

**APPENDIX 17**  
**Pre-Analysis Consensus Document**

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## PRE-ANALYSIS CONSENSUS PLAN

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### 1. Reasons for the Transportation Conformity Regional Emissions Analysis (40 CFR 93.104

[https://www.govinfo.gov/app/search/?7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A\(CFR\)%20AND%20publishdate%3Arange\(%2C2018-12-17\)%20AND%20content%3A\(40%20CFR%2093.104\)%22%2C%22historical%22%3Atrue%7D](https://www.govinfo.gov/app/search/?7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A(CFR)%20AND%20publishdate%3Arange(%2C2018-12-17)%20AND%20content%3A(40%20CFR%2093.104)%22%2C%22historical%22%3Atrue%7D)

**Beginning 8/14/2017.**

**Table 1: Explanation**

X	New Metropolitan Transportation Plan (demographics, horizon year, etc.)
	Modify Existing Metropolitan Transportation Plan (interim year adjustments)
X	New or Amended Transportation Improvement Program
	State Implementation Plan (SIP) Requirement
X	Newly Designated Nonattainment Area
	Other

Conformity Rule link: <http://www.gpo.gov/fdsys/pkg/FR-2012-03-14/pdf/2012-6207.pdf>

This conformity determination is being prepared to support the new long-range plan called the “2045 Regional Transportation Plan” (RTP) and the new “2019-2022 Transportation Improvement Program” (TIP).

**Note: In accordance with 23 CFR§450.324**

[https://www.govinfo.gov/app/search/?7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A\(CFR\)%20AND%20publishdate%3Arange\(%2C2018-12-17\)%20AND%20content%3A\(23%20CFR%20450.324\)%22%2C%22historical%22%3Atrue%7D](https://www.govinfo.gov/app/search/?7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A(CFR)%20AND%20publishdate%3Arange(%2C2018-12-17)%20AND%20content%3A(23%20CFR%20450.324)%22%2C%22historical%22%3Atrue%7D), all

**projects are constrained by the financial resources estimated to be reasonably available within the RTP timeframe.**

A complete listing of the projects in the RTP and TIP that affect this conformity analysis will be included in Appendix 3 of the conformity report. This conformity will comply with the non-attainment designation for the 2015 8-hr Ozone Standard (effective date August 3, 2018). Under the Clean Air

Act, the demonstration conformity is required within one year of designation to avoid a conformity lapse. In addition, this conformity complies with the 2008 8-hr Ozone NAAQS.

This conformity will demonstrate compliance to the latest emission budgets based on the revision to the air quality State Implementation Plan for the 2008 8-hr Ozone Standard due to the reclassification from marginal to moderate with attainment year 2017. The Reasonable Further Progress (RFP) SIP budget was found adequate by the Environmental Protection Agency (EPA) on June 6, 2017 with an effective date of June 21, 2017.

The February 16, 2018 court decision on South Coast Air Quality Management District versus EPA does not affect transportation conformity requirements for the 2015 ozone NAQSS.<sup>1</sup>

### **Draft Timeline**

- Pre-Consensus Conference Call #1 - Initiate Conformity: November 14, 2018  
Deadline for approval of Pre-Consensus Document: November 29, 2018
  - Model Network Review (H-GAC/TxDOT/METRO): Early December 2018  
Deadline for pre-approval of networks: 2 weeks later
  - TDM Model Runs: December 2018
  - MOVES Model Runs: January 2019
  - TAC Conformity Preview: 2/20/2019
  - TPC Conformity Preview: 2/28/2019
  - Conference Call #2 (Public Comment Documents): End of February 2019
  - Public Comment Period (Plan and Conformity): March 19 – April 19, 2019
    - Public Involvement Meetings consisting with Public Participation (sometime between 3/19 – 4/19)
  - Conference Call #3 (Public Comment Responses): Mid-April 2019
  - TAC Recommend Conformity & Transportation Plan: 4/17/ 2019
  - TPC Approve Conformity & Transportation Plan: 4/26/ 2019
  - Conference Call #4 (Request Partner Review/Approval): End-April 2019
- This conformity needs to be approved before August 3, 2019 to avoid a conformity lapse.

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<sup>1</sup> Transportation Conformity Guidance for 2015 Ozone NAAQS Nonattainment Areas . EPA June 2018

<https://www.epa.gov/state-and-local-transportation/policy-and-technical-guidance-state-and-local-transportation>

**2. Planning Detail 40 CFR 93.110** <https://www.govinfo.gov/app/details/CFR-1998-title40-vol13/CFR-1998-title40-vol13-sec93-110>

**Table 2: Metropolitan Transportation Plan/Transportation Improvement Program**

Plan or Program names	Years covered	Fiscally Constrained	Website
<b>2045 Regional Transportation Plan</b>	2019-2045	Yes	<a href="http://2045rtp.com/default.aspx">http://2045rtp.com/default.aspx</a>
<b>Transportation Improvement Program</b>	2019-2022	Yes	<a href="http://www.h-gac.com/taq/tip/2019-2022-tip.aspx">http://www.h-gac.com/taq/tip/2019-2022-tip.aspx</a>

**Table 3: State Implementation Plan**

SIP Element	Description
<b>Title of Applicable SIP</b>	<p>Houston-Galveston-Brazoria Reasonable Further Progress State Implementation Plan Revision for the 2008 Eight-Hour Ozone Standard Nonattainment Area</p> <p>MVEB were found adequate by EPA 6/6/2017 (effective 6/21/2017)</p> <p>2017 HGB 2008 Eight-Hour Ozone RFP SIP Revision (Project No. 2016-017-SIP-NR)</p> <p><a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2016-HGB-AD-RFP/HGBRFP_2016_Archive.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2016-HGB-AD-RFP/HGBRFP_2016_Archive.pdf</a></p>

<b>Motor Vehicle Emissions Budgets</b>	RFP SIP for 2008 8-hr Ozone Standard: 2017 NO <sub>x</sub> = 121.81 tpd VOC= 68.04 tpd
<b>Transportation Control Measures</b> (The list of TCMs will be included in Appendix 12)	<p>1. 2000 HGB RFP and AD SIP, Approved Nov. 2001 ID#2000-011-SIP-AI <a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2000-12-HGB/HGB_AD_ROP_dec2000.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2000-12-HGB/HGB_AD_ROP_dec2000.pdf</a></p> <p>2. 2004 HGB Mid Course Review SIP, Approved Dec. 2004 ID# 2004-42-NR <a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2004-05-HGB/HGB_MCR_dec2004.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2004-05-HGB/HGB_MCR_dec2004.pdf</a></p> <p>3. TCM Substitution for HGB 2006 <a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2007-HGB-SIPs/HGB_SIP_2007_Archive.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2007-HGB-SIPs/HGB_SIP_2007_Archive.pdf</a></p> <p>4. 2010 HGB AD SIP for the 1997 8-hr Ozone Standard (2009-017-SIP-NR) <a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2010-HGB-AD-RFP/HGB_AD_2010_archive.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2010-HGB-AD-RFP/HGB_AD_2010_archive.pdf</a></p>

**Table 4: Conformity Analysis Years**

<b>Requirement</b>	<b>Years</b>
<b>Conformity Base Year (validation year)</b>	2016
<b>Attainment Year</b>	2020 <sup>1</sup>
<b>Motor Vehicle Emissions Budget Years</b>	
<b>First Analysis Year</b>	2020
<b>Intermediate Analysis Years</b>	2030, 2040
<b>Last Year of RTP</b>	2045

<sup>1</sup>Attainment year 2020 for the 2015 8-hr Ozone Standard

**Table 5: Demographics Used in Conformity Analysis**

<b>Data Element</b>	<b>Detail and Source of Data</b>
<b>Population</b>	<p>H-GAC uses an in-house model for regional econometric forecasting local area forecasts. The base year demographic was developed based on the 2010 Census and 2005 to 2014 American Community Survey (ACS) Public Use Microdata Sample (PUMS).</p> <p>The base year demographic is fed into an in-house demographic evolution model to simulate future population mix.</p>
<b>Employment</b>	<p>H-GAC uses an in-house model for regional econometric forecast-supplied data as baseline H-GAC forecasts regional employment according to multiple sources such as 2014 Texas Workforce Commission, 2005 to 2014 ACS PUMS, and 2015 Woods &amp; Poole.</p>
<b>Socio-economic</b>	<p>H-GAC's socio-economic model uses a 2010 base year. The forecast uses the following external data as input: 2014 Texas Workforce Commission, 2005 to 2014 ACS PUMS, and 2015 Woods &amp; Poole.</p>

### 3. Activity Detail

**Table 6: Travel Demand Model**

<b>Model Factor</b>	<b>Detail and Methodology</b>
<b>Model Validation Year</b>	2016
<b>Software</b>	Cube Voyager
<b>Mode Split/Mode Choice</b>	Updated and simplified model with help from Houston METRO
<b>Vehicle Miles Travel (VMT) Highway Performance Monitoring System (HPMS) Adjustment</b>	H-GAC will adjust the forecasted VMT to TxDOT's HPMS for all roadway facilities. The HPMS adjustment factor is calculated below and will be discussed in detail in Appendix 4 of the final report.
<b>VMT adjustment - Seasonal Adjustment Factor</b>	Refer to Table 6a below for factors.
<b>Time Periods Designation</b>	Refer to Table 6b below for designations.
<b>Hourly Factors</b>	Refer to Table 6c below
<b>Counties Covered by Model</b>	Harris, Galveston, Brazoria, Fort Bend, Montgomery, Liberty, Chambers and Waller. <sup>1</sup>

The factor used to reconcile model estimated regional VMT to HPMS estimated regional VMT is calculated by dividing the HPMS estimated average non-summer weekday VMT as follows:

2016 HPMS Adjustment Factor Calculation

$$\begin{aligned}
 &= (\text{HPMS estimated ANSWT}) / (\text{Model estimated ANSWT}) \\
 &= (185,764,014) / (186,710,076) \\
 &= 0.9949330
 \end{aligned}$$

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<sup>1</sup>The counties affected by the 2008 8 hr Ozone Standard are: Harris, Galveston, Brazoria, Fort Bend, Montgomery, Liberty, Chambers and Waller. The counties affected by the 2015 8 hr Ozone Standard are: Harris, Galveston, Brazoria, Fort Bend, Montgomery and Chambers. However, the 8 counties will be used to model the conformity determination for both standards. : [https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=af20ed2ce9060edb99ad830696e25a8a&mc=true&n=s40.22.93.a&r=SUBPART&ty=HTML%20-%20se40.22.93\\_1109#se40.22.93\\_1109](https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=af20ed2ce9060edb99ad830696e25a8a&mc=true&n=s40.22.93.a&r=SUBPART&ty=HTML%20-%20se40.22.93_1109#se40.22.93_1109)

**Table 6a: Seasonal Adjustment Factors\***

	<b>County</b>	<b>Factors</b>
<b>Weekday summer June to August</b>	Harris, Brazoria, Fort Bend, Galveston, Montgomery, and Waller	1.01446
	Liberty, Chambers	1.03033

\*Data from Texas A&M Transportation Institute

Seasonal adjustment factors are used to adjust the Travel Demand Model (TDM) and estimated intrazonal VMT to summer weekday VMT. The adjustment factors were developed using aggregated Automated Traffic Recorder (ATR) data for the years 2007-2016. These factors, provided in Table 6a, were calculated by dividing the average day-of-week (weekday) count for the June – August episode by the Annual Non-Summer Weekday Traffic (ANSWT) count.

Two seasonal factors are needed because there are two different sources for data. The counties of Liberty and Chambers belong to the Beaumont TxDOT District while the counties of Harris, Brazoria, Ft. Bend, Galveston, Montgomery and Waller belong to the Houston TxDOT District.

**Table 6b: Time Period Designations**

<b>Hours</b>	<b>Designations</b>
12:00 a.m. – 12:59 a.m.	Overnight
1:00 a.m. – 1:59 a.m.	Overnight
2:00 a.m. – 2:59 a.m.	Overnight
3:00 a.m. – 3:59 a.m.	Overnight
4:00 a.m. – 4:59 a.m.	Overnight
5:00 a.m. – 5:59 a.m.	Overnight
6:00 a.m. – 6:59 a.m.	AM Peak
7:00 a.m. – 7:59 a.m.	AM Peak
8:00 a.m. – 8:59 a.m.	AM Peak

<b>Hours</b>	<b>Designations</b>
9:00 a.m. – 9:59 a.m.	Midday
10:00 a.m. – 10:59 a.m.	Midday
11:00 a.m. – 11:59 a.m.	Midday
12:00 p.m. – 12:59 p.m.	Midday
1:00 p.m. – 1:59 p.m.	Midday
2:00 p.m. – 2:59 p.m.	Midday
3:00 p.m. – 3:59 p.m.	PM Peak
4:00 p.m. – 4:59 p.m.	PM Peak
5:00 p.m. – 5:59 p.m.	PM Peak
6:00 p.m. – 6:59 p.m.	PM Peak
7:00 p.m. – 7:59 p.m.	Overnight
8:00 p.m. – 8:59 p.m.	Overnight
9:00 p.m. – 9:59 p.m.	Overnight
10:00 p.m. – 10:59 p.m.	Overnight
11:00 p.m. – 11:59 p.m.	Overnight

**Table 6c: Hourly Factors\***

<b>Hours</b>	<b>Designations</b>
12:00 a.m. – 12:59 a.m.	0.009133
1:00 a.m. – 1:59 a.m.	0.006045
2:00 a.m. – 2:59 a.m.	0.005653
3:00 a.m. – 3:59 a.m.	0.005847
4:00 a.m. – 4:59 a.m.	0.011887
5:00 a.m. – 5:59 a.m.	0.034904
6:00 a.m. – 6:59 a.m.	0.061936
7:00 a.m. – 7:59 a.m.	0.068165
8:00 a.m. – 8:59 a.m.	0.058194
9:00 a.m. – 9:59 a.m.	0.051874
10:00 a.m. – 10:59 a.m.	0.050529

<b>Hours</b>	<b>Designations</b>
11:00 a.m. – 11:59 a.m.	0.052538
12:00 p.m. – 12:59 p.m.	0.054395
1:00 p.m. – 1:59 p.m.	0.055211
2:00 p.m. – 2:59 p.m.	0.057869
3:00 p.m. – 3:59 p.m.	0.063351
4:00 p.m. – 4:59 p.m.	0.068174
5:00 p.m. – 5:59 p.m.	0.071420
6:00 p.m. – 6:59 p.m.	0.059365
7:00 p.m. – 7:59 p.m.	0.045813
8:00 p.m. – 8:59 p.m.	0.035531
9:00 p.m. – 9:59 p.m.	0.031194
10:00 p.m. – 10:59 p.m.	0.024428
11:00 p.m. – 11:59 p.m.	0.016542

\*Data from Texas A&M Transportation Institute

**Table 7: Projects**

<b>Project Element</b>	<b>Description</b>
<b>Regionally Significant Definition</b>	Please see definition below
<b>Projects that trigger conformity</b>	Please see below
<b>CMAQ projects</b>	H-GAC does not anticipate taking off-model credit for CMAQ projects within this conformity. CMAQ projects will be identified in Appendix 3.
<b>Non-Federal Projects</b>	All RTP projects will be identified in Appendix 3, including regionally significant projects which do not require federal funds or other approvals.
<b>Exempt Projects</b>	All RTP projects will be identified in Appendix 3. A listing of activities eligible for grouping is contained in Appendix J of the 2019-2022 TIP as well as listing of grouped projects.
<b>Other</b>	All RTP projects will be identified in Appendix 3.

## **Regionally Significant Definition:**

### Regionally Significant Roadway Projects

Non-exempt projects<sup>1</sup> on regionally significant roadways will be treated as regionally significant projects if they:  
provide additional through traffic lanes greater than 1 mile in length;  
construct a bypass to a principal arterial/interstate along on a new alignment;  
add or extend freeway auxiliary/weaving lanes from one interchange to a point beyond the next interchange;  
construct a new interchange that provides access from or allows movement between facilities that was not previously possible; and/or  
remove an existing interchange and result in the elimination of access from or movement between facilities which previously existed.

Regionally significant roadways are limited to:

all freeways, tollways and other highways classified as principal arterial or higher; and  
select highways currently designated as minor arterials that serve significant interregional and intraregional travel, and connect rural population centers not already served by a principal arterial, or connect with intermodal transportation terminals not already served by a principal arterial.

### Regionally Significant Transit Projects

Any transit facility within an exclusive right-of-way (“fixed guideway”) that offers an alternative to regional highway travel including light rail, commuter rail, bus rapid transit, and barrier separated HOV lanes will be considered regionally significant.

### Other Projects

The regional significance of non-exempt projects not addressed in the above statements will be decided on a case-by-case basis through the interagency consultation process. The consultation will occur before taking the plan to TPC (either plan or TIP revision), and prior to the environmental determination.

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<sup>1</sup> Non-exempt projects include all projects that are not identified under 40 CFR § 93.126 and 40 CFR § 93.127 as exempt or exempt from regional emissions analysis.

#### 4. Emissions Detail (MOVES Air Quality Emission Model Information)

**Table 8: MOVES2014b Modeled Pollutants**

Command	Function/Description	Input Parameter Source/Value
<b>Pollutant</b>	Defines the basic set of pollutants to report.	NO <sub>x</sub> , VOC

**Table 9: Model External Conditions**

Utility used	Spatial Emission Estimator (SEE) developed by ERG*
<b>Emission Model Version</b>	MOVES2014b
<b>Analysis Year Runs</b>	2020, 2030, 2040, 2045
<b>Time Periods</b>	AM, MD, PM, OV
<b>Pollutants Reported</b>	NO <sub>x</sub> , VOC
<b>Evaluation Month</b>	July
<b>Inputs to SEE</b>	Hourly VMT per link and speeds, link definitions, time period designation, road type and speed, and VMT mix and emission factors from MOVES model. Inputs will be provided in Appendix 9 of the final report.

\*Detailed information concerning SEE will be included in Appendix 8 of the final report

**Table 10: MOVES2014b Input Parameters and Source**

Input Parameter Name	Description	Source
<b>Source Type Population</b>	Input the number of vehicles in the geographic area, which will be modeled for each vehicle type. A module is used to convert MOVES2014b based TXDMV registration data for each county into 13 MOVES SUT population.	TXDMV registration data for July 2014 (latest available)

<b>Input Parameter Name</b>	<b>Description</b>	<b>Source</b>
<b>Source Type Age Distribution</b>	Input that provides the distribution of vehicle counts by age for each calendar year and vehicle type. TXDMV registration data is used to estimate the age distribution of vehicle types up to 30 years. The distribution of Age fractions should sum up to 1.0 for all vehicle types for each analysis year.	TXDMV registration data for July 2014 (latest available); MOVES default used for buses
<b>Vehicle Type VMT</b>	County-specific VMT is distributed to 6 HPMS vehicle types.	NA
<b>Average Speed Distribution</b>	Input average speed data specific to vehicle type, road type, and time of day/type of day into 16 speed bins. The sum of speed distribution to all speed bins for each road type, vehicle type, and time/day type would be 1.0.	Travel Model Output
<b>Road Type Distribution (VMT Fractions)</b>	Input county-specific VMT by road type. VMT fraction is distributed between the road types and must sum to 1.0 for each source type.	Travel Model Output
<b>Ramp Fraction</b>	Input county-specific fraction of ramp driving time on rural and urban restricted roadway type.	Travel Model Output
<b>Fuel Supply</b>	Input to assign existing fuels to counties, months, and years, and to assign the associated market share for each fuel.	TCEQ, EPA Fuel Surveys and default MOVES input where local data unavailable. (Refer to Table 11)

Input Parameter Name	Description	Source
<b>Meteorology</b>	County-specific data on temperature and humidity.	RFP SIP revision for 2008 8-hr Ozone Standard for years 2020, 2030, 2040 and 2045 Appendix 10: Regional data from TCEQ. HGB area weather station data averages for the 2011 June through August period developed originally for the 2011 AERR inventories, TTI, August 2012. <a href="https://www.tceq.texas.gov/assets/public/implementation/air/sip/hgb/HGB_2016_AD_RFP/RFP/HGBRFP_Appendix_10.pdf">https://www.tceq.texas.gov/assets/public/implementation/air/sip/hgb/HGB_2016_AD_RFP/RFP/HGBRFP_Appendix_10.pdf</a>
<b>Fuel Formulation</b>	Input county-specific fuel properties in the MOVES database.	TCEQ, EPA Fuel Surveys and default MOVES input where local data unavailable. (Refer to Table 12)
<b>I/M Coverage</b>	Input I/M coverage record for each combination of pollutants, process, county, fuel type, regulatory class and model year are specified using this input.	Refer to Tables 13, 14, 15 and 16
<b>Fuel Engine Fraction / Diesel Fraction</b>	Input fuel engine fractions (i.e. gasoline vs. diesel engine types in the vehicle population) for all vehicle types.	TXDMV registration data July 2014 (latest available); MOVES default used for light-duty vehicles and buses; county regional data applied for heavy-duty vehicles.

**Table 11: MOVES2014b Fuel Supply**

Fuel Formulation ID	Market Share
10005 (gasoline)	1
30011 (diesel)	1

**Table 12: MOVES2014b Fuel Properties**

<b>Fuel Type</b>	<b>Units</b>	<b>2018 and Later RFG<sup>1</sup></b>	<b>2018 and Later Diesel<sup>1</sup></b>
<b>Fuel Formulation ID</b>	-	10005	30011
<b>Fuel Subtype ID<sup>2</sup></b>	-	12	20
<b>RVP</b>	psi	7.01	0
<b>Sulfur Level</b>	ppm	10	11
<b>ETOH Volume</b>	Vol. %	9.67	0
<b>MTBE Volume</b>	Vol. %	0	0
<b>ETBE Volume</b>	Vol. %	0	0
<b>TAME Volume</b>	Vol. %	0	0
<b>Aromatic Content</b>	Vol. %	15.62	0
<b>Olefin Content</b>	Vol. %	10.83	0
<b>Benzene Content</b>	Vol. %	0.51	0
<b>e200</b>	Vap. %	49.02	0
<b>e300</b>	Vap. %	84.54	0
<b>T50</b>	Deg. F	203.13	0
<b>T90</b>	Deg. F	327.89	0
<b>BioDieselEster</b>	-	-	-
<b>Cetane Index</b>	-	-	-
<b>PAH Content</b>	-	-	-

<sup>1</sup> These future year RFG property estimates (produced by TTI, May 2018) are based on the latest available (2017), summer season, Houston RFG sample data set from the EPA's RFG compliance program, with the average sulfur level adjusted to match the federal Tier 3 average annual standard (the expected level for future years). For future year diesel the sulfur level was set for consistency with the federal standard (within the average annual 15 ppm ultra low sulfur diesel standard), at the maximum level of the last three of TCEQ's statewide diesel sulfur surveys (2011, 2014, 2017).

<sup>2</sup> Fuel subtype IDs 12 and 20 are 10% ethanol-blend gasoline (in this case RFG), and conventional diesel, respectively

Tables 13, 14, 15 and 16 contain the MOVES2014b I/M descriptive inputs, by analysis year, for the area counties subject to I/M. Brazoria, Fort Bend, Galveston, Harris, and Montgomery Counties are subject to I/M, but Chambers, Liberty, and Waller are not.

**Table 13: MOVES2014b I/M Descriptive Inputs for Analysis Year 2020<sup>1</sup>**

<b>I/M Program ID</b> (Identifies program number with MOVES database)	40	60
<b>Pollutant Process ID</b> (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
<b>Source Use Type (SUT)<sup>2,3</sup></b> (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
<b>Begin Model Year</b> (Calculated as YearID-24)	1996	1996
<b>End Model Year</b> (Calculated as YearID-2)	2018	2018
<b>Inspection Frequency</b> (Annual testing per program specifications)	1	1
<b>Test Standards Description</b> (Describes test type)	OBD <sup>4</sup> check	Evaporative gas cap and OBD check
<b>Test Standards ID</b> (Identifies test with MOVES database)	51	45
<b>I/M Compliance</b> (Expected compliance percentage by SUT)	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%

<sup>1</sup> Acceleration simulation mode (ASM) and evaporative gas cap check tests are no longer required.

<sup>2</sup> SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

<sup>3</sup> From TCEQ AERR, for heavy-duty gasoline vehicles (i.e., > 8,500 lbs. GVWR), MOVES does not contain any combinations of I/M factors and mean base rates that yield I/M effects, except for the evaporative tank venting process; for light-duty gasoline vehicles, MOVES includes

both exhaust and evaporative I/M factors and mean base rates with I/M effects. Via the I/M compliance factor (note 2), the heavy-duty class I/M effects were not included – only light-duty gasoline vehicles (SUTs 21, 31, and 32) were flagged for use in the user input I/M coverage records. The processes/pollutants affected by I/M are exhaust running and exhaust start THC, CO, NOx, and tank vapor venting THC.

<sup>4</sup> On-board diagnostics

**Table 14: MOVES2014b I/M Descriptive Inputs for Analysis Year 2030<sup>1</sup>**

<b>I/M Program ID</b> (Identifies program number with MOVES database)	40	60
<b>Pollutant Process ID</b> (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
<b>Source Use Type (SUT)<sup>2,3</sup></b> (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
<b>Begin Model Year</b> (Calculated as YearID-24)	2006	2006
<b>End Model Year</b> (Calculated as YearID-2)	2028	2028
<b>Inspection Frequency</b> (Annual testing per program specifications)	1	1
<b>Test Standards Description</b> (Describes test type)	OBD <sup>4</sup> check	Evaporative gas cap and OBD check
<b>Test Standards ID</b> (Identifies test with MOVES database)	51	45
<b>I/M Compliance</b> (Expected compliance percentage by SUT)	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%

<sup>1</sup> Acceleration simulation mode (ASM) and evaporative gas cap check tests are no longer required.

<sup>2</sup> SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

<sup>3</sup> From TCEQ AERR, for heavy-duty gasoline vehicles (i.e., > 8,500 lbs. GVWR), MOVES does not contain any combinations of I/M factors and mean base rates that yield I/M effects, except for the evaporative tank venting process; for light-duty gasoline vehicles, MOVES includes both exhaust and evaporative I/M factors and mean base rates with I/M effects. Via the I/M compliance factor (note 2), the heavy-duty class I/M effects were not included – only light-duty gasoline vehicles (SUTs 21, 31, and 32) were flagged for use in the user input I/M coverage records. The processes/pollutants affected by I/M are exhaust running and exhaust start THC, CO, NO<sub>x</sub>, and tank vapor venting THC.

<sup>4</sup> On-board diagnostics

**Table 15: MOVES2014b I/M Descriptive Inputs for Analysis Year 2040<sup>1</sup>**

<b>I/M Program ID</b> (Identifies program number with MOVES database)	40	60
<b>Pollutant Process ID</b> (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
<b>Source Use Type (SUT)<sup>2,3</sup></b> (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
<b>Begin Model Year</b> (Calculated as YearID-24)	2016	2016
<b>End Model Year</b> (Calculated as YearID-2)	2038	2038
<b>Inspection Frequency</b> (Annual testing per program specifications)	1	1
<b>Test Standards Description</b> (Describes test type)	OBD <sup>4</sup> check	Evaporative gas cap and OBD check
<b>Test Standards ID</b> (Identifies test with MOVES database)	51	45
<b>I/M Compliance</b> (Expected compliance percentage by SUT)	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%

<sup>1</sup> Acceleration simulation mode (ASM) and evaporative gas cap check tests are no longer required.

<sup>2</sup> SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

<sup>3</sup> From TCEQ AERR, for heavy-duty gasoline vehicles (i.e., > 8,500 lbs. GVWR), MOVES does not contain any combinations of I/M factors and mean base rates that yield I/M effects, except for the evaporative tank venting process; for light-duty gasoline vehicles, MOVES includes both exhaust and evaporative I/M factors and mean base rates with I/M effects. Via the I/M compliance factor (note 2), the heavy-duty class I/M effects were not included – only light-duty gasoline vehicles (SUTs 21, 31, and 32) were flagged for use in the user input I/M coverage records. The processes/pollutants affected by I/M are exhaust running and exhaust start THC, CO, NOx, and tank vapor venting THC.

<sup>4</sup> On-board diagnostics

**Table 16: MOVES2014b I/M Descriptive Inputs for Analysis Year 2045<sup>1</sup>**

<b>I/M Program ID</b> (Identifies program number with MOVES database)	40	60
<b>Pollutant Process ID</b> (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
<b>Source Use Type (SUT)<sup>2,3</sup></b> (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
<b>Begin Model Year</b> (Calculated as YearID-24)	2021	2021
<b>End Model Year</b> (Calculated as YearID-2)	2043	2043
<b>Inspection Frequency</b> (Annual testing per program specifications)	1	1
<b>Test Standards Description</b> (Describes test type)	OBD <sup>4</sup> check	Evaporative gas cap and OBD check
<b>Test Standards ID</b> (Identifies test with MOVES database)	51	45
<b>I/M Compliance</b> (Expected compliance percentage by SUT)	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%	SUT 21 = 93.12% SUT 31 = 91.26% SUT 32 = 86.60%

<sup>1</sup> Acceleration simulation mode (ASM) and evaporative gas cap check tests are no longer required.

<sup>2</sup> SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

<sup>3</sup> From TCEQ AERR, for heavy-duty gasoline vehicles (i.e., > 8,500 lbs. GVWR), MOVES does not contain any combinations of I/M factors and mean base rates that yield I/M effects, except for the evaporative tank venting process; for light-duty gasoline vehicles, MOVES includes both exhaust and evaporative I/M factors and mean base rates with I/M effects. Via the I/M compliance factor (note 2), the heavy-duty class I/M effects were not included – only light-duty gasoline vehicles (SUTs 21, 31, and 32) were flagged for use in the user input I/M coverage records. The processes/pollutants affected by I/M are exhaust running and exhaust start THC, CO, NO<sub>x</sub>, and tank vapor venting THC.

<sup>4</sup> On-board diagnostics

**Table 17: MOVES2014a Emissions Factor Post-Processing to Be Performed by County and Year**

<b>Strategy and Post-Processing Result</b>	<b>Analysis Year</b>	<b>Counties</b>
Texas Low Emission Diesel Fuel (TxLED)	2020, 2030, 2040 and 2045	Harris, Brazoria, Chambers, Fort Bend, Galveston, Liberty, Montgomery, Waller

Source: TCEQ, Texas A&M Transportation Institute.

The following table provides the TxLED reduction and the adjustment factors for the years 2020, 2030, 2040 and 2045. These factors were calculated using MOVES2014a (November 2016) and the July 2014 TXDMV registration.

**Table 18: TxLED NO<sub>x</sub> Reduction and NO<sub>x</sub> Adjustment Factors by Source Use Type**

Produced by TTI, March 2016 using TCEQ procedure available at: [http://amdaftp.tceq.texas.gov/pub/Mobile\\_EI/Statewide/mvs/txled/](http://amdaftp.tceq.texas.gov/pub/Mobile_EI/Statewide/mvs/txled/).

Local MOVES sourcetypeagedistribution and AVFT inputs were based on mid-year 2011 and latest available (2014) TxDMV statewide vehicle registrations data.

Source Use Type	2020 Reduction	2030 Reduction	2040 Reduction	2045 Reduction	2020 Factor	2030 Factor	2040 Factor	2045 Factor
<b>Passenger Car</b>	4.92%	4.85%	4.80%	4.80%	0.9508	0.9515	0.952	0.952
<b>Passenger Truck</b>	5.01%	4.86%	4.80%	4.80%	0.9499	0.9514	0.952	0.952
<b>Light Commercial Truck</b>	5.21%	4.96%	4.80%	4.80%	0.9479	0.9504	0.952	0.952
<b>Intercity Bus</b>	5.61%	5.03%	4.80%	4.80%	0.9439	0.9497	0.952	0.952
<b>Transit Bus</b>	5.51%	4.95%	4.80%	4.80%	0.9449	0.9505	0.952	0.952
<b>School Bus</b>	5.57%	4.96%	4.80%	4.80%	0.9443	0.9504	0.952	0.952
<b>Refuse Truck</b>	5.24%	4.81%	4.80%	4.80%	0.9476	0.9519	0.952	0.952
<b>Single Unit Short-Haul Truck</b>	4.85%	4.81%	4.80%	4.80%	0.9515	0.9519	0.952	0.952
<b>Single Unit Long-Haul Truck</b>	4.86%	4.81%	4.80%	4.80%	0.9514	0.9519	0.952	0.952
<b>Motor Home</b>	5.29%	4.94%	4.80%	4.80%	0.9471	0.9506	0.952	0.952
<b>Combination Short-Haul Truck</b>	5.11%	4.83%	4.80%	4.80%	0.9489	0.9517	0.952	0.952
<b>Combination Long-Haul Truck</b>	5.12%	4.82%	4.80%	4.80%	0.9488	0.9518	0.952	0.952

## Emissions Controls Used for Conformity Credit

This conformity will not use any credits from voluntary mobile emission reduction programs since they are not needed to show conformity to the emission budgets.

**Table 19: Emissions Controls Used for Conformity Credit**

Emission Reduction Strategy and Years Covered	Modeling or Post-Processing Approach	Analysis Year
NA	NA	NA

## VMT Mix

The VMT mix designates the vehicle types included in the analysis and specifies the fraction of on-road fleet VMT attributable to each vehicle type by MOVES road type.

The VMT mixes were estimated based on Texas A&M Transportation Institute's 24-hour average VMT mix method (Methodologies for Conversion of Data Sets for MOVES Model Compatibility. Texas A&M Transportation Institute, August 2009) estimated for each TxDOT district associated with the eight-county HGB area (i.e., Houston and Beaumont districts). The 4-time period VMT mix was developed using vehicle classification counts (2005-2014), end-of-year registration data (2013) and MOVES defaults (where needed).

This data will be included in Appendix 9 of final conformity report.

## 5. Interagency Consultation

Interagency consultation is a required element of the transportation conformity process according to 40 CFR 93.105

([https://www.govinfo.gov/app/search/%7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A\(CFR%20AND%20publishdate%3Arange\(%2C2018-12-17\)%20AND%20content%3A\(40%20CFR%2093.105\)%22%2C%22historical%22%3Atrue%7D](https://www.govinfo.gov/app/search/%7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A(CFR%20AND%20publishdate%3Arange(%2C2018-12-17)%20AND%20content%3A(40%20CFR%2093.105)%22%2C%22historical%22%3Atrue%7D)). Consultation partners include H-GAC, TxDOT, TCEQ, EPA, FHWA, METRO and Texas A&M Transportation Institute. Consultation regarding this Pre-Analysis Consensus Plan and the conformity process will be documented in Appendix 14 of the final conformity report.

## 6. Public Participation

Public consultation is a required element of the transportation conformity process according to 40 CFR 93.105

[https://www.govinfo.gov/app/search/%7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A\(CFR\)%20AND%20publishdate%3Arange\(%2C2018-12-17\)%20AND%20content%3A\(40%20CFR%2093.105\)%22%2C%22historical%22%3Atrue%7D](https://www.govinfo.gov/app/search/%7B%22offset%22%3A0%2C%22query%22%3A%22collection%3A(CFR)%20AND%20publishdate%3Arange(%2C2018-12-17)%20AND%20content%3A(40%20CFR%2093.105)%22%2C%22historical%22%3Atrue%7D).

The draft transportation conformity report, which will be based on this pre-analysis consensus plan, will undergo a 30-day public comment period. During the public comment period, H-GAC will hold two public meetings. Information concerning the public participation process will be documented in Appendix 15 of the final conformity report.

The following appendices will accompany the final transportation conformity report.

## **APPENDICES**

- Appendix 1: Resolution from Transportation Policy Council
- Appendix 2: Applicable SIP Excerpts
- Appendix 3: Project Listing
- Appendix 4: Travel Model Validation
- Appendix 5: Final RTP Link Listing
- Appendix 6: MOVES information and Fact Sheets
- Appendix 7: MOVES input parameters
- Appendix 8: SEE Report
- Appendix 9: MOVES input and output files
- Appendix 10: Post Process (TxLED adjustment)
- Appendix 11: Final MOVES emission factors
- Appendix 12: Transportation Control Measures in the State Implementation Plan
- Appendix 13: VMEPs
- Appendix 14: Interagency Conformity Consultation Process
- Appendix 15: Public Comment process
- Appendix 16: Summary Output Files from SEE
- Appendix 17: Pre-Analysis Consensus Document
- Appendix 18: Output VMT and Speeds
- Appendix 19: Output Off-Network Activity