

Attachment C

Inspection and Maintenance (I/M) Program Performance
Standard Modeling (PSM) for the Updated I/M Programs in the
Austin-Round Rock (ARR), Bexar County, Dallas-Fort Worth
(DFW), El Paso County, and Houston-Galveston-Brazoria (HGB)
I/M Program Areas

2026 Program Implementation Year

Updated Program Assessment

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CHAPTER 1: INTRODUCTION

On November 7, 2022, the United States Environmental Protection Agency (EPA) published the final approval of Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards (87 FR 60897). This rule requires states to provide a demonstration that the existing or proposed vehicle inspection and maintenance (I/M) program for a newly designated or reclassified ozone nonattainment area meets the emissions reduction benchmarks specified for the area's ozone National Ambient Air Quality Standard classification level. EPA interprets the I/M performance requirement to mean upon designation or reclassification that a proposed or existing I/M program must meet the I/M performance benchmark. These I/M emissions reductions should be realized in the attainment year or program implementation year.

The Texas Commission on Environmental Quality (TCEQ) performed the required performance standard modeling analysis of the Austin-Round Rock (ARR), Bexar County, Dallas-Fort Worth (DFW), El Paso County, and Houston-Galveston-Brazoria (HGB) I/M program areas using the requirements in the EPA guidance document, *Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) Programs Using the MOVES Mobile Source Emissions Model* (EPA-420-B-22-034, October 2022). TCEQ specifically used the Enhanced Performance Standard that reflects the I/M program design elements as specified in 40 Code of Federal Regulations §51.351(i). The assessment uses a 2026 analysis year, the anticipated implementation year for the updated I/M programs in the ARR, Bexar County, DFW, El Paso County, and HGB I/M program areas. The documentation of the PSM assessments is provided in Chapter 2: *Performance Standard Modeling for the Updated ARR, Bexar County, DFW, El Paso, and HGB I/M Program Scenario and for the EPA Enhanced Performance Standard Scenario*. A summary of the results is provided in Chapter 3: *Summary of Results for Performance Standard Modeling*.

CHAPTER 2: PERFORMANCE STANDARD MODELING FOR THE UPDATED ARR, BEXAR COUNTY, DFW, EL PASO COUNTY, AND HGB I/M PROGRAM SCENARIO AND FOR EPA ENHANCED PERFORMANCE STANDARD SCENARIO

2.1 MODELING BACKGROUND

The performance standard modeling (PSM) analysis was performed in a manner consistent with all the state implementation plan (SIP) requirements for the Austin-Round Rock (ARR), Bexar County, Dallas-Fort Worth (DFW), El Paso County, and Houston-Galveston-Brazoria (HGB) inspection and maintenance (I/M) program areas and the United States Environmental Protection Agency (EPA) guidance document, *Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) Programs Using the MOVES Mobile Source Emissions Model*. This report provides documentation that supports the conclusion that the ARR, Bexar County, DFW, El Paso County, and HGB area I/M programs meet the Enhanced Performance Standard. This documentation includes:

- a description of the updated ARR, Bexar County, DFW, El Paso County, and HGB area I/M program that includes the geographic scope, tests performed and inspection frequency, vehicles covered including model years, weight classes, fuel types, etc., and other coverage information such as waiver programs;
- a description of the Enhanced Performance Standard I/M program that includes the geographic scope, tests performed and inspection frequency, vehicles covered including model years, weight classes, fuel types, etc., and other coverage information such as waiver programs;
- a description of the analysis for 2026, which is the anticipated implementation year for the updated I/M programs in the ARR, Bexar County, DFW, El Paso County, and HGB I/M program areas;
- a reference to the emissions model, EPA's Motor Vehicle Emissions Simulator 4 (MOVES4), that is used;
- MOVES4 Run Specification (RunSpec) files (available upon request) – these files define the scope of the MOVES4 run by defining elements such as time period(s), geographical area, source types, etc. included in the modeling;
- MOVES4 Input Databases (available upon request) – input databases provide vehicle characteristics, vehicle activity, and other local conditions;
- MOVES4 Output Databases (available upon request) – output databases contain the results of the MOVES4 analysis; and
- post-processing calculations that demonstrate how the I/M program meets the applicable performance standard in the I/M regulations.

2.2 UPDATED ARR, BEXAR COUNTY, DFW, EL PASO, AND HGB I/M PROGRAM

As part of this SIP revision, TCEQ is proposing updates to the vehicle emissions testing programs for the ARR, Bexar County, DFW, El Paso County, and HGB areas to implement the new requirements for Texas I/M programs specified in Texas Senate Bill (SB) 2102, 88th Texas Legislature, 2023. Specifically, SB 2102 extends the inspection exemption period for rental vehicles to three years. The anticipated implementation year for the updated I/M programs is 2026. Texas I/M program requirements are

codified in 30 Texas Administrative Code §114, Subchapter C. The design elements of the I/M programs include the following.

- Subject vehicles and test frequency: Gasoline vehicles, except rental vehicles, model-year 2 to 24 years old are required to have an annual emissions inspection beginning with the vehicle's second anniversary; and gasoline vehicles titled as rental vehicles model-year 3 to 24 years old are required to have an annual inspection beginning with the vehicle's third anniversary. Since the exempt rental vehicles are a subset of the MOVES regulatory classes used for modeling emissions, the regulatory class coverage adjustment (RCCA) variable within the Compliance Factor is used to model the change in the number of subject vehicles.
- Inspection method: Model-year 1996 and newer vehicles are subject to on-board diagnostics (OBD) inspections.
- Timing: Annual test required.
- 2026: The anticipated implementation year for the updated I/M programs.
- Testing network: All inspection stations are required to offer OBD inspections.
- Waivers: Waivers and time extensions are available for eligible vehicle owners.
- Vehicles must successfully pass the emissions inspection before receiving a passing vehicle inspection report, which is required to renew the vehicle's annual registration and obtain a vehicle registration insignia sticker.

An I/M program is characterized in MOVES4 through a table in the input county database file called the *IMCoverageTable*. The MOVES4 inputs used in the *IMCoverageTable* for the updated program scenario are consistent with the I/M program in this SIP revision. The input values used to model the ARR, Bexar County, DFW, El Paso County, and HGB I/M program design requirements in MOVES4 are discussed in Section 2.5: *I/M Program Parameters for Input County Database Tables (IMCOVERAGETABLE)*.

2.3 MOVES4 RUN SPECIFICATION

The 2026 updated program PSM analysis included modeling of two scenarios for each I/M program area:

1. Updated ARR, Bexar County, DFW, El Paso County, and HGB program scenario: This scenario represents the new I/M program that is covered by this SIP and is consistent with all the 2026 local area parameters, control measures, and the inputs that define each I/M program area; and
2. Enhanced Performance Standard benchmark scenario: This scenario models the Enhanced Performance Standard EPA defined benchmark program and is consistent with all the 2026 local area parameters, control measures, and an I/M program with the elements of the required I/M performance standard.

For the 2026 updated I/M program PSM analysis using MOVES4, the MOVES4 graphical user interface (GUI) was used to develop run specification (RunSpec) files for each scenario. The PSM RunSpec selections include the following.

- Description Panel: The description panel was used to document each of the two PSM scenarios for each of the 18 counties.
- Scale Panel: On-road; county; and inventory.

- Time Spans Panel: 2026; July; weekday; all hours.
- Geographic Bounds Panel: 18 geographic scenarios, one geographic scenario for each of the counties within the five updated I/M program areas.
- On-road Vehicle Equipment Panel: All fuel type/source type combinations.
- Road Type Panel: All road types.
- Pollutants and Processes Panel: volatile organic compounds (VOC), nitrogen oxides (NO_x), all the pollutants and emission processes that MOVES4 needs to calculate VOC, and with refueling emissions unchecked.
- General Output Panel: Output database specified with naming convention consistent with county, year, and PSM scenario; tons; miles; include distance traveled.
- Output Emissions Detail Panel: 24-hour day.
- Create Input Database Panel: existing input county databases (CDBs) are selected, see Section 2.4 *MOVES4 Input County Databases*; the option to create an input CDB is not used for the PSM runs.
- Advanced Performance Features Panel: not used for PSM scenarios.

The MOVES4 run specification files are provided in Electronic Attachment 2: *Run Specification Files*.

2.4 MOVES4 INPUT COUNTY DATABASES

The input county databases for the 2026 PSM assessments include local activity, local meteorology, and local fuel parameters for each county. Through a grant agreement with the Texas A&M Transportation Institute, TCEQ developed MOVES3.1 input county database (CDB) files for each Texas county, for each MOVES3.1 analysis year. The MOVES3.1 input county databases were processed for compatibility with MOVES4 using techniques documented in EPA's MOVES4 Technical Guidance. The MOVES3.1 input CDBs include local activity information consistent with the analysis year, local meteorological information, local fuel parameters, and existing I/M program parameters. Electronic Attachment 1: *MOVES3 On-Road Trend Emissions Inventories for 1990 and 1999 through 2060* is the Final Project Report and documents development of the county input CDB used for the 2026 PSM modeling.

Two sets of input CDBs are required to complete the PSM MOVES4 runs: 1) an input CDB with the updated I/M program for each subject county, and 2) a CDB with EPA's Enhanced Performance Standard I/M program. Both sets of input CDBs must include the local activity and conditions. MOVES4 input CDBs for ARR, Bexar County, DFW, El Paso County, and HGB reflecting existing 2026 control programs, the updated program *IMCoverageTable*, local activity, and local conditions are used for the updated I/M PSM scenario. For the benchmark EPA Enhanced Performance Standard PSM MOVES4 runs, all tables in the input CDB are the same except for the *IMCoverageTable*. The *IMCoverageTable* is modified for the benchmark runs to be consistent with the Enhanced Performance Standard program provided in the EPA guidance. A summary of the *IMCoverageTable* for each scenario is provided in Section 2.5: *I/M Program Parameters for Input County Database Table (IMCoverageTable)*.

The MOVES4 input county database files are provided in Electronic Attachment 3: *Input County Database Files*.

2.5 I/M PROGRAM PARAMETERS FOR INPUT COUNTY DATABASE TABLES (IMCOVERAGETABLE)

I/M programs are characterized in MOVES4 through an input called the *IMCoverageTable*. The *IMCoverageTable* consists of 13 parameters including: *polProcessID*; *stateID*; *countyID*; *yearID*; *sourceTypeID*; *fuelTypeID*; *IMProgramID*; *inspectFreq*; *testStandardsID*; *begModelYearID*; *endModelYearID*; *useIMyn*; and *complianceFactor*. The input parameters for the two PSM scenarios for each of the five I/M program areas are summarized in:

- Table 2-1: *Austin-Round Rock 2026 MOVES4 I/M Descriptive Inputs for Updated Program for Travis and Williamson Counties*;
- Table 2.2: *Bexar County 2026 MOVES4 I/M Descriptive Inputs for Updated Program*;
- Table 2.3: *DFW 2023 MOVES4 I/M Descriptive Inputs for Updated Program for Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties*;
- Table 2.4: *El Paso 2026 MOVES4 I/M Descriptive Inputs for Updated Program*;
- Table 2.5: *HGB 2026 MOVES4 I/M Descriptive Inputs for Updated Program for Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties*; and
- Table 2.6: *2026 MOVES4 I/M Descriptive Inputs for EPA’s Enhanced Performance Standard Program for All Subject Counties*.

Tables 2.1 through 2.5 are the I/M coverage table inputs for the local I/M program for the five I/M program areas. Table 2.6 is the I/M coverage table inputs for the Enhanced Performance Standard and is the same for all five areas.

Table 2-1: Austin-Round Rock 2026 MOVES4 I/M Descriptive Inputs for Updated Program for Travis and Williamson Counties

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Program ID	140	160	MOVES4
Pollutant Process ID	101, 102, 201, 202, 301, 302	112	MOVES4
Source Use Type	21, 31, 32	21, 31, 32	MOVES4
Begin Model Year	2002	2002	Annual testing; program specifications
End Model Year	2024	2024	Annual testing; program specifications
Inspect Frequency	1	1	Annual testing; program specifications
Test Standards Description	Exhaust OBD Check	Evaporative Gas Cap and OBD Check	Annual testing; program specifications
Test Standards ID	51	45	MOVES4

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Compliance	93.99% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	93.99% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	Latest available (2021) ARR I/M Program data for Compliance Rate, Waiver Rate, and Failure Rate; and MOVES4 default values for RCCA. See Section 2.6

Table 2-2: Bexar County 2026 MOVES4 I/M Descriptive Inputs for Updated Program

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Program ID	140	160	MOVES4
Pollutant Process ID	101, 102, 201, 202, 301, 302	112	MOVES4
Source Use Type	21, 31, 32	21, 31, 32	MOVES4
Begin Model Year	2002	2002	Annual testing; program specifications
End Model Year	2024	2024	Annual testing; program specifications
Inspect Frequency	1	1	Annual testing; program specifications
Test Standards Description	Exhaust OBD Check	Evaporative Gas Cap and OBD Check	Annual testing; program specifications
Test Standards ID	51	45	MOVES4
I/M Compliance	95.77% for source use type 21, 92.05% for source use type 31, and 72.08% for source use type 32	95.77% for source use type 21, 92.05% for source use type 31, and 72.08% for source use type 32	Program design criteria for Compliance Rate, Waiver Rate and Failure Rate; and MOVES4 default values for RCCA. See Section 2.6

Table 2-3: DFW 2023 MOVES4 I/M Descriptive Inputs for Updated Program for Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Program ID	20	24	MOVES4
Pollutant Process ID	101, 102, 201, 202, 301, 302	112	MOVES4

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
Source Use Type	21, 31, 32	21, 31, 32	MOVES4
Begin Model Year	2002	2002	Annual testing; program specifications
End Model Year	2024	2024	Annual testing; program specifications
Inspect Frequency	1	1	Annual testing; program specifications
Test Standards Description	Exhaust OBD Check	Evaporative Gas Cap and OBD Check	Annual testing; program specifications
Test Standards ID	51	45	MOVES4
I/M Compliance	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	Latest available (2021) DFW I/M Program data for Compliance Rate, Waiver Rate and Failure Rate; and MOVES4 default values for RCCA. See Section 2.6

Table 2-4: El Paso County 2026 MOVES4 I/M Descriptive Inputs for Updated Program

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Program ID	140	160	MOVES4
Pollutant Process ID	101, 102, 201, 202, 301, 302	112	MOVES4
Source Use Type	21, 31, 32	21, 31, 32	MOVES4
Begin Model Year	2002	2002	Annual testing; program specifications
End Model Year	2024	2024	Annual testing; program specifications
Inspect Frequency	1	1	Annual testing; program specifications
Test Standards Description	Exhaust OBD Check	Evaporative Gas Cap and OBD Check	Annual testing; program specifications
Test Standards ID	51	45	MOVES4

I/M Compliance	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	Latest available (2021) El Paso I/M Program data for Compliance Rate, Waiver Rate and Failure Rate; and MOVES4 default values for RCCA. See Section 2.6
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Table 2-5: HGB 2026 MOVES4 I/M Descriptive Inputs for Updated Program for Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Source Information
I/M Program ID	140	160	MOVES4
Pollutant Process ID	101, 102, 201, 202, 301, 302	112	MOVES4
Source Use Type	21, 31, 32	21, 31, 32	MOVES4
Begin Model Year	2002	2002	Annual testing; program specifications
End Model Year	2024	2024	Annual testing; program specifications
Inspect Frequency	1	1	Annual testing; program specifications
Test Standards Description	Exhaust OBD Check	Evaporative Gas Cap and OBD Check	Annual testing; program specifications
Test Standards ID	51	45	MOVES4
I/M Compliance	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	94.00% for source use type 21, 90.35% for source use type 31, and 70.74% for source use type 32	Latest available (2021) HGB I/M Program data for Compliance Rate, Waiver Rate and Failure Rate; and MOVES4 default values for RCCA. See Section 2.6

Table 2-6: 2026 MOVES4 I/M Descriptive Inputs for EPA's Enhanced Performance Standard Program for All Subject Counties

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Values for Third Specified Test	Source Information
I/M Program ID	111	143	151	MOVES4
Pollutant Process ID	101, 102, 301, 302	112	101, 102, 301, 302	Enhanced Performance Standard Program
Source Use Type	21, 31, 32	21, 31, 32	21, 31, 32	Enhanced Performance Standard Program
Begin Model Year	1968	2001	2001	Enhanced Performance Standard Program
End Model Year	2000	2025	2025	Enhanced Performance Standard Program
Inspect Frequency	1	1	1	Enhanced Performance Standard Program
Test Standards Description	Unloaded Idle Test	Evaporative System OBD Check	Exhaust OBD Check	Enhanced Performance Standard Program
Test Standards ID	11	43	51	MOVES4

Parameter Name	Values for First Specified Test	Values for Second Specified Test	Values for Third Specified Test	Source Information
I/M Compliance	fuelTypeID 1: 95.77% for source use type 21, 92.05%, for source use type 31, and 72.08% for source use type 32; fuelTypeID 5: 95.77% for all source use types	fuelTypeID 1: 95.77% for source use type 21, 92.05%, for source use type 31, and 72.08% for source use type 32; fuelTypeID 5: 95.77% for all source use types	fuelTypeID 1: 95.77% for source use type 21, 92.05%, for source use type 31, and 72.08% for source use type 32; fuelTypeID 5: 95.77% for all source use types	Enhanced Performance Standard Program

2.6 SOURCES OF DATA FOR COMPLIANCE FACTOR CALCULATION

The calculation of the I/M compliance factors is consistent with the definitions, equation, and recommendations in the most recent MOVES4 Technical Guidance, Section 4.9.10, Compliance Factor. The compliance factor entered in MOVES4 is calculated as:

$$CF = CR \times (1 - WR \times FR) \times RCCA$$

- Where:
- CF = Compliance factor
- CR = Compliance rate
- WR = Waiver rate
- FR = Failure rate
- RCCA = Regulatory class coverage adjustment

The updated I/M programs in all five I/M program areas allow for rental vehicles to delay initial inspection until Model-Year 3. Prior to calculating the MOVES compliance factors for each I/M program area, an assessment of the number of Model Year 3 rental vehicles relative to the number of subject vehicles for each of the three I/M regulatory classes was required. If the ratio of rental vehicles to subject vehicles is below the significant figure threshold of the compliance factor calculations, an update to the RCCA is not required.

The most recent I/M program performance data is for year 2021. The number of subject vehicles is included in the I/M program data. The number of Model Year 3 vehicles titled as rental vehicles was obtained from the Texas Department of Motor Vehicles. The assessment of the ratio of the Model-Year 3 rental vehicles to the total subject vehicles demonstrated that the values were less than significant figure threshold of the compliance factor calculations for all evaluations, and therefore no update to the RCCA was required.

The implementation date for the I/M program in Bexar County is 2026, therefore, historical program performance data are not yet available for the Bexar County I/M program. For the updated program in the Bexar County area, the I/M program values used for the failure rate, waiver rate, and compliance rate are based upon default and assumed values using recommendations from the EPA guidance document, *Performance Standard Modeling for New and Existing Vehicle Inspection and Maintenance (I/M) Programs Using the MOVES Mobile Source Emissions Model*, in conjunction with the I/M program design criteria from the TCEQ Mobile Source Programs Team. A compliance rate of 96.00 percent can be assumed for programs that include centralized monitoring of testing and registration denial. A three percent waiver rate and an eight percent failure rate can be used as default values until program historical information is available.

The MOVES4 Bexar County area compliance factor values used for this PSM assessment were developed for calendar year 2026, the anticipated implementation year for the updated Bexar County area I/M program. The calculations use new program compliance, waiver, and failure rates and RCCA factors from Appendix A of the most recent MOVES4 Technical Guidance. The results of the Bexar County MOVES4 Compliance Factor calculations are summarized in Table 2-7: *Bexar County Updated I/M Program MOVES4 Compliance Factors*.

For the updated programs in the ARR, DFW, El Paso County, and HGB areas, historical I/M program data were used to obtain the failure rate, waiver rate, and compliance rate. The historical data used for these PSM assessments are from the TCEQ Mobile Source Programs Team based on I/M operating information for the 2021 calendar year, the most recent data available at the time of this assessment. The RCCA factors are from Appendix A of the most recent MOVES4 Technical Guidance. The results of the compliance factor calculations for the ARR, DFW, El Paso County, and HGB I/M program areas are summarized in:

- Table 2-8: *ARR Updated I/M Program MOVES4 Compliance Factors*;
- Table 2-9: *DFW Updated I/M Program MOVES4 Compliance Factors*;
- Table 2-10: *El Paso County Updated I/M Program MOVES4 Compliance Factors*; and
- Table 2-11: *HGB Updated I/M Program MOVES4 Compliance Factors*.

Table 2-7: Bexar County Updated I/M Program MOVES4 Compliance Factors

MOVES3.1 Modeling Parameter	Passenger Car	Passenger Truck	Light Commercial Truck
Compliance Rate (CR)	96.00%	96.00%	96.00%
Waiver Rate (WR)	3.00%	3.00%	3.00%
Failure Rate (FR)	8.00%	8.00%	8.00%
Regulatory Class Coverage Adjustment (RCCA)	100.00%	96.12%	75.26%
MOVES4 I/M Compliance Factor	95.77%	92.05%	72.08%

Table 2-8: ARR Updated I/M Program MOVES4 Compliance Factors

MOVES4 Modeling Parameter	Passenger Car	Passenger Truck	Light Commercial Truck
Compliance Rate (CR)	94.00%	94.00%	94.00%
Waiver Rate (WR)	0.16%	0.16%	0.16%
Failure Rate (FR)	3.88%	3.88%	3.88%
Regulatory Class Coverage Adjustment (RCCA)	100.00%	96.12%	75.26%
MOVES4 I/M Compliance Factor	93.99%	90.35%	70.74%

Table 2-9: DFW Updated I/M Program MOVES4 Compliance Factors

MOVES4 Modeling Parameter	Passenger Car	Passenger Truck	Light Commercial Truck
Compliance Rate (CR)	94.00%	94.00%	94.00%
Waiver Rate (WR)	0.09%	0.09%	0.09%
Failure Rate (FR)	3.08%	3.08%	3.08%
Regulatory Class Coverage Adjustment (RCCA)	100.00%	96.12%	75.26%
MOVES4 I/M Compliance Factor	94.00%	90.35%	70.74%

Table 2-10: El Paso County Updated I/M Program MOVES4 Compliance Factors

MOVES4 Modeling Parameter	Passenger Car	Passenger Truck	Light Commercial Truck
Compliance Rate (CR)	94.00%	94.00%	94.00%
Waiver Rate (WR)	0.01%	0.01%	0.01%
Failure Rate (FR)	3.20%	3.20%	3.20%
Regulatory Class Coverage Adjustment (RCCA)	100.00%	96.12%	75.26%
MOVES4 I/M Compliance Factor	94.00%	90.35%	70.74%

Table 2-11: HGB Updated I/M Program MOVES4 Compliance Factors

MOVES4 Modeling Parameter	Passenger Car	Passenger Truck	Light Commercial Truck
Compliance Rate (CR)	94.00%	94.00%	94.00%
Waiver Rate (WR)	0.07%	0.07%	0.07%
Failure Rate (FR)	3.37%	3.37%	3.37%
Regulatory Class Coverage Adjustment (RCCA)	100.00%	96.12%	75.26%
MOVES4 I/M Compliance Factor	94.00%	90.35%	70.74%

2.7 PROCESSING MODEL OUTPUT FOR THE ENHANCED PERFORMANCE STANDARD ASSESSMENT

Evaluating whether a proposed program meets the Enhanced Performance Standard requires showing that the proposed program grams per mile emission rates for NO_x and VOC emissions are less than the emission rates of the benchmark program plus a 0.02 grams-per-mile buffer rate. To perform this evaluation, TCEQ converted MOVES4 output emissions in grams per day to the equivalent grams per mile rate. The conversion is done using one of the Structured Query Language (SQL) scripts EPA has provided within MOVES4 called *EmissionRates.sql*. The *EmissionRates.sql* script computes emissions in grams per mile based upon the output from the MOVES4 runs in grams per day.

After each MOVES4 run was completed, to access the *EmissionRates.sql* script, first, an output database was specified in the General Output panel of the MOVES4 GUI. Once the output database was specified, an option in the Post Processing menu in MOVES4 provides the *EmissionRates.sql* script. The *EmissionRates.sql* script takes information from the *movesactivityoutput* table and the *movesoutput* table in the output database and produces a new table in the output database called *movesrates*. Finally, the *emissionRate* column in the *movesrates* table provides the gram-per-mile rate for each pollutant.

The *EmissionRates.sql* results are included in the output county databases for each scenario. The MOVES4 output county database files are provided in Electronic Attachment 4: *Output County Database Files*. Summaries of the PSM results for the ARR, Bexar County, DFW, El Paso County, and HGB I/M program areas are provided in Chapter 3: *Summary of Results for Performance Standard Modeling*.

CHAPTER 3: SUMMARY OF RESULTS FOR PERFORMANCE STANDARD MODELING

TCEQ performed Motor Vehicle Emissions Simulator 4 (MOVES4) runs and post-processing for the updated inspection and maintenance (I/M) program and the Enhanced Performance Standard for each I/M program area. The assessment uses a 2026 analysis year. The PSM analysis includes all counties within the Austin-Round Rock (ARR), Bexar County, Dallas-Fort Worth (DFW), El Paso County, and Houston-Galveston-Brazoria (HGB) I/M program areas that are required to operate an I/M program. All required documentation for the I/M program performance standard benchmark assessment is provided in Chapter 2: *Performance Standard Modeling for the Updated ARR, Bexar County, DFW, El Paso County, and HGB I/M Program Scenario and for the EPA Enhanced Performance Standard Scenario.*

Evaluating whether the updated I/M program meets the Enhanced Performance Standard requires demonstrating that the updated program emission rates for nitrogen oxides (NO_x) and volatile organic compounds (VOC) do not exceed the benchmark program's emission rates plus a 0.02 grams-per-mile buffer. The analysis demonstrates that the updated ARR, Bexar County, DFW, El Paso County, and HGB I/M program area emissions rates are lower than the performance standard benchmark-plus-buffer emission rates for every county with an I/M program. Therefore, the ARR, Bexar County, DFW, El Paso County, and HGB area I/M program performance requirement is met. Summaries of the 2026 I/M PSM analysis for each of the five I/M program areas are provided in:

- Table 3-1: *Summary of NO_x Performance Standard Evaluation for the Austin-Round Rock Area Updated I/M Program;*
- Table 3-2: *Summary of VOC Performance Standard Evaluation for the Austin-Round Rock Area Updated I/M Program;*
- Table 3-3: *Summary of the NO_x Performance Standard Evaluation for the Bexar County Updated I/M Program;*
- Table 3-4: *Summary of the VOC Performance Standard Evaluation for the Bexar County Updated I/M Program;*
- Table 3-5: *Summary of NO_x Performance Standard Evaluation for the DFW Area Updated I/M Program;*
- Table 3-6: *Summary of VOC Performance Standard Evaluation for the DFW Area Updated I/M Program;*
- Table 3-7: *Summary of NO_x Performance Standard Evaluation for the El Paso County Updated I/M Program;*
- Table 3-8: *Summary of VOC Performance Standard Evaluation for the El Paso County Updated I/M Program;*
- Table 3-9: *Summary of NO_x Performance Standard Evaluation for the HGB Area Updated I/M Program; and*
- Table 3-10: *Summary of VOC Performance Standard Evaluation for the HGB Area Updated I/M Program.*

Table 3-1: Summary of NO_x Performance Standard Evaluation for the Austin-Round Rock Area Updated I/M Program

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Travis	0.21	0.21	0.23	Yes
Williamson	0.25	0.25	0.27	Yes

Table 3-2: Summary of VOC Performance Standard Evaluation for the Austin-Round Rock Area Updated I/M Program

County	I/M Program VOC Emission Rate	I/M VOC Performance Standard Benchmark	I/M VOC Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Travis	0.12	0.13	0.15	Yes
Williamson	0.14	0.14	0.16	Yes

Table 3-3: Summary of NO_x Performance Standard Evaluation for the Bexar County Updated I/M Program

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Bexar	0.23	0.23	0.25	Yes

Table 3-4: Summary of VOC Performance Standard Evaluation for the Bexar County Updated I/M Program

County	I/M Program VOC Emission Rate	I/M VOC Performance Standard Benchmark	I/M VOC Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Bexar	0.14	0.15	0.17	Yes

Table 3-5: Summary of NO_x Performance Standard Evaluation for the DFW Area Updated I/M Program

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Collin	0.18	0.18	0.20	Yes
Dallas	0.18	0.18	0.20	Yes
Denton	0.21	0.21	0.23	Yes
Ellis	0.29	0.29	0.31	Yes
Johnson	0.34	0.34	0.36	Yes
Kaufman	0.34	0.34	0.36	Yes
Parker	0.40	0.40	0.42	Yes

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Rockwall	0.24	0.24	0.26	Yes
Tarrant	0.18	0.18	0.20	Yes

Table 3-6: Summary of VOC Performance Standard Evaluation for the DFW Area Updated I/M Program

County	I/M Program VOC Emission Rate	I/M VOC Performance Standard Benchmark	I/M VOC Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Collin	0.13	0.14	0.16	Yes
Dallas	0.11	0.11	0.13	Yes
Denton	0.14	0.15	0.17	Yes
Ellis	0.10	0.11	0.13	Yes
Johnson	0.14	0.15	0.17	Yes
Kaufman	0.10	0.11	0.13	Yes
Parker	0.13	0.13	0.15	Yes
Rockwall	0.14	0.14	0.16	Yes
Tarrant	0.13	0.13	0.15	Yes

Table 3-7: Summary of NO_x Performance Standard Evaluation for the El Paso County Updated I/M Program

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
El Paso	0.34	0.34	0.36	Yes

Table 3-8: Summary of VOC Performance Standard Evaluation for the El Paso County Updated I/M Program

County	I/M Program VOC Emission Rate	I/M VOC Performance Standard Benchmark	I/M VOC Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
El Paso	0.19	0.19	0.21	Yes

Table 3-9: Summary of NO_x Performance Standard Evaluation for the HGB Area Updated I/M Program

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Brazoria	0.21	0.21	0.23	Yes
Fort Bend	0.20	0.20	0.22	Yes

County	I/M Program NO _x Emission Rate	I/M NO _x Performance Standard Benchmark	I/M NO _x Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Galveston	0.17	0.17	0.19	Yes
Harris	0.19	0.19	0.21	Yes
Montgomery	0.20	0.20	0.22	Yes

Table 3-10: Summary of VOC Performance Standard Evaluation for the HGB Area Updated I/M Program

County	I/M Program VOC Emission Rate	I/M VOC Performance Standard Benchmark	I/M VOC Performance Standard Benchmark Plus Buffer	Does Proposed Program Meet I/M Performance Standard?
Brazoria	0.13	0.14	0.16	Yes
Fort Bend	0.16	0.16	0.18	Yes
Galveston	0.14	0.14	0.16	Yes
Harris	0.11	0.12	0.14	Yes
Montgomery	0.13	0.13	0.15	Yes

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<https://www.tceq.texas.gov/downloads/air-quality/sip/misc/mobile/2024-im-sip-electronic-attachments.zip>.