 80 and 90. This means that if costs were to increase by a small amount and the break- even number of tests increased from 68 per month, a portion of these approximately 9 percent of stations may no longer break even.

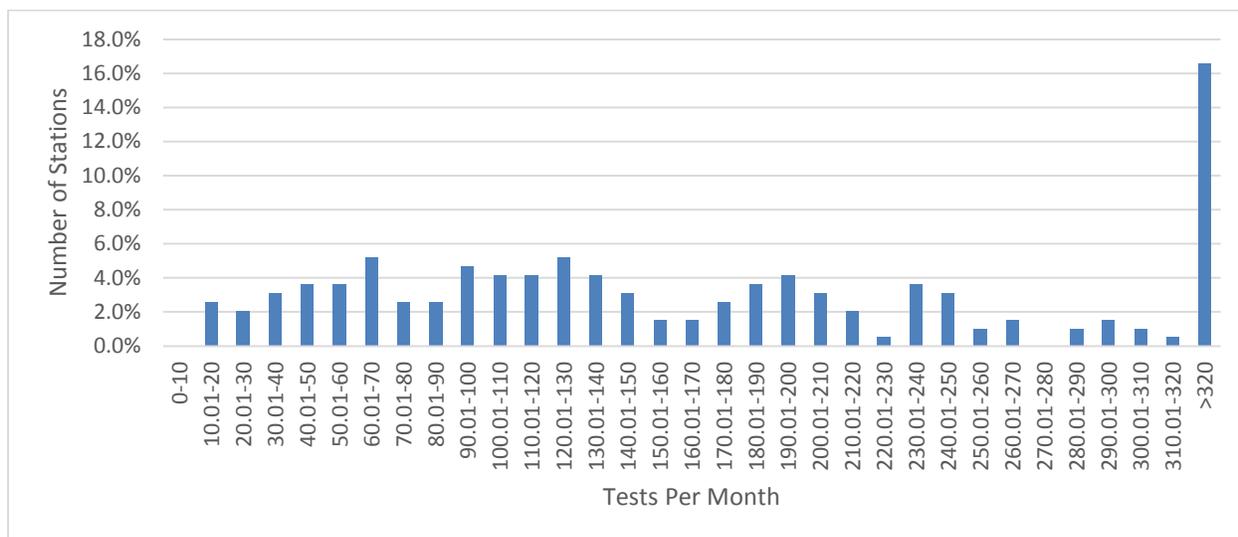
**Figure VIII-6. Monthly Testing Throughput for ASM/OBD Stations in HGB/DFW**



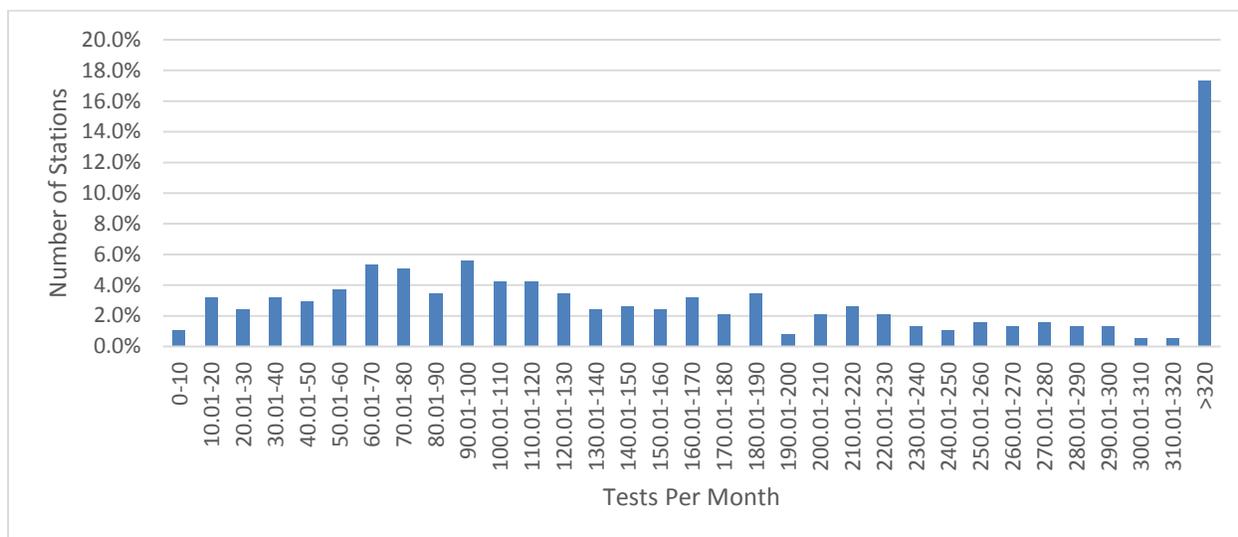
**Figure VIII-7. Monthly Testing Throughput for OBD-Only Stations in HGB/DFW**



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



**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 T&R and test- only 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**

	ARR	El Paso	HGB/DFW OBD-Only	HGB/DFW ASM/OBD
Number of repairs per month (median)	5.0	6.5	4.0	5.0
Repair revenue from each failed emissions inspection (median)	\$200	\$100	\$200	\$200
Estimated monthly repair revenue generated from failed inspections	\$1,000	\$650	\$800	\$1,000
Percent net revenue per dollar of repair work	4.9%	4.9%	4.9%	4.9%
Estimated net revenue attributed to emissions inspection repairs	\$49	\$32	\$39	\$49
Reduction in number of tests to break even	7	4	3	3

The table above shows that a typical T&R station generates approximately \$650 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, approximately 4.9 percent of the total revenue generated (IRS, 2016).<sup>11</sup> This is the equivalent impact of reducing a station’s break- even number of tests by between three (HGB/DFW) and seven (ARR) 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 of this report use throughput figures for all stations to generate representative small, medium, and large stations based on throughput. As discussed above in Section VIII.D, 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

<sup>11</sup> 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.

dependent for ones that do not offer non-repair services) on revenue from emissions inspections. Table VIII-8 shows the 25<sup>th</sup> percentile, 50<sup>th</sup> percentile (median), and 75<sup>th</sup> 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**

Program Area	Station Type	25 <sup>th</sup> Percentile (Small)	50 <sup>th</sup> Percentile (Median) (Medium)	75 <sup>th</sup> Percentile (Large)	Break-Even Tests
HGB/DFW (OBD-only)	Test-only	43	78	116	20
	Test-and-repair	40	70	106	20
	Both types	41	76	108	20
HGB/DFW (ASM/OBD)	Test-only	155	240	369	63
	Test-and-repair	130	205	314	63
	Both types	138	224	338	63
El Paso	Test-only	125	209	312	59
	Test-and-repair	79	128	200	59
	Both types	89	149	243	59
ARR	Test-only	112	205	320	68
	Test-and-repair	71	122	225	68
	Both types	76	138	256	68

Table VIII-8 also shows the break-even number of emissions inspections needed for revenue to equal the costs associated with emissions inspections in each program area. No model stations fall below the break-even number of emissions inspections, but the ARR T&R small throughput station only clears the break-even point by three tests per month. Representative medium throughput test-only stations in all program areas uniformly perform three to four times the amount of break-even inspections, and large test-only stations in all program areas uniformly perform approximately five to six times the number of break-even inspections.

## F. OVERALL FINDINGS ON THE ADEQUACY OF THE FEE

Of the 4,888 active vehicle emissions inspection stations in the TCEQ emissions inspection database that were invited to participate in the survey, ERG received 767 in-scope survey responses (i.e., public stations that indicated they offer motor vehicle emissions inspections) during the survey period, equaling a 16 percent response rate. The data from these responses were used in conjunction with a cost model developed

by ERG to determine the adequacy of Texas's emission inspection fee in the state's four program areas.

The cost model analyses show over 90 percent of stations 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 is sufficient in these program areas.

In the El Paso program area, 85 percent of stations are estimated to break even. The number of stations in El Paso increased since 2012 by about 4 percent. El Paso's market is similar to ARR's, but stations are faring slightly better in the cost model analyses, as more stations are breaking even (in part, because of lower median labor costs in El Paso compared to ARR). Additionally, more stations are entering the market in El Paso than in ARR. Overall, the break-even value for this program area may indicate that the fee is adequate at this time.

In the ARR program area, the smallest percentage of stations break even, according to the cost model analyses (79 percent). There was a small increase (5 percent) in the number of vehicle emissions inspection stations in the market since 2012, and total throughput decreased by about 4 percent during that same time period, which, as an isolated impact, would cause fewer stations to break even. However, the number of TSI tests (which take more labor than OBD tests) has also been steadily decreasing, which appears to be lowering the variable cost of performing inspections and, perhaps, countering the impact of lower throughput per station. The overall picture is less definitive in ARR. The small increase in the number of stations combined with the increased percentage of stations breaking even (primarily due to fewer TSI tests) may indicate the fee is acceptable.

## G. RECOMMENDATIONS FOR FUTURE SURVEY EFFORTS

Based on the survey administration and data collection effort, ERG recommends that the TCEQ consider the following minor changes to the survey:

- For survey question 6, consider making it clearer that the question is asking about emissions inspectors, as opposed to other employees not performing inspections.
- Consider additional validation to not allow a "0" for survey question 7 about wage.
- For survey question 8, consider adding a few examples of non-repair services.
- For survey question 11, consider removing "0%, perform inspections only" as a response for T&R stations.

- For survey question 14, consider clarifying that the building cost question is asking about additional space needed for testing. Also, consider asking whether space is purchased or rented.
- For survey questions 14 and 21 to 23, consider specifying the type of analyzer (OBD- only, ASM, TSI) associated with the costs for purchasing or decommissioning.
- For survey questions 21 to 23, consider clarifying what decommissioning includes and what costs are being collected. Additionally, ask whether there is a possible income stream associated with selling an old or used analyzer at the end of its life.

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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 survey questions 25 and 26). Additionally, ERG programmed skip logic into the survey so stations would not see questions that were not applicable to them (e.g., if a respondent replied "no other services" [test- only] in survey question 8, the electronic survey would automatically skip them to survey question 14 as outlined in the paper survey).

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

## **HGB/DFW Survey Instrument**

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

## 2016 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](mailto:fee-survey@erg.com) or call us toll free at 1-844-585-1101.
- 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](http://www.tceqsurvey.com)

**Need help or have questions about completing this survey?**

→ Please email ERG at [fee-survey@erg.com](mailto:fee-survey@erg.com) or call 1-844-585-1101.

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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.

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](mailto:fee-survey@erg.com) or 1-844-585-1101.

- In answering the questions:
- Please use blue or black ink.
  - Place an **X** inside the box.
  - Please do not put slashes

## PART I STATION INFORMATION

- 1** Does this station offer motor vehicle emissions inspections? Mark  **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 air emissions testing offered at your station. Mark  **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** On average, how long does it take to perform the following emissions tests?

On-Board Diagnostics (OBD)  minutes

Acceleration Simulation Mode (ASM)  minutes

- 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	<input type="text"/> am/pm	to	<input type="text"/> am/pm	Closed
Tuesday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Wednesday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Thursday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Friday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Saturday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Sunday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed

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

Emissions inspection bays used **EXCLUSIVELY** for emissions testing

Emissions inspection bays used for emissions testing **AND OTHER USES** (If > 0, please answer 5b)

- 5b** 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

- 6** How many emissions inspectors currently work at this station?

Full-time emissions inspectors

Part-time emissions inspectors (If > 0, please answer 6b)

- 6b** On average, about how many hours per week does each part-time inspector work?

hours/week

PLEASE CONTINUE ON NEXT PAGE →

**7** 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

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

Mark  **ONE box only.**

- No other services - Go to **14**  
 Non-repair services - Please specify the non-repair services in the space below  
 Repair services only  
 Repair services and non-repair services - Please specify the non-repair services in the space below

Please describe any non-repair services...

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

- 50% or more of their time performing emissions inspections:.....  inspectors  
about 25% of their time performing emissions inspections:.....  inspectors  
about 15% of their time performing emissions inspections:.....  inspectors  
about 10% of their time performing emissions inspections:.....  inspectors  
about 5% or less of their time performing emissions inspections:....  inspectors

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

- 50% or more of their time performing emissions inspections:.....  inspectors  
about 25% of their time performing emissions inspections:.....  inspectors  
about 15% of their time performing emissions inspections:.....  inspectors  
about 10% of their time performing emissions inspections:.....  inspectors  
about 5% or less of their time performing emissions inspections:....  inspectors

## PART II STATIONS OFFERING REPAIR SERVICES

[If this station does not offer repair services, please go to Part III, beginning at Question 14.]

**11** What proportion of the repair revenues for this station result directly from failed emission inspections?

Mark  **ONE box only.**

- 0%, perform inspections only - Go to **14**  
 less than 10%  
 about 25%  
 about 50%  
 about 75%  
 between 75% and 95%  
 more than 95%

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

repair jobs

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

\$  ,    .00 per repair for a failed emission test

PLEASE CONTINUE ON NEXT PAGE →

Page 2 of 4

**PART III EMISSIONS TESTING EQUIPMENT AND ADDITIONAL COSTS**

**14** Did you have to add or acquire any of these items when you began to offer emissions testing at this station?  
If yes, enter your best estimate for the additional costs.

a. Emissions testing equipment (Including installation costs)	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
b. Tools and other equipment	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
c. Building space	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
d. Land	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No

**15** Identify the option that best describes how you financed the purchase of emissions testing equipment.

Mark  **ONE box only.**

- Paid cash - Go to **18**
- Lease-to-purchase agreement arranged with vendor - Go to **16**
- Loan from bank - Go to **16**

**16** What is the lease-to-purchase or loan term?

years

**17** What is the interest rate for the lease-to-purchase agreement or loan?

percent (%)

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

- Yes. - Go to **19**
- No. - Go to **21**

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

\$   ,    .00 per month/quarter/year

**20** During the last year, what costs did you incur for normal maintenance of the emissions testing equipment that were not covered by the service contract or maintenance package?

\$   ,    .00

**21** Have you ever decommissioned emissions testing equipment that you owned for its entire useful life?

- Yes. - Go to **22**
- No. - Go to **24**

**22** How many years did you own the equipment?

years

**23** What was your cost to decommission that equipment?

\$   ,    .00

**24** Outside of free retests on vehicles that failed previously at your station, do you ever offer emissions tests for free or at no charge?

Yes, please describe

No.

**25** Outside of free retests on vehicles that failed previously at your station, do you ever charge less than \$18.50 (OBD) or \$24.50 (ASM) for an emissions test?

Yes. What is the lowest fee that you charge? \$   .

No.

**26** In your opinion, does the \$18.50 (OBD) or \$24.50 (ASM) fee cover your costs of offering emissions testing at this station?

Yes.

No. If not, please tell us some of the reasons in the space below. If you require additional space for your comments, please include them on the back of this page.

**END**

**Thank you for completing this survey.**

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

Please return the completed original questionnaire in the postage-paid envelope provided. Please make a photocopy of this form for your records. 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 and ARR Survey Instrument**

# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

## 2016 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](mailto:fee-survey@erg.com) or call us toll free at 1-844-585-1101.
- 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](http://www.tceqsurvey.com)

**Need help or have questions about completing this survey?**

→ Please email ERG at [fee-survey@erg.com](mailto:fee-survey@erg.com) or call 1-844-585-1101.

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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.

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](mailto:fee-survey@erg.com) or 1-844-585-1101.

- In answering the questions:
- Please use blue or black ink.
  - Place an **X** inside the box.
  - Please do not put slashes

## PART I 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** On average, how long does it take to perform the following emissions tests?
- On-Board Diagnostics (OBD)  minutes
- Two Speed Idle (TSI)  minutes

- 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	<input type="text"/> am/pm	to	<input type="text"/> am/pm	Closed
Tuesday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Wednesday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Thursday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Friday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Saturday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed
Sunday	<input type="text"/> am/pm		<input type="text"/> am/pm	Closed

- 5** How many emissions inspection bays do you currently have at this station? If zero, please enter 0.
- Emissions inspection bays used **EXCLUSIVELY** for emissions testing
- Emissions inspection bays used for emissions testing **AND OTHER USES** (If > 0, please answer 5b)

- 5b** 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

- 6** How many emissions inspectors currently work at this station?
- Full-time emissions inspectors
- Part-time emissions inspectors (If > 0, please answer 6b)

- 6b** On average, about how many hours per week does each part-time inspector work?
- hours/week

**7** 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

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

Mark  **ONE box only.**

- No other services - Go to **14**  
 Non-repair services - Please specify the non-repair services in the space below  
 Repair services only  
 Repair services and non-repair services - Please specify the non-repair services in the space below

Please describe any non-repair services...

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

- 50% or more of their time performing emissions inspections:.....  inspectors  
about 25% of their time performing emissions inspections:.....  inspectors  
about 15% of their time performing emissions inspections:.....  inspectors  
about 10% of their time performing emissions inspections:.....  inspectors  
about 5% or less of their time performing emissions inspections:....  inspectors

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

- 50% or more of their time performing emissions inspections:.....  inspectors  
about 25% of their time performing emissions inspections:.....  inspectors  
about 15% of their time performing emissions inspections:.....  inspectors  
about 10% of their time performing emissions inspections:.....  inspectors  
about 5% or less of their time performing emissions inspections:....  inspectors

## PART II STATIONS OFFERING REPAIR SERVICES

[If this station does not offer repair services, please go to Part III, beginning at Question 14.]

**11** What proportion of the repair revenues for this station result directly from failed emission inspections?

Mark  **ONE box only.**

- 0%, perform inspections only - Go to **14**  
 less than 10%  
 about 25%  
 about 50%  
 about 75%  
 between 75% and 95%  
 more than 95%

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

repair jobs

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

\$  ,    .00 per repair for a failed emission test

PLEASE CONTINUE ON NEXT PAGE →

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**PART III EMISSIONS TESTING EQUIPMENT AND ADDITIONAL COSTS**

**14** Did you have to add or acquire any of these items when you began to offer emissions testing at this station?  
If yes, enter your best estimate for the additional costs.

a. Emissions testing equipment (Including installation costs)	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
b. Tools and other equipment	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
c. Building space	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No
d. Land	<input type="checkbox"/> Yes How much? \$ <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> .00 <input type="checkbox"/> No

**15** Identify the option that best describes how you financed the purchase of emissions testing equipment.

Mark  **ONE box only.**

- Paid cash - Go to **18**
- Lease-to-purchase agreement arranged with vendor - Go to **16**
- Loan from bank - Go to **16**

**16** What is the lease-to-purchase or loan term?

years

**17** What is the interest rate for the lease-to-purchase agreement or loan?

percent (%)

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

- Yes. - Go to **19**
- No. - Go to **21**

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

\$   ,    .00 per month/quarter/year

**20** During the last year, what costs did you incur for normal maintenance of the emissions testing equipment that were not covered by the service contract or maintenance package?

\$   ,    .00

**21** Have you ever decommissioned emissions testing equipment that you owned for its entire useful life?

- Yes. - Go to **22**
- No. - Go to **24**

**22** How many years did you own the equipment?

years

**23** What was your cost to decommission that equipment?

\$   ,    .00

**24** Outside of free retests on vehicles that failed previously at your station, do you ever offer emissions tests for free or at no charge?

Yes, please describe

No.

**25** Outside of free retests on vehicles that failed previously at your station, do you ever charge less than \$11.50 for an emissions test?

Yes. What is the lowest fee that you charge? \$   .

No.

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

Yes.

No. If not, please tell us some of the reasons in the space below. If you require additional space for your comments, please include them on the back of this page.

**END**

**Thank you for completing this survey.**

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

Please return the completed original questionnaire in the postage-paid envelope provided. Please make a photocopy of this form for your records. 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.