Pre-Analysis Consensus Plan

Houston-Galveston Area Council

METROPOLITAN PLANNING ORGANIZATION

2025 Transportation Conformity

Consensus by:	*Date:*
EPA	*06/13/2025*
FHWA/FTA	*06/12/2025*
TCEQ	*06/16/2025*
TxDOT	*06/13/2025*

Parameter	Inputs
MPO	H-GAC
RTP	Regional Transportation Plan
RTP Years Covered	2023-2045
TIP	2025-2028 Transportation Improvement Plan
TIP Years Covered	2025-2028
Base Year	N/A
Analysis Years	2023, 2026, 2030, 2040, and 2045

PACP Submission Information

Prepared by	Houston-Galveston Area Council
Meeting Date	**Purpose of Meeting**
3/11/2025	Conformity kick-off meeting. Discuss PACP inputs with Consultation Partners.
4/17/2025	Present to the Consultation Partners the Pre-Consensus Plan for Review

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1 THE PURPOSE OF TRANSPORTATION CONFORMITY EMISSIONS ANALYSIS

Table 1. Reasons for the Transportation Conformity Emissions Analysis (40 CFR § 93.104)

Check Box	Reasons	Years Covered
	a. Regional Transportation Plan (demographics, horizon year, etc.)	
X	**b. Modify Existing Regional Transportation Plan (interim year adjustments)**	2023-2045
X	**c. New or Amended Transportation Improvement Program**	2025-2028
X	**d. State Implementation Plan (SIP) Requirements**	
	e. Newly Designated Non-Attainment Area	
	f. Other	

Explanation:

b. Houston-Galveston Area Council (H-GAC) is proposing an amendment to its current 2045 Regional Transportation Plan (RTP) Update. H-GAC's current Travel Demand Model (TDM) has a base year of 2016 and was developed with analysis years of 2023, 2026, 2030, 2040, and 2045.

c. The Transportation Improvement Program (TIP) will cover the Fiscal Years (FY) 2025-2028.

d. On October 7, 2022, the U.S. Environmental Protection Agency (EPA) published a final notice reclassifying the Houston-Galveston-Brazoria (HGB) area as "severe nonattainment" for the 2008 eight-hour ozone National Ambient Air Quality Standards (NAAQS), effective November 7, 2022. As a result of this reclassification, the Texas Commission on Environmental Quality (TCEQ) was required to submit a Reasonable Further Progress (RFP) State Implementation Plan (SIP) revision in accordance with the federal Clean Air Act (FCAA) requirements for areas designated as severe nonattainment. TCEQ submitted the RFP SIP revision for the severe classification to EPA, which is currently in the process of determining the adequacy of the 2023 and 2026 RFP Motor Vehicle Emissions Budgets (MVEBs), with a final determination expected by the end of 2025. Because this MVEB adequacy finding could intersect with the transportation conformity review process, the potential 2023 and 2026 RFP MVEBs will also be addressed as part of this conformity determination.

2 TIMELINE FOR THE TRANSPORTATION CONFORMITY DOCUMENT DEVELOPMENT

Table 2. Anticipated Transportation Conformity Timeline

#	Task Items	Timeframe
1	Pre-Analysis Consensus Plan Review and Approval	04/10/2025-06/15/2025
2	Travel Model Networks Development and Emissions Analysis	04/01/2025-06/30/2025
3	Regional Technical and Policy Board Information	08/16/2025-09/22/2025
4	Public Meetings and Comment Period	08/15/2025-09/15/2025
5	Consultative Partner Review Period	09/22/2025-01/22/2025
6	U.S. Department of Transportation Air Quality Conformity Determination Anticipated	01/22/2026
7	Transportation Conformity Lapse Grace Period Begins (lapse would begin one year after)	11/02/2027

3 REGIONAL TRANSPORTATION PLAN (RTP)/ TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

Table 3. RTP/TIP

Plan/Program Name	Years Covered	Fiscally Constrained
2045 Regional Transportation Plan Update (RTP)	2023-2045	Yes
Transportation Improvement Program (TIP)	2025-2028	Yes

A regionally significant project means a transportation project (other than projects that may be grouped in the TIP and/or Statewide Transportation Improvement Program or exempt projects as defined in EPA's transportation conformity regulation [40 Code of Federal Regulations (CFR) § part 93]) that serves regional transportation needs (e.g., access to and from the area outside the region; major activity centers in the region; major planned developments such as new retail malls, sports complexes, employment centers, or transportation terminals) and would normally be included in the modeling of the metropolitan area's transportation network. At a minimum, this includes all principal arterial highways and all fixed guided way transit facilities that offer a significant alternative to regional highway travel.

Consistent with federal definition H-GAC has developed the following local definition to classify projects as regionally significant:

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 High-Occupancy Vehicle (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 the Transportation Policy Council (TPC) (either plan or TIP revision), and prior to the environmental determination.

Projects determined to be regionally significant, except as specifically exempted under 40 CFR Part 93.126, 40 CFR Part 93.127 or 40 CFR 93.128, must come from a conforming RTP and TIP or be individually found to conform prior to the issuance of federal approvals and other actions.

[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.

4 APPLICABLE STATE IMPLEMENTATION PLAN, RELATED EMISSIONS BUDGET, AND TRANSPORTATION CONTROL MEASURES (TCM)

Table 4a. Applicable SIP and Emissions Budget(s)

SIP	Motor Vehicle Emission Budget Year	Pollutant	Emission Budget (TPD)
Serious 2008 Ozone SIP	2020[1]	VOC	57.70
Serious 2008 Ozone SIP	2020	NO_x	87.69

[1] Although 2020 is not an analysis year, the 2020 MVEBs from this SIP are the current applicable budgets this conformity will be based upon if EPA does not find adequate/approve the Severe 2008 SIP MVEBs (Table 4b) within the timeframe of this conformity process.

Table 5b. Potential SIP and Emissions Budget(s) Currently Under Review[1,2]

SIP	Motor Vehicle Emission Budget Year	Pollutant	Emission Budget (TPD)
Severe 2008 Ozone SIP	2023	VOC	37.27
Severe 2008 Ozone SIP	2023	NO_x	67.77
Severe 2008 Ozone SIP	2026	VOC	31.88
Severe 2008 Ozone SIP	2026	NO_x	56.12

[1]EPA is reviewing the 2023 and 2026 RFP MVEBs submitted by TCEQ on May 7th, 2024. Although EPA has not yet found adequate/approved these MVEBs, they will be addressed in this conformity as a contingency should EPA find adequate/approve these MVEBs within the timeframe of this conformity process.
[2]Attainment year is 2026.

Table 6. TCM Strategies (if applicable)[1]

#	TCM	Strategies	Effective Date
1	TCM	2000 HGB RFP and AD SIP, ID#2000-011-SIP-AI	November 2001
2	TCM	2004 HGB Mid-Course Review SIP, ID# 2004-42-NR	December 2004
3	TCM	TCM Substitution for HGB	April 2006
4	TCM	2010 HGB AD SIP for the 1997 8-hr Ozone Standard (2009-017-SIP-NR)	March 2010

Note: N/A = not applicable.
[1] While the HGB region has discharged the requirements of all TCMs committed to existing SIPs, many of the noted commitments are still active as Transportation Emission Reduction Measures (TERMs). Many of these measures are ongoing and have been included as conformity credits in Table 18.

5 CONFORMITY ANALYSIS YEARS

Per CFR § 93.106(a)(1)(i), analysis years cannot be more than 10 years apart.

Table 7. Conformity Analysis Years

Variable	Information
Baseline Conformity Year (if applicable)	N/A
Attainment Year	2026 for the 2008 8-hr Ozone Standard and the 2015 8-hr Ozone Standard
Analysis Years	2023, 2026, 2030, 2040, and 2045
Last Year of Maintenance Plan (if applicable)	N/A
Other	N/A

Note: N/A = not applicable.

6 DEMOGRAPHICS USED IN CONFORMITY ANALYSIS

Table 8. Demographics

Data Element	Detail and Source of Data
Population and Households	These values are unchanged from the previous 2045 RTP Update found conforming on November 1, 2023. 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 2016 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. The base year demographic is fed into an in-house demographic evolution model to simulate future population mix.

Employment	These values are unchanged from the previous 2045 RTP Update found conforming on November 1, 2023. 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 2018 Infogroup, 2018 Woods & Poole and Other local sources.
Land Use	These values are unchanged from the previous 2045 RTP Update found conforming on November 1, 2023. 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.
Other	These values are unchanged from the previous 2045 RTP Update found conforming on November 2, 2023. H-GAC periodically updates its Regional Growth Forecast, which projects population, employment, and land use trends across the eight-county H-GAC Transportation Management Area: Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties. Each forecast update integrates the latest data on planned developments, population and employment trends, economic conditions, regional travel networks, and user feedback. The forecast is developed in phases: 1. Estimating the total population and number of households in the region. 2. Forecasting the number of jobs based on the future labor force. 3. Predicting the location, type, and scale of residential and non-residential developments needed to support projected household and job growth.

	4. Allocating expected household and job growth across different areas, ensuring every household has a housing unit and every job has a designated work site.

7 TRAVEL DEMAND MODEL

Table 9. Land-Use Model

Model Factor	Detail and Methodology
Study Area (sq-mi)	8,750
Traffic Analysis Zones	5,263
Counties	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller

Table 10. Travel Demand Model

Model Factor	Detail and Methodology
Model Validation Year	2016
Software	CUBE Voyager
Vehicle Miles of Travel (VMT) Highway Performance Monitoring System (HPMS) Factor	0.93837
Mode Split Method	Multinomial logit model
Countries Covered by Model	Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, Waller
Other	N/A

Table 11. Seasonal Factor

Factor	Information	
Base Data	Texas Department of Transportation (TxDOT) automated traffic recorder (ATR) data	
Year of the Base Data	2014-2023	
Season	Summer (June, July, August)	
TxDOT districts	Beaumont[1]	Houston[2]
Adjustment Factor[3]	0.989918	0.985568

[1]The Beaumont Seasonal Factor is only used for Chambers and Liberty counties.

[2]The Houston Seasonal Factor is only used for Harris, Galveston, Fort Bend, Brazoria, Montgomery, and Waller counties.

[3]The adjustment factor converts annual non-summer weekday to seasonal weekday. Data from Texas A&M Transportation Institute.

Table 12. Summer Weekday Time Period Hourly Travel Factors

Assignment	Hour	Base Factor	Time Period Factor[1]
Overnight	**00:00–00:59**	0.009209	0.038973
Overnight	**1:00–1:59**	0.006157	0.026057
Overnight	**2:00–2:59**	0.005702	0.024131
Overnight	**3:00–3:59**	0.006737	0.028511
Overnight	**4:00–4:49**	0.014475	0.061259
Overnight	**5:00–5:59**	0.038700	0.163780
AM Peak	**6:00–6:59**	0.060460	0.333109
AM Peak	**7:00–7:59**	0.064376	0.354685
AM Peak	**8:00–8:59**	0.056666	0.312206
Mid-Day	**9:00–9:59**	0.051333	0.159592
Mid-Day	**10:00–10:59**	0.050327	0.156464
Mid-Day	**11:00–11:59**	0.052292	0.162573
Mid-Day	**12:00–12:59**	0.054431	0.169223
Mid-Day	**13:00–13:59**	0.055189	0.171580
Mid-Day	**14:00–14:59**	0.058080	0.180568
PM Peak	**15:00–15:59**	0.063351	0.243141
PM Peak	**16:00–16:59**	0.067754	0.260039
PM Peak	**17:00–17:59**	0.069611	0.267166
PM Peak	**18:00–18:59**	0.059837	0.229654
Overnight	**19:00–19:59**	0.047415	0.200662
Overnight	**20:00–20:59**	0.036784	0.155671
Overnight	**21:00–21:59**	0.030844	0.130533
Overnight	**22:00–22:59**	0.023974	0.101459
Overnight	**23:00–23:59**	0.016296	0.068965

Note: The hourly factors for the summer weekday calculated using 2014 through 2023 ATR. Data from Texas A&M Transportation Institute.

[1]Used in the hourly VMT calculation process.

8 EMISSION MODELING

Table 13. Emission Modeling

Pollutants Reported	
Pollutants	Volatile organic compounds (VOCs), and nitrogen oxides (NOx)
Emission Factor Development	
Emission Model Version[1]	MOVES3.1
Years Modeled	2023, 2026, 2030, 2040, and 2045
Time periods	Summer Weekday
Functional Class	Urban restricted, rural restricted, urban unrestricted, rural unrestricted
VMT Mix	Four-period, time-of-day VMT mixes for conventional gasoline and diesel source-use type by functional class will be estimated using latest vehicle classification count (2014-2023) and associated year-end registration data. No seasonal adjustments are made for VMT mix.
Speed	MOVES county scale/emission rates mode will be used to model urban and rural, restricted, and unrestricted access functional class emissions factors for each of the 16 speed bin average speeds (i.e., 2.5 and 5 through 75 at 5 mph increments).
Vehicle Registration	The latest registration data (year-end 2021) will be used for age distribution.
MOVES External Condition	
Baseline Year, If Applicable	2023
Other Years	2026, 2030, 2040, and 2045
Evaluation Month	July

[1]The default emission model used is EPA's Motor Vehicle Emission Simulator (MOVES) 3.1.0. The latest version of MOVES is MOVES4 (refer to as just MOVES in this document), which was released on September 12, 2023. A 2-year conformity grace period is in effect with the release and ends on September 12, 2025. After this date, MOVES4 must be used for new transportation conformity analyses. The federal register notifying this release is available at: https://www.federalregister.gov/documents/2023/09/12/2023-19116/official-release-of-the-moves4-motor-vehicle-emissions-model-for-sips-and-transportation-conformity.

9 MOVES INPUT

Table 14. 15MOVES Input Parameters and Data Source

Input Parameter	**Description**	**Base Data Source**	**Notes**
Vehicle Population by Source Type	Input the number of vehicles in the geographic area to be modeled for each vehicle.	Texas Department of Motor Vehicles (TxDMV) data (year-end 2021), MOVES defaults for rates runs.	• Local gasoline and diesel-powered source type populations by analysis year are estimated for use external to MOVES in the estimation of county level vehicle starts and source-hours-parked, and needed in the external emissions calculations, per the Texas A&M

Input Parameter	Description	Base Data Source	Notes
			Transportation Institute's (TTI's) rates-per-activity, TDM-based method. • Populations by source use type (SUT) and fuel type are a function of TxDMV year-end vehicle registration data and VMT mix, and in the case of base and future years, population scaling factors.
Fleet Age Distribution by Source Type	Input that provides the distribution of vehicle counts by age for each calendar year and vehicle type. TxDMV registration data are used to estimate the age distribution of vehicle types up to 31 years.	TxDMV data (year-end 2021), MOVES defaults for refuse trucks, motor homes, and buses.	• Age distributions will be developed using TxDMV registration data aggregated at the county level for all source types except the single-unit long-haul source types, which will be statewide level. • The 2021 TxDMV data will be used for the baseline as well as the future analysis years. • The distribution of age fractions should sum up to 1.0 for each source use type for each analysis year.
Fleet VMT by HPMS Vehicle Type	County specific VMT is distributed to six HPMS vehicle types.	MOVES defaults for rates runs.	• Local activity estimates are applied in emissions calculations external to MOVES.
Road Type VMT Distributions	Fractions of VMT across the four MOVES road types, for each source type.	Travel Model Output	• VMT fraction is distributed between the road type and must sum to 1.0 for each source type.
Average Speed Distribution	Input average speed data specific to vehicle type, road type, and time of day/type of day into 16 speed bins.	Travel Model Output	• The sum of speed distribution to all speed bins for each road type, vehicle type, and time/day type would be 1.0.
Fuel Supply (Table 14)[1]	Input to assign existing fuels to counties, months, and years, and to assign the	TCEQ, EPA Fuel Surveys and default MOVES input where local data unavailable.	• For each analysis year and season, the local fuel supply will consist of one conventional gasoline formulation and one biodiesel formulation. (Although only the predominant fuels gasoline and diesel will be modeled, the other MOVES

Input Parameter	Description	Base Data Source	Notes
	associated market share for each fuel.		fuel type formulations will be input as required to run the MOVES model.)
Fuel Properties (Table 15)	Input county-specific fuel properties in the MOVES database.	TCEQ, EPA Fuel Surveys and default MOVES input where local data unavailable.	• Reformulated Gasoline (RFG) formulations based on the EPA's summer 2020 fuel survey samples. o The 2023 RFG properties are actual averages (fuel grade averages weighted by relative sales volumes). o The future years RFG properties are the latest available actual averages except with average sulfur level set to the expected values (MOVES3.1 defaults, consistent with the pertinent regulatory standards). • The 2023 diesel sulfur level is the statewide average from TCEQ's 2023 survey. o Future year diesel sulfur was set to the current expected future year value (6 ppm), which is conservative and consistent with the statewide diesel sulfur average from TCEQ's latest (2023) survey. o The BD ester volume percentages for future years were based the latest available (2022) DOE state-level transportation sector BD consumption estimates. o Fuel subtype IDs 12 and 21 are 10% ethanol-blend gasoline and biodiesel, respectively.
Fuel Engine Fraction/Diesel Fraction	Input fuel engine fractions (i.e., gasoline vs. diesel engine types in the vehicle population) for all vehicle types.	TxDMV year-end 2021 registration data for particular source type diesel fractions; MOVES defaults for other source types.	• Locality-specific/MOVES default (renormalized with setting compressed natural gas [CNG] fractions to zero). • TTI developed the evaluation year-specific local diesel fractions for the MOVES single unit and combination truck source use types using the latest TxDMV data, for all analysis years, aggregated to the statewide level. • The 2021 TxDMV data will be used for the future analysis years.
Meteorology	County-specific data on	Average hourly from weather stations within.	• The summer season temperature and humidity data are the same values used

Input Parameter	Description	Base Data Source	Notes
	temperature and humidity.		in TCEQ's 2011 Air Emissions Reporting Requirements [AERR] inventory analysis. • These inputs were developed as seasonal hourly temperature and relative humidity, and 24-hour barometric pressure averages, using the hourly data from multiple weather stations within HGB nonattainment area counties, provided by TCEQ.
Inspection and Maintenance (I/M) Coverage (Table 17)	Input I/M coverage record for each combination of pollutants, process, county, fuel type, regulatory class, and model year.	N/A	• Begin and end model year (X, Y) define the range of model years covered, where X and Y, respectively, are calculated as YearID–24 and YearID–2. • I/M compliance factor estimates were calculated by TTI using TCEQ 2023 statewide compliance data and MOVES3.1 I/M compliance factor equation in MOVES3.1 Technical Guidance, HGB I/M-program-specific I/M waiver rates and failure rates, and statewide average I/M compliance rates in combination with MOVES3.1 regulatory class coverage adjustments. • The model processes/pollutants affected are start and running exhaust hydrocarbon (HC), CO, NOx, and tank vapor venting HC; fuel type is gasoline; frequency is annual.

Source: Email from Mobile Source Programs Team, values confirmed January 11, 2023, based on calendar year 2021 I/M Program Data.

Note: N/A = not applicable.

[1]There are only limited samples (14 stations) in the HGB area in the TCEQ 2023 fuel study. The comparison shows significant differences in fuel parameters compared to 2020 RFGs in these two areas. TTI recommended to use (2021+ RFG) from the 2020 study for the HGB area, as the 2020 EPA's RFG compliance program survey data is the last year EPA has for RFG areas in Texas, and the sample size in the 2023 summer fuel study is limited. The 2023 RFG properties are actual averages (fuel grade averages weighted by relative sales volumes). The future years (2024+) RFG properties are the latest available actual averages except with average sulfur level set to the expected values (MOVES3 defaults, consistent with the pertinent regulatory standards).

Table 16. Fuel Supply

Fuel Type	Fuel Formulation ID	Market Share	Market Share CV[1]
Gasoline	2379 (2023), 2479 (2024+)	1.0	N/A
Diesel	30236 (2023), 30600 (2024+)	1.0	N/A

Note: E85, CNG, and electricity MOVES default IDs will be used, per MOVES3.1 requirement to run the model, even though those fuel types do not affect the emissions results.

+

++++++/A = not applicable.

[1]Market Share CV—the coefficient variation of the market share.

Table 17. Fuel Properties[1]

Factor	Information			
Fuel Type	Gasoline	Gasoline	Diesel	Diesel
Fuel Formulation ID	2379	2479	30236	30600
Fuel Subtype ID[2]	12	12	21	21
Analysis Year	2023	2024+	2023	2024+
Season	Summer	Summer	Summer	Summer
RVP	7.15	7.15	0	0
Sulfur Level	9.98	10.00	5.91	6
Ethanol (ETOH) Volume	9.56	9.56	0	0
Methyl Tert-Butyl Ether (MTBE) Volume	0	0	0	0
Ethyl Tert-Butyl Ether (ETBE) Volume	0	0	0	0
Tert-Amyl Methyl Ether (TAME) Volume	0	0	0	0
Aromatic Content	16.92	16.92	0	0
Olefin Content	10.24	10.24	0	0
Benzene Content	0.41	0.41	0	0
Lower Volatility Percentage (e200)	48.2	48.2	0	0
Upper Volatility Percentage (e300)	84.92	84.92	0	0
Vol to Wt Percent Oxy	0.3653	0.3653	0	0
BioDieselEster Volume	N/A	N/A	2.82	2.82
Cetane Index	N/A	N/A	N/A	N/A
Polycyclic Aromatic Hydrocarbons (PAH) Content	N/A	N/A	N/A	N/A
T50	206.36	206.36	0	0
T90	326.7	326.7	0	0

Note: N/A = not applicable.

[1] 2024 future year RFG based on EPA latest available (2020) summer RFG compliance survey data with sulfur level set to MOVES3.1 default (future year expected Tier 3 value). 2024 future year BD based on TCEQ summer 2020 fuel survey data for sulfur level and EIA Texas 2022 (latest available) transportation sector fuel consumption data for BD ester volume. BD sulfur level was set to MOVES default (i.e., expected future year value – very close to the observed Texas values for many years).

[2] Fuel subtype IDs 12 and 21 are 10% ethanol-blend gasoline (in this case RFG) and BD, respectively.

Table 18a. Hourly Meteorological Data (Temperature ºF)

Factor	Information							
County/ Area(s)	Brazoria	Cham-bers	Fort Bend	Galves-ton	Harris	Liberty	Mont-gomery	Waller
Season	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer
Hour	**Temperature (°F)**							
00:00–00:59	81.78	81.78	81.78	81.78	81.78	81.78	81.78	81.78
1:00–1:59	81.05	81.05	81.05	81.05	81.05	81.05	81.05	81.05
2:00–2:59	80.42	80.42	80.42	80.42	80.42	80.42	80.42	80.42
3:00–3:59	79.88	79.88	79.88	79.88	79.88	79.88	79.88	79.88
4:00–4:49	79.38	79.38	79.38	79.38	79.38	79.38	79.38	79.38
5:00–5:59	78.92	78.92	78.92	78.92	78.92	78.92	78.92	78.92
6:00–6:59	78.66	78.66	78.66	78.66	78.66	78.66	78.66	78.66
7:00–7:59	79.91	79.91	79.91	79.91	79.91	79.91	79.91	79.91
8:00–8:59	82.99	82.99	82.99	82.99	82.99	82.99	82.99	82.99
9:00–9:59	85.64	85.64	85.64	85.64	85.64	85.64	85.64	85.64
10:00–10:59	88.01	88.01	88.01	88.01	88.01	88.01	88.01	88.01
11:00–11:59	90.11	90.11	90.11	90.11	90.11	90.11	90.11	90.11
12:00–12:59	91.82	91.82	91.82	91.82	91.82	91.82	91.82	91.82
13:00–13:59	92.94	92.94	92.94	92.94	92.94	92.94	92.94	92.94
14:00–14:59	93.6	93.6	93.6	93.6	93.6	93.6	93.6	93.6
15:00–15:59	93.82	93.82	93.82	93.82	93.82	93.82	93.82	93.82
16:00–16:59	93.55	93.55	93.55	93.55	93.55	93.55	93.55	93.55
17:00–17:59	92.67	92.67	92.67	92.67	92.67	92.67	92.67	92.67
18:00–18:59	91.15	91.15	91.15	91.15	91.15	91.15	91.15	91.15
19:00–19:59	88.9	88.9	88.9	88.9	88.9	88.9	88.9	88.9
20:00–20:59	86.34	86.34	86.34	86.34	86.34	86.34	86.34	86.34
21:00–21:59	84.64	84.64	84.64	84.64	84.64	84.64	84.64	84.64
22:00–22:59	83.45	83.45	83.45	83.45	83.45	83.45	83.45	83.45
23:00–23:59	82.54	82.54	82.54	82.54	82.54	82.54	82.54	82.54

Table 19b. Hourly Meteorological Data (Relative Humidity, %)

Factor	Information							
County/ Area(s)	Brazoria	Cham-bers	Fort Bend	Galves-ton	Harris	Liberty	Mont-gomery	Waller
Season	Summer	Summer	Summer	Summer	Summer	Summer	Summer	Summer
Hour	**Relative Humidity (%)**							
00:00–00:59	77.92	77.92	77.92	77.92	77.92	77.92	77.92	77.92
1:00–1:59	80.26	80.26	80.26	80.26	80.26	80.26	80.26	80.26
2:00–2:59	82.41	82.41	82.41	82.41	82.41	82.41	82.41	82.41
3:00–3:59	83.82	83.82	83.82	83.82	83.82	83.82	83.82	83.82
4:00–4:49	85.06	85.06	85.06	85.06	85.06	85.06	85.06	85.06
5:00–5:59	86.09	86.09	86.09	86.09	86.09	86.09	86.09	86.09
6:00–6:59	86.78	86.78	86.78	86.78	86.78	86.78	86.78	86.78
7:00–7:59	84.25	84.25	84.25	84.25	84.25	84.25	84.25	84.25
8:00–8:59	76.56	76.56	76.56	76.56	76.56	76.56	76.56	76.56
9:00–9:59	67.93	67.93	67.93	67.93	67.93	67.93	67.93	67.93
10:00–10:59	59.29	59.29	59.29	59.29	59.29	59.29	59.29	59.29
11:00–11:59	52.73	52.73	52.73	52.73	52.73	52.73	52.73	52.73
12:00–12:59	48.13	48.13	48.13	48.13	48.13	48.13	48.13	48.13
13:00–13:59	45.45	45.45	45.45	45.45	45.45	45.45	45.45	45.45
14:00–14:59	43.78	43.78	43.78	43.78	43.78	43.78	43.78	43.78
15:00–15:59	43.29	43.29	43.29	43.29	43.29	43.29	43.29	43.29
16:00–16:59	43.99	43.99	43.99	43.99	43.99	43.99	43.99	43.99
17:00–17:59	45.94	45.94	45.94	45.94	45.94	45.94	45.94	45.94
18:00–18:59	49.19	49.19	49.19	49.19	49.19	49.19	49.19	49.19
19:00–19:59	54.47	54.47	54.47	54.47	54.47	54.47	54.47	54.47
20:00–20:59	61.24	61.24	61.24	61.24	61.24	61.24	61.24	61.24
21:00–21:59	66.62	66.62	66.62	66.62	66.62	66.62	66.62	66.62
22:00–22:59	71.05	71.05	71.05	71.05	71.05	71.05	71.05	71.05
23:00–23:59	74.73	74.73	74.73	74.73	74.73	74.73	74.73	74.73

Table 20c. County Barometric Pressure

County	Barometric Pressure
Brazoria	29.95
Chambers	29.94
Fort Bend	29.94
Galveston	29.95
Harris	29.95
Liberty	29.94
Montgomery	29.95
Waller	29.95

Table 17. I/M Inputs

Factor	I/M Information		
Test Standards Description	Evaporative Gas Cap Check	Exhaust Onboard Diagnostics (OBD) Check	Evaporative Gas Cap and OBD Check
Test Standards ID	45	51	45
Year ID	2023	2023, 2026, 2030, 2040, 2045	2026, 2030, 2040, 2045
I/M Program ID	60	40	60
Pollutant Process ID	112	101,102,201,202,301,302	112
Source Use Type	21, 31, 32	21, 31, 32	21, 31, 32
Begin Model Year	1999	1999, 2002, 2006, 2016, 2021	2002, 2006, 2016, 2021
End Model Year	2021	2021, 2024, 2028, 2038, 2043	2024, 2028, 2038, 2043
I/M Compliance	21 – 94.80% 31 – 91.12% 32 – 71.34%	21 – 94.80% 31 – 91.12% 32 – 71.34%	21 – 94.80% 31 – 91.12% 32 – 71.34%

Source use type: 21—Passenger Car, 31—Passenger Truck, 32—Light Commercial Truck.
N/A = not applicable.

Table 21. Emission Controls Used for Conformity Credit

Emission Reduction Strategy and Years Covered	Modeling or Post-Processing Approach	Analysis Year
Intersection Improvements	Post Processed	2023
Transit Service	Travel Demand Model	All
High Occupancy Vehicle/Managed Lanes	Travel Demand Model	All
Park-n-Ride Lots	Travel Demand Model	All
Vanpools	Post Processed	2023
Grade Separations	Travel Demand Model	All
Traffic Signal Improvements	Post Processed	2023
Intelligent Transportation Systems	Post Processed	2023
Clean Vehicle Commitments (2021)	Post Processed	2023
Bicycle/Pedestrian Facilities	Post Processed	2023
Employer Trip Reduction Programs	Travel Demand Model	All
Sustainable Development	Post Processed	2023
Public Education/Ozone Season Fare Reduction	Post Processed	2023
Commute Solutions (2021)	Post Processed	2023