APPENDIX 17

Pre-Analysis Consensus Plan

PRE-ANALYSIS CONSENSUS PLAN

1. Reasons for the Transportation Conformity Regional Emissions Analysis (40 CFR 93.104**)** https://www.govinfo.gov/app/details/CFR-2013-title40-vol21/CFR-2013-title40-vol21-sec93-104

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
	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 update to the long-range plan called the '2045 Regional Transportation Plan (RTP) Update (RTP Update)' and the amendments to the "2023-2026 Transportation Improvement Program" (TIP).

Note: In accordance with 23 CFR 450.324 https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-C/section-450.324 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 updated RTP and 2023-2026 TIP that affect this conformity analysis will be included in Appendix 3 of the conformity report. This conformity complies with the 2015 and 2008 8-hr Ozone NAAQS.[1]

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[1] 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

Although the HGB region has been reclassified on November 7, 2022 as "moderate" and "severe" for the 2015 and 2008 8-hr ozone standards, with attainment years 2023 and 2026 respectively, the state has not yet submitted new emission budgets to EPA for consideration. Consequently, this conformity will demonstrate compliance to the latest EPA-approved 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 moderate to serious with attainment year 2020. The Reasonable Further Progress (RFP) SIP budget was found adequate by the Environmental Protection Agency (EPA) with an effective approval date of June 9, 2021.
https://www.federalregister.gov/documents/2021/05/10/2021-09626/air-plan-approval-texas-reasonable-further-progress-plan-for-the-houston-galveston-brazoria-ozone

Draft Timeline

- Kick- off meeting with conformity partners – TAC/TPC announcement to start Conformity December 7, 2022
- Model Network review (H-GAC/TxDOT/METRO) – January 2023
  Deadline for pre-approval of networks: 2 weeks later (Final Project listing)
- Pre-Analysis Consensus document review– January 2023
  Deadline for approval of data: 2 weeks later
- TDM Model Runs – January 2023
- MOVES Model Runs - February 2023
- TAC/TPC Conformity Preview for update to the RTP and TIP - March 2023
- Public Comment – March 2023
- Public meeting – March 2023
- Public Comment Responses – March/April 2023
- TAC Recommends of RTP and TIP with Conformity - April 2023
- TPC finds adequate RTP and TIP with Conformity – April 2023
- Request Partner Review/Approval - End of April 2023 – Deadline for approval of this conformity is 8/2/2023. Concludes the four-year cycle of the transportation plan.
  If no determination is made by 8/2/2023, a one-year conformity lapse grace period will start.

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
2045 Regional Transportation Plan	2023-2045	Yes	https://engage.h-gac.com/2045rtpupdate
Transportation Improvement Program	2023-2026	Yes	2023-2026 Transportation Improvement Program | Houston-Galveston Area Council (H-GAC)

Table 3: State Implementation Plan

SIP Element	Description
Title of Applicable SIP	Houston-Galveston-Brazoria Reasonable Further Progress State Implementation Plan Revision for the 2008 Eight-Hour Ozone Standard Nonattainment Area MVEB were found adequate by EPA (effective 6/9/2021) DFW and Houston-Galveston-Brazoria (HGB) Serious Classification Reasonable Further Progress (RFP) SIP Revision for the 2008 Eight-Hour Ozone NAAQS (Non-Rule Project No. 2019-079-SIP-NR). https://www.tceq.texas.gov/airquality/sip/dfw/dfw-latest-ozone#DFWseriousRFP2020
Motor Vehicle Emissions Budgets	RFP SIP for 2008 8-hr Ozone Standard:(serious) 2020 NOx= 87.69 tpd VOC= 57.70 tpd

Transportation Control Measures (The list of TCMs will be included in Appendix 12)	1. 2000 HGB RFP and AD SIP, Approved Nov. 2001 ID#2000-011-SIP-AI https://www.tceq.texas.gov/downloads/air-quality/sip/archive/hgb_ad_rop_dec2000_archive.pdf 2. 2004 HGB Mid Course Review SIP, Approved Dec. 2004 ID# 2004-42-NR https://wayback.archive-it.org/414/20210527180933/https://www.tceq.texas.gov/assets/public/implementation/air/sip/sipdocs/2004-05-HGB/HGB_MCR_dec2004.pdf 3. TCM Substitution for HGB 2006 https://www.tceq.texas.gov/airquality/mobilesource/tcm_hgb.html 4. 2010 HGB AD SIP for the 1997 8-hr Ozone Standard (2009-017-SIP-NR) https://www.tceq.texas.gov/downloads/air-quality/sip/archive/hgb_ad_2010_archive.pdf

Table 4: Conformity Analysis Years[1]

Requirement	Years
Conformity Base Year (validation year)	2016
Attainment Year	2023[2] and 2026[3]
Motor Vehicle Emissions Budget Years[4]	------
First Analysis Year	2023
Intermediate Analysis Years	2030, 2040
Last Year of RTP	2045

[1]This table includes all the years analyzed for this conformity. The air quality program will be used on all these years except the validation year.
[2]Attainment year 2023 for the 2015 8-hr Ozone Standard.
[3]Attainment year 2026 for the 2008 8-hr Ozone standard.
[4]The budget year is 2020, which is outside the transportation plan.

Table 5: Demographics Used in Conformity Analysis

Data Element	Detail and Source of Data
Population and Households	H-GAC uses an in-house population and household micro-simulation model that evolves population and households' overtime by applying fertility, survival, in-migration, out-migration, marriage, and divorce rates. The model forecasts population and household control totals for the region. The base-year data for the model is constructed from the block-level 2010 Census data (SF1 tables). The data sources utilized in the model include- 2010 Decennial Census, 2005 to 2017 American Community Survey (ACS) Public Use Microdata Sample (PUMS), Texas State Data Center fertility and survival rates, and ACS 5-years estimates 2013 to 2017. Additional Info- https://www.h-gac.com/getmedia/6f706efb-9c6d-4b6a-b3aa-7dc7ad10bd26/read-documentation.pdf Here is the link to the forecast Data- https://www.h-gac.com/regional-growth-forecast
Employment	H-GAC applies the historic labor force participation rates (LFPR) and Unemployment Rates (UR) to the forecasted population control totals to forecast employment control totals for the region. H-GAC's base year employment data is derived from the 2019 Data Axle, 2019 Woods & Poole and Other local sources. Additional Info- https://www.h-gac.com/getmedia/6f706efb-9c6d-4b6a-b3aa-7dc7ad10bd26/read-documentation.pdf Here is the link to the forecast Data- https://www.h-gac.com/regional-growth-forecast

Land Use	H-GAC uses in-house parcel-level land use micro-simulation model to forecast the location of future residential and non-residential spaces. The model then allocates future households and jobs to the new/vacant residential units and commercial space, respectively. The base year population and jobs are allocated to individual buildings and parcels collected from the County Appraisal Districts. Additional Info- https://www.h-gac.com/getmedia/6f706efb-9c6d-4b6a-b3aa-7dc7ad10bd26/read-documentation.pdf Here is the link to the Regional Land Use Information system to access the Current and future land use- https://datalab.h-gac.com/RLUIS/

3. Activity Detail

Table 6: Travel Demand Model

Model Factor	Detail and Methodology
Model Validation Year	2016
Software	Cube Voyager
Mode Split/Mode Choice	Updated and simplified model with help from Houston METRO
Vehicle Miles Travel (VMT) Highway Performance Monitoring System (HPMS) Adjustment	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.
VMT adjustment - Seasonal Adjustment Factor	Refer to Table 6a below for factors.
Time Periods Designation	Refer to Table 6b below for designations.
Hourly Factors	Refer to Table 6c below
Counties Covered by Model	Harris, Galveston, Brazoria, Fort Bend, Montgomery, Liberty, Chambers and Waller.[1]

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

= (HPMS estimated ANSWT) / (Model estimated ANSWT)

= (172,203,352) / (186,710,076)

= 0.93837

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[1]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. Consistent with 40 CFR 93.109(c)(2) eight counties will be used to model the conformity determination for both standards: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-93/subpart-A/section-93.109

Table 6a: Seasonal Adjustment Factors*

	County	Factors
Weekday summer June to August	Harris, Brazoria, Fort Bend, Galveston, Montgomery, and Waller	1.05559
	Liberty, Chambers	1.04818

*Data from Texas A&M Transportation Institute - calculated using 2013-2020 ATR data.

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 2013-2020. 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, Fort. Bend, Galveston, Montgomery, and Waller belong to the Houston TxDOT District.

Table 6b: Time Period Designations

Hours	Designations
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
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

Hours	Designations
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*

hourID	Seasonday	TIMEPERIOD	Hour VMT Fraction by 24hours	Hourly Fraction by TimePeriod
1	swkd**	Overnight	0.008874100	0.038074973
2	swkd	Overnight	0.005853248	0.025113787
3	swkd	Overnight	0.005402546	0.023180018
4	swkd	Overnight	0.006374567	0.027350545
5	swkd	Overnight	0.014109343	0.060537165
6	swkd	Overnight	0.039471892	0.169357031
7	swkd	AM Peak	0.062163664	0.337276276
8	swkd	AM Peak	0.065380565	0.354729951
9	swkd	AM Peak	0.056766582	0.307993773
10	swkd	Midday	0.050902645	0.159807769
11	swkd	Midday	0.049673613	0.155949249
12	swkd	Midday	0.051668036	0.162210698
13	swkd	Midday	0.053868761	0.169119827
14	swkd	Midday	0.054687907	0.171691518
15	swkd	Midday	0.057723258	0.181220938
16	swkd	PM Peak	0.063607988	0.240851891
17	swkd	PM Peak	0.068767549	0.260388589
18	swkd	PM Peak	0.071349776	0.270166201
19	swkd	PM Peak	0.06037055	0.22859332
20	swkd	Overnight	0.046917604	0.201303401
21	swkd	Overnight	0.036112625	0.154943851
22	swkd	Overnight	0.030443644	0.130620675
23	swkd	Overnight	0.023599481	0.101255294
24	swkd	Overnight	0.015910057	0.06826326

*Data from Texas A&M Transportation Institute – Hourly factors calculated using 2013-2020 ATR data.

**swkd: summer weekday

Table 7: Projects

Project Element	Description
Regionally Significant Definition	Please see definition below
Projects that trigger conformity	Please see below
CMAQ projects	H-GAC is anticipating taking off-model credit for CMAQ projects within this

	conformity. All RTP projects, including CMAQ projects, will be identified in Appendix 3.
Non-Federal Projects	All RTP projects will be identified in Appendix 3, including regionally significant projects which do not require federal funds or other approvals.
Exempt Projects	All RTP projects will be identified in Appendix 3. A listing of activities eligible for grouping is contained in Appendix J of the 2023-2026 TIP as well as listing of grouped projects.
Other	All RTP projects will be identified in Appendix 3.

Regionally Significant Definition:

Regionally Significant Roadway Projects

Non-exempt projects[1] 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

[1] 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.

will occur before taking the plan to TPC (either plan or TIP revision), and prior to the environmental determination.

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

Table 8: MOVES3 Modeled Pollutants

Command	Function/Description	Input Parameter Source/Value
Pollutant	Defines the basic set of pollutants to report.	NOx, VOC

Table 9: Model External Conditions

Utility used	Spatial Emission Estimator (SEE) developed by ERG*
Emission Model Version	MOVES3
Analysis Year Runs	2023, 2026, 2030, 2040, 2045
Time Periods	AM, MD, PM, OV
Pollutants Reported	NO_X, VOC
Evaluation Month	July
Inputs to SEE	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: MOVES3 Input Parameters and Source

Input Parameter Name	Description	Source
Source Type Population	Input the number of vehicles in the geographic area, which will be modeled for each vehicle type. A module is used to convert MOVES3 based TXDMV registration data for each county into 13 MOVES SUT population.	TXDMV registration data for End of Year 2018 (latest available)

Input Parameter Name	Description	Source
Source Type Age Distribution	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 End of Year 2018 (latest available); MOVES default used for buses
Average Speed Distribution	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
Vehicle Type VMT	County-specific VMT is distributed to 6 HPMS vehicle types.	NA
Road Type Distribution (VMT Fractions)	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
Ramp Fraction	Input county-specific fraction of ramp driving time on rural and urban restricted roadway type.	Travel Model Output
Fuel Supply	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
Meteorology	County-specific data on temperature and humidity.	RFP SIP revision for 2008 8-hr Ozone Standard for years 2023, 2026, 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. https://wayback.archive-it.org/414/20210529164039/https://www.tceq.texas.gov/assets/public/implementation/air/sip/hgb/HGB_2016_AD_RFP/RFP/HGBRFP_Appendix_10.pdf
Fuel Formulation	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)
I/M Coverage	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, 16, and 17

Input Parameter Name	Description	Source
Fuel Engine Fraction / Diesel Fraction	Input fuel engine fractions (i.e. gasoline vs. diesel engine types in the vehicle population) for all vehicle types.	Locality-Specific/MOVES default. TTI develops the evaluation year-specific local gasoline/diesel fractions for the MOVES single unit and combination truck SUTs using the TxDMV registration data, for each analysis year, aggregated to the statewide level. MOVES defaults are used for the other SUTs, except alternative fuel fractions are dropped and the default gasoline/diesel fractions are renormalized

Table 11: MOVES3 Fuel Supply

Fuel Formulation ID 2021+	Market Share
14724 (gasoline)	1
30600 (diesel)	1

Table 12: MOVES3 Fuel Properties - Summer Gasoline and Diesel Fuel Formulation Inputs to MOVES for HGB Counties – 2021 and Later Years.

Fuel Formulation Field	Units	Gasoline	Diesel
Fuel Formulation ID	-	14724	30600
Fuel Subtype ID	-	12	21
RVP	psi	7.15	\N
Sulfur Level	ppm	10.00	6.00
ETOH Volume	vol.%	9.56	\N
MTBE Volume	vol.%	0	\N
ETBE Volume	vol.%	0	\N
TAME Volume	vol.%	0	\N
Aromatic Content	vol.%	16.89	\N
Olefin Content	vol.%	10.29	\N
Benzene Content	vol.%	0.42	\N

e200	vap.%	48.26	\N
e300	vap.%	84.89	\N
Vol to Wt Percent Oxy	-	0.3653	\N
BioDieselEster Volume	vol.%	\N	4.44
Cetane Index	-	\N	\N
PAH Content	vol.%	\N	\N
T50	deg. F	206.18	\N
T90	deg. F	326.87	\N

[1] TTI (February 2021) based the RFG (Re-Formulated Gasoline) formulations on EPA's Houston RFG compliance surveys for summer 2020 (latest available). RFG properties are actual averages calculated as composites of averages by fuel grade (premium, mid-grade, and regular) using sales fractions based on Texas RFG sales volumes by grade data from the EIA. The RFG properties for 2021+ (future years) were also based on the latest available 2020 survey, except for sulfur, which was set to the expected future level (consistent with the Tier 3 standard). Fuel subtype ID 12 is 10% ethanol volume blended in gasoline (E10).

[2] The diesel sulfur level for the 2020 historical year is the statewide average developed from TCEQ's summer 2020 diesel fuel survey. Diesel sulfur for future years (2021+) was set to the expected future year value, consistent with the actual, relatively stable, statewide averages observed in the last four TCEQ fuel surveys (2011, 2014, 2017, 2020) and with the MOVES3 default. The biodiesel ester volume percent estimates were based on EIA (US Energy Information Administration) transportation sector biodiesel and diesel consumption estimates for Texas, by year, using latest available data (2020) for 2020 and later years (biodiesel volume percent updated by TTI, December 2022). Fuel subtype ID 21 is biodiesel, in Texas, ULSD (Ultra-Low Sulfur Diesel) currently estimated with a blend of about 5% by volume biodiesel ester.

Tables 13, 14, 15, 16 and 17contain the MOVES3 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: MOVES3 I/M Descriptive Inputs for Analysis Year 2023[1]

I/M Program ID (Identifies program number with MOVES database)	40	60
Pollutant Process ID (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
Source Use Type (SUT)[2] **(Identifies vehicle type with MOVES database)**	21, 31, 32	21, 31, 32
Begin Model Year (Calculated as YearID-24)	1999	1999

End Model Year (Calculated as YearID-2)	2021	2021
Inspection Frequency (Annual testing per program specifications)	1	1
Test Standards Description (Describes test type)	OBD[3] check	Evaporative gas cap and OBD check
Test Standards ID (Identifies test with MOVES database)	51	45
I/M Compliance (Expected compliance percentage by SUT)[4]	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%

[1] Acceleration simulation mode (ASM) is no longer required. It is part of the evaporative checks performed in the I/M program for OBD equipped vehicles (1996 and newer vehicles).

[2] SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

[3] On-board diagnostics

[4] I/M compliance factors have been updated using the latest Houston I/M program statistics (2021 I/M program data) provided by TCEQ and the updated I/M compliance factor calculation method per EPA's latest technical guidance on emissions inventory development for conformity (Pages 47-49, EPA-420-B-20-052, November 2020).

The latest available compliance factors are the expected future year compliance factor values (i.e., for all future years):

Passenger car: 94.00%

Passenger truck: 90.35%

Light commercial truck: 70.74%

Table 14: MOVES3 I/M Descriptive Inputs for Analysis Year 2026[1]

I/M Program ID (Identifies program number with MOVES database)	40	60
Pollutant Process ID (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
Source Use Type (SUT)[2] **(Identifies vehicle type with MOVES database)**	21, 31, 32	21, 31, 32
Begin Model Year (Calculated as YearID-24)	2002	2002
End Model Year (Calculated as YearID-2)	2024	2024
Inspection Frequency (Annual testing per program specifications)	1	1
Test Standards Description (Describes test type)	OBD[3] check	Evaporative gas cap and OBD check
Test Standards ID (Identifies test with MOVES database)	51	45
I/M Compliance (Expected compliance percentage by SUT)[4]	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%

[1] Acceleration simulation mode (ASM) is no longer required. It is part of the evaporative checks performed in the I/M program for OBD equipped vehicles (1996 and newer vehicles).

[2] SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

[3] On-board diagnostics

[4] I/M compliance factors have been updated using the latest Houston I/M program statistics (2021 I/M program data) provided by TCEQ and the updated I/M compliance factor calculation method per EPA's latest technical guidance on emissions inventory development for conformity (Pages 47-49, EPA-420-B-20-052, November 2020).

The latest available compliance factors are the expected future year compliance factor values (i.e., for all future years):

Passenger car: 94.00%

Passenger truck: 90.35%

Light commercial truck: 70.74%

Table 15: MOVES3 I/M Descriptive Inputs for Analysis Year 2030[1]

I/M Program ID (Identifies program number with MOVES database)	40	60
Pollutant Process ID (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
Source Use Type (SUT)[2] (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
Begin Model Year (Calculated as YearID-24)	2006	2006
End Model Year (Calculated as YearID-2)	2028	2028
Inspection Frequency (Annual testing per program specifications)	1	1
Test Standards Description (Describes test type)	OBD[3] check	Evaporative gas cap and OBD check
Test Standards ID (Identifies test with MOVES database)	51	45
I/M Compliance (Expected compliance percentage by SUT)[4]	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%

[1] Acceleration simulation mode (ASM) is no longer required. It is part of the evaporative checks performed in the I/M program for OBD equipped vehicles (1996 and newer vehicles).

[2] SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

[3] On-board diagnostics

[4] I/M compliance factors have been updated using the latest Houston I/M program statistics (2021 I/M program data) provided by TCEQ and the updated I/M compliance factor calculation method per EPA's latest technical guidance on emissions inventory development for conformity (Pages 47-49, EPA-420-B-20-052, November 2020).

The latest available compliance factors are the expected future year compliance factor values (i.e., for all future years):

Passenger car: 94.00%

Passenger truck: 90.35%

Light commercial truck: 70.74%

Table 16: MOVES3 I/M Descriptive Inputs for Analysis Year 2040[1]

I/M Program ID (Identifies program number with MOVES database)	40	60
Pollutant Process ID (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
Source Use Type (SUT)[2] (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32
Begin Model Year (Calculated as YearID-24)	2016	2016
End Model Year (Calculated as YearID-2)	2038	2038
Inspection Frequency (Annual testing per program specifications)	1	1

Test Standards Description (Describes test type)	OBD[3] check	Evaporative gas cap and OBD check
Test Standards ID (Identifies test with MOVES database)	51	45
I/M Compliance (Expected compliance percentage by SUT)[4]	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%

[1] Acceleration simulation mode (ASM) is no longer required. It is part of the evaporative checks performed in the I/M program for OBD equipped vehicles (1996 and newer vehicles).

[2] SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

[3] On-board diagnostics

[4] I/M compliance factors have been updated using the latest Houston I/M program statistics (2021 I/M program data) provided by TCEQ and the updated I/M compliance factor calculation method per EPA's latest technical guidance on emissions inventory development for conformity (Pages 47-49, EPA-420-B-20-052, November 2020).

The latest available compliance factors are the expected future year compliance factor values (i.e., for all future years):

Passenger car: 94.00%

Passenger truck: 90.35%

Light commercial truck: 70.74%

Table 17: MOVES3 I/M Descriptive Inputs for Analysis Year 2045[1]

I/M Program ID (Identifies program number with MOVES database)	40	60
Pollutant Process ID (Identifies pollutant process with MOVES database)	101, 102, 201, 202, 301, 302	112
Source Use Type (SUT)[2] (Identifies vehicle type with MOVES database)	21, 31, 32	21, 31, 32

Begin Model Year (Calculated as YearID-24)	2021	2021
End Model Year (Calculated as YearID-2)	2043	2043
Inspection Frequency (Annual testing per program specifications)	1	1
Test Standards Description (Describes test type)	OBD[3] check	Evaporative gas cap and OBD check
Test Standards ID (Identifies test with MOVES database)	51	45
I/M Compliance (Expected compliance percentage by SUT)[4]	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%	SUT 21 = 94.00% SUT 31 = 90.35% SUT 32 = 70.74%

[1] Acceleration simulation mode (ASM) is no longer required. It is part of the evaporative checks performed in the I/M program for OBD equipped vehicles (1996 and newer vehicles).

[2] SUTs listed represent the following vehicle types: SUT 21 represents passenger cars; SUT 31 represents passenger trucks; and SUT 32 represents light commercial trucks.

[3] On-board diagnostics

[4] I/M compliance factors have been updated using the latest Houston I/M program statistics (2021 I/M program data) provided by TCEQ and the updated I/M compliance factor calculation method per EPA's latest technical guidance on emissions inventory development for conformity (Pages 47-49, EPA-420-B-20-052, November 2020).

The latest available compliance factors are the expected future year compliance factor values (i.e., for all future years):

Passenger car: 94.00%

Passenger truck: 90.35%

Light commercial truck: 70.74%

Table 18: MOVES3 Emissions Factor Post-Processing to Be Performed by County and Year

Strategy and Post-Processing Result	Analysis Year	Counties
Texas Low Emission Diesel Fuel (TxLED)	2023, 2026, 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 2023, 2026, 2030, 2040 and 2045.

Table 18: TxLED NO_X Reduction and NO_X Adjustment Factors by Source Use Type

Source: *Production of Statewide Non-Link On-Road Emission Inventories for 2019, 2023, and 2026* (TTI, July 2021). The 2023 and 2026 TxLED factors were produced by TCEQ, based on MOVES3 inventory mode output (using Texas statewide age distributions and fuel fractions inputs based on 2018 end-of-year TxDMV vehicle registration data) and TCEQ's spreadsheet TxLED factor calculation procedure available at: ftp://amdaftp.tceq.texas.gov/EI/onroad/txled/.The 2030 factors were estimated by TTI using MOVES3 and 2018 registration data consistent with TCEQ methodology. The 2032 and later analysis years TxLED factors are constant, hence 2040 and 2045 factors are the same.

Source Use Type	2023 Reduction	2026 Reduction	2030 Reduction	2040 Reduction	2045 Reduction	2023 Factor	2026 Factor	2030 Factor	2040 Factor	2045 Factor
Passenger Car	4.86%	4.83%	4.83%	4.80%	4.80%	0.9514	0.9517	0.9517	0.9520	0.9520
Passenger Truck	5.11%	5.02%	4.92%	4.80%	4.80%	0.9489	0.9498	0.9508	0.9520	0.9520
Light Commercial Truck	5.15%	5.06%	4.97%	4.80%	4.80%	0.9485	0.9494	0.9503	0.9520	0.9520
Intercity Bus	5.19%	5.06%	4.89%	4.80%	4.80%	0.9481	0.9494	0.9511	0.9520	0.9520
Transit Bus	4.92%	4.88%	4.84%	4.80%	4.80%	0.9508	0.9512	0.9516	0.9520	0.9520
School Bus	5.06%	4.97%	4.85%	4.80%	4.80%	0.9494	0.9503	0.9515	0.9520	0.9520
Refuse Truck	5.05%	4.92%	4.81%	4.80%	4.80%	0.9495	0.9508	0.9519	0.9520	0.9520
Single Unit Short-Haul Truck	4.82%	4.81%	4.80%	4.80%	4.80%	0.9518	0.9519	0.9520	0.9520	0.9520
Single Unit Long-Haul Truck	4.84%	4.82%	4.81%	4.80%	4.80%	0.9516	0.9518	0.9519	0.9520	0.9520
Motor Home	5.33%	5.17%	4.92%	4.80%	4.80%	0.9467	0.9483	0.9508	0.9520	0.9520
Combination Short-Haul Truck	4.87%	4.83%	4.81%	4.80%	4.80%	0.9513	0.9517	0.9519	0.9520	0.9520
Combination Long-Haul Truck	4.93%	4.86%	4.82%	4.80%	4.80%	0.9507	0.9514	0.9518	0.9520	0.9520

Emissions Controls Used for Conformity Credit

This conformity will use credits from voluntary mobile emission reduction programs like Clean Vehicles, Commute Solutions and TCMs. These off-model calculations will be subtracted to the modeling calculations 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
Clean Vehicles (2021)	Off-Model Calculation	2023
Commute Solutions (2021)	Off-Model Calculation	2023
TCMs (2021)	Off-Model Calculation	2023

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.

TTI developed these weekday VMT mixes using new Vehicle Classification Count (VCC) data (2009 through 2018) and TxDMV vehicle registration data (2018 end-of-year data) and the same method/procedures as used on Texas A&M Transportation Institute's VMT mix method (Methodologies for Conversion of Data Sets for MOVES Model Compatibility. Texas A&M Transportation Institute, August 2009). The VMT mix was estimated for each TxDOT district associated with the eight-county HGB area (i.e., Houston and Beaumont districts). The VMT mixes were developed for the years 2025, 2030, 2035, 2040 and 2045. The following table (Table 20) indicates the relation between the VMT Mix year and the conformity analysis year.

Table 20: VMT Mix and conformity analysis years correlations

VMT Mix Year	Analysis Years
2025	2023 through 2027
2030	2028 through 2032
2035	2033 through 2037
2040	2038 through 2042
2045	2043 through 2047

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). Consultation partners include H-GAC, TxDOT, TCEQ, EPA, FHWA, and METRO. 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.

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 a public meeting. 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 and Networks
Appendix 6: MOVES information and Fact Sheets
Appendix 7: Additional Input Files for SEE Tool
Appendix 8: SEE Report
Appendix 9: MOVES input 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