

## Appendix 2

### Applicable SIP Excerpts

The SIP excerpts contained within this appendix are from the AD SIP. This SIP can be found on the TCEQ Web site:

[http://www.tnrcc.state.tx.us/oprd/sips/june2004hgb\\_EDrec.html](http://www.tnrcc.state.tx.us/oprd/sips/june2004hgb_EDrec.html)

AD Excerpts:

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**1.5 MOTOR VEHICLE EMISSIONS BUDGET (MVEB)**

The MVEB refers to the maximum allowable emissions from on-road mobile sources, and are determined for each applicable criteria pollutant or precursor as defined in the SIP. These budgets must be used in transportation conformity analyses. In order to pass the budget test, areas must demonstrate that the estimated emissions from transportation plans, programs, and projects do not exceed the MVEB(s). The attainment budgets represent the mobile source emissions that have been modeled for the attainment demonstration, and reflect all the on-road control measures used in that demonstration.

Attainment MVEBs are shown in Table 1.5-1, *2007 Attainment Demonstration Motor Vehicle Emissions Budget for HGB*. These figures have been calculated by subtracting all on-road mobile source reductions from the 1-11 projected, uncontrolled on-road mobile source emissions forecast for the attainment year of 2007. For additional detail, see Table 3.5-48.

**Table 1.5-1: 2007 Attainment Demonstration Motor Vehicle Emissions Budget for HGB**

Year	NO <sub>x</sub> (tpd)	VOC (tpd)
2007	186.13	89.99

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**3.5.3 2000 & 2007 On-road Mobile Source Emission Inventories for 8-County HGB Area**

The purpose of this section is to provide a brief overview of the 8-county HGB area on-road mobile source emission inventory data which were input into the photochemical model for both the 2000 base case and the 2007 future case. These inventory data were developed under contract by the Texas Transportation Institute (TTI). The TTI couples MOBILE6.2 emission rate output with travel demand model VMT data from the HGAC. The net result is referred to as a “link-based” inventory due to the fact that both hourly VMT and emissions estimates are developed for each roadway segment or “link.” Separate inventories were developed for each of the 20 days stretching from August 18 to September 6 based on the 2000 ozone episode. Greater detail covering both the development and processing of these inventory data can be found in the following SIP Appendices:

- F.1 - *Summary of Development and Processing of On-road Mobile Source Inventories Used for Photochemical Modeling Efforts in Texas*
- F.2 - *2000 On-road Mobile Source Modeling Emissions Inventories for the Houston/Galveston Ozone Nonattainment Area, TTI Report*
- F.3 - *2007 On-road Mobile Source Modeling Emissions Inventories for the Houston/Galveston Ozone Nonattainment Area, TTI Report*

Tables 3.5-32, *VMT, NO<sub>x</sub>, VOC, & CO Summary for 2000 MOBILE6.2 8-County HGB Inventory* and 3.5- 33, *VMT, NO<sub>x</sub>, VOC, & CO Summary for 2007 MOBILE6.2 8-County HGB Inventory* provide summaries of the total VMT, NO<sub>x</sub>, VOC, and CO MOBILE6.2

emissions for the entire 8-county HGB area for each day of the episode for the 2000 base case and the 2007 future case, respectively. For this modeling episode, the Monday-Thursday periods have the same VMT totals and are considered to be “average weekdays.” The two Fridays have the highest total VMT of the week and the Saturdays and Sundays have the least amount of VMT. Because Labor Day occurred on Monday, September 4 in 2000, the VMT for this Monday does not have a typical weekday VMT. Instead, its overall VMT is similar to that of a typical Sunday. Also, even though Fridays have the highest VMT of the week, the estimated NO<sub>x</sub> emissions are actually lower on Fridays than on weekdays. This NO<sub>x</sub> reduction occurs because the relative contribution of VMT from the “18-wheeler” categories (i.e., HDDV8a and HDDV8b classes from MOBILE6.2) is lower on Fridays than on weekdays. For on-road mobile source inventories, overall VMT increases with future growth, while total emissions decrease from 2000 to 2007. This reduction is a result of more stringent emissions standards for the on-road fleet and the simultaneous attrition of older, higher emitting vehicles. Consistent with current federal and state rules, the on-road inventories from TTI for 2007 include the benefits of RFG, the I/M Program in all eight HGB counties, and the use of TxLED. In addition, the 2007 on-road emissions inventory was modeled based on a maximum posted speed limit of 65 mph on appropriate freeway segments....

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For on-road inventory descriptive purposes, Wednesday, August 30 was selected as the most representative “average weekday.” For both the 2000 and 2007 Wednesday, August 30 inventories, Table 3.5-34, *Summary of 2000 HGB On-road Wednesday, August 30 Inventory by County*, and Table 3.5- 35, *Summary of 2007 HGB On-road Wednesday, August 30 Inventory by County*, present respective summaries of the VMT, NO<sub>x</sub>, VOC, and CO MOBILE6 emissions for each of the eight counties in the HGB area. Harris County accounts for roughly 70 to 75 percent of the estimated VMT, NO<sub>x</sub>, VOC, and CO from the HGB nonattainment area.

**Table 3.5-34: Summary of 2000 HGB Onroad Wednesday, August 30 Inventory by County**

<i>County</i>	<i>8-County VMT</i>		<i>Total Emissions (tpd)</i>		
	<i>Total</i>	<i>Distribution</i>	<i>NO<sub>x</sub></i>	<i>VOC</i>	<i>CO</i>
<i>Brazoria</i>	5,591,008	4.39%	14.92	6.79	101.41
<i>Chambers</i>	2,202,239	1.73%	7.76	3.09	50.90
<i>Fort Bend</i>	6,790,771	5.33%	18.91	8.73	124.38
<i>Galveston</i>	6,160,053	4.83%	16.27	7.55	110.07
<i>Harris</i>	95,707,669	75.09%	265.46	110.49	1,503.35
<i>Liberty</i>	2,034,665	1.60%	6.18	2.89	42.36
<i>Montgomery</i>	7,253,818	5.69%	21.34	8.98	137.52
<i>Waller</i>	1,720,671	1.35%	5.85	2.54	40.86
<i>Total</i>	127,460,894	100.00%	356.70	151.07	2,110.85

**Table 3.5-35: Summary of 2007 HGB Onroad Wednesday, August 30 Inventory by County**

<i>County</i>	<i>VMT</i>		<i>Total Emissions (tpd)</i>		
	<i>Total</i>	<i>Distribution</i>	<i>NO<sub>x</sub></i>	<i>VOC</i>	<i>CO</i>
<i>Brazoria</i>	6,216,326	4.26%	8.86	3.81	58.22
<i>Chambers</i>	2,689,680	1.84%	4.70	1.65	29.90
<i>Fort Bend</i>	10,110,632	6.92%	13.66	5.63	85.65
<i>Galveston</i>	5,839,485	4.00%	7.94	3.68	53.49
<i>Harris</i>	105,704,622	72.39%	141.21	65.62	906.16
<i>Liberty</i>	2,398,364	1.64%	3.86	1.71	24.53
<i>Montgomery</i>	10,742,491	7.36%	15.74	6.52	97.72
<i>Waller</i>	2,317,615	1.59%	4.13	1.80	27.30
<i>Total</i>	146,019,214	100.00%	200.09	90.44	1282.97

The on-road emissions inventory data provided by TTI were prepared for input into the photochemical model using the Emissions Preprocessor System version 2 with extensions (EPS2x). When input into the EPS2x system, the inventory data are in a “readable” text-based format. However, once within the EPS2x system, the emissions data are maintained in a binary format. Table 3.5-36, *EPS2x Modules Used to Process 8-County HGB On-road Emissions Data*, summarizes the EPS2x modules which were used to process the 8-county HGB link-based inventories.

**Table 3.5-36: EPS2x Modules Used to Process 8-County HGB Onroad Emissions Data**

<i>EPS2x Module</i>	<i>Description</i>
LBASE	“Link-Base” - Spatially allocate link emissions among grid cells
PREPNT	“Pre-Point” - Prepare stationary extended idling emissions for further processing
CHMSPL	“Chemistry Split” - Speciate emissions into NO, NO <sub>2</sub> , Paraffins, Olefins, etc.
TMPRL	“Temporal” - Apply temporal profile to extended idling emissions
CNTLEM	“Control Emissions” - Apply controls to model strategies, adjustments, etc.
CNTLHR	“Control Hourly” - Apply adjustments that vary by hour per vehicle type
GRDEM	“Grid Emissions” - Sum emissions by grid cell for photochemical model input
MARGUAM	Merge and adjust multiple gridded emission files for photochemical model input

As described above in Table 3.5-36, adjustments to the inventory are made with either the CNTLEM or CNTLHR modules. The CNTLEM module was used to:

- Remove 3.4 percent of the HDDV8a and HDDV8b (“18-wheeler”) emissions for separate processing as “extended idling” emissions in accordance with the January 2004 EPA *Guidance for Quantifying and Using Long Duration Truck Idling Emission Reductions in State Implementation Plans and Transportation Conformity*;
- Apply benefits to accrue from January 15, 2004 EPA *Final Rule for Control of Emissions From Highway Motorcycles*; and

- Remove benefits to accrue from I/M Program for Chambers, Liberty, and Waller Counties.

According to the January 15, 2004 motorcycle rule, new NO<sub>x</sub> and VOC emission standards for motorcycles are scheduled to take place beginning with the 2006 model year. According to EPA, these benefits have not been included in MOBILE6.2, but are expected to yield a 3.47 percent NO<sub>x</sub> reduction and 2.61 percent VOC reduction from the 2007 motorcycle (MC) emission rate output from MOBILE6.2. Because total motorcycle emissions are relatively low, the overall NO<sub>x</sub> and VOC benefits for 2007 are both less than 0.01 tpd in the 8-county HGB area as shown in Table 3.5-37, *Eight County HGB NO<sub>x</sub> & VOC Benefits from New Motorcycle Rule for August 30*.

**Table 3.5-37: Eight County HGB NO<sub>x</sub> & VOC Benefits from New Motorcycle Rule for August 30**

<i>Calendar Year</i>	<i>Units Reported</i>	<i>NO<sub>x</sub> Emissions</i>	<i>VOC Emissions</i>
2007	<i>tpd</i>	0.006	0.011
	<i>Pounds Per Day</i>	12.800	21.800

For each of the eight counties within the HGB nonattainment area, the 2007 on-road mobile source inventories received from TTI included the effects of the I/M program which was either already in place or scheduled to be implemented. This revision removes Chambers, Liberty, and Waller Counties from the I/M program which was scheduled to begin in May of 2005. In order to remove the I/M program benefits from the 2007 on-road inventory, “with I/M” and “without I/M” MOBILE6.2 scenarios were performed for each of these three counties. By comparing these two scenarios, the net change in NO<sub>x</sub>, VOC, and CO emission rates for each county and affected vehicle type was determined. These differences were used as adjustment factors with the EPS2x CNTLEM module. Table 3.5-38, *2007 Chambers, Liberty, & Waller County I/M Program Benefits Removed for August 30*, contains a summary of the 2007 I/M benefits removed from Chambers, Liberty, and Waller Counties.

**Table 3.5-38: 2007 Chambers, Liberty, & Waller County I/M Program Benefits Removed for August 30**

<i>I/M Program County</i>	<i>Emissions Benefits (tpd)</i>		
	<i>NO<sub>x</sub></i>	<i>VOC</i>	<i>CO</i>
<i>Chambers</i>	0.28	0.22	4.79
<i>Liberty</i>	0.30	0.23	4.46
<i>Waller</i>	0.29	0.23	4.47
<b><i>3-County Total</i></b>	<b>0.87</b>	<b>0.68</b>	<b>13.72</b>

### 3.5.3.1 Temperature/Humidity NO<sub>x</sub> corrections

The MOBILE6.2 model accounts for the effects that changes in hourly temperature and humidity have on NO<sub>x</sub> emissions for only 6 of the 28 total vehicle types. These vehicle types are the MOBILE6.2 LDGV, LDGT1-4, and MC classes. There is no temperature/humidity NO<sub>x</sub> correction in MOBILE6.2 for the remaining 22 vehicle classes, which include all 13 of the diesel-powered vehicle classes and the 9 heavy-duty gasoline vehicle classes. Under contract to the Houston Advanced Research Center (HARC), ENVIRON worked with the Southwest Research Institute to develop temperature/humidity NO<sub>x</sub> correction equations to apply to both the 13 diesel and 9 heavy-duty gasoline vehicle classes in MOBILE6.2. These equations reflect the fact that as ambient temperature increases, tailpipe NO<sub>x</sub> emissions increase. However, as ambient humidity increases, tailpipe NO<sub>x</sub> emissions decrease. Greater

detail on the development of these correction equations can be found in the following Appendices:

- F.4 - *Humidity and Temperature Correction Factors for NOx Emissions From Diesel Engines, June 2003, ENVIRON/SwRI Report*
- F.5 - *Humidity and Temperature Correction Factors for NOx Emissions From Spark Ignited-Engines, October 2003, ENVIRON/SwRI Report*

ENVIRON also developed the CNTLHR module referenced above in Table 3.5-36, which allows the user to apply a different NO<sub>x</sub>, VOC, and/or CO correction for each hour, episode day, county, and vehicle type combination. SAS code was developed to calculate the appropriate CNTLHR adjustment factors for each vehicle type by obtaining hourly inputs for temperature, relative humidity, and barometric pressure data for each county and episode day combination. The hourly temperature, relative humidity, and barometric pressure inputs used by the SAS software are also used by TTI in its development of the 2000 and 2007 HGB on-road inventories. These meteorological data were obtained from National Weather Service and the TCEQ monitors in the HGB area during the August 18-September 6, 2000 time period.

Table 3.5-39, *Summary of Temperature/Humidity NO<sub>x</sub> Correction by County for 2000 Inventory*, and Table 3.5-40, *Summary of Temperature/Humidity NO<sub>x</sub> Correction by County for 2007 Inventory*, are 2000 and 2007 summaries, respectively, of this correction procedure by county for the Wednesday, August 30 episode day. In general, the relatively cooler and more humid counties, such as Galveston and Chambers Counties, have a greater reduction of NO<sub>x</sub> emissions on a 24-hour basis. Conversely, the relatively hotter and drier counties, such as Liberty and Montgomery Counties, have very slight changes to 24-hour NO<sub>x</sub> emission totals. Within each county, there are greater NO<sub>x</sub> reductions during the overnight and early morning hours when the temperature is at its minimum and the relative humidity is at its maximum. However, during the hottest hours of the afternoon when the relative humidity is at its lowest, the temperature/humidity NO<sub>x</sub> correction either decreases NO<sub>x</sub> very slightly or increases it somewhat, depending upon the specific conditions for that hour. Overall, the temperature/humidity NO<sub>x</sub> correction procedure allows not only for improved estimates of the total on-road NO<sub>x</sub> emissions, but also for improved spatial and temporal allocation of those emissions. Greater detail on this correction procedure can be found in Appendix F.1.

**Table 3.5-39: Summary of Temperature/Humidity NO<sub>x</sub> Correction by County for 2000 Inventory**

<i>County</i>	<i>NO<sub>x</sub> Emissions (tpd)</i>			
	<i>Input</i>	<i>Output</i>	<i>Difference</i>	<i>Change</i>
<i>Brazoria</i>	14.72	13.95	-0.77	-5.23%
<i>Chambers</i>	7.96	7.33	-0.63	-7.91%
<i>Fort Bend</i>	19.18	18.61	-0.57	-2.97%
<i>Galveston</i>	16.11	14.33	-1.78	-11.05%
<i>Harris</i>	264.17	253.76	-10.41	-3.94%
<i>Liberty</i>	6.18	6.20	0.02	0.32%
<i>Montgomery</i>	21.75	21.62	-0.13	-0.60%
<i>Waller</i>	6.18	5.98	-0.20	-3.24%
<i>8-County Total</i>	356.25	341.78	-14.47	-4.06%

**Table 3.5-40: Summary of Temperature/Humidity NO<sub>x</sub> Correction by County for 2007 Inventory**

<i>County</i>	<i>NO<sub>x</sub> Emissions (tpd)</i>			
	<i>Input</i>	<i>Output</i>	<i>Difference</i>	<i>Change</i>
<i>Brazoria</i>	8.75	8.29	-0.46	-5.26%
<i>Chambers</i>	4.79	4.42	-0.37	-7.72%
<i>Fort Bend</i>	13.73	13.34	-0.39	-2.84%
<i>Galveston</i>	7.88	7.01	-0.87	-11.04%
<i>Harris</i>	140.67	135.53	-5.14	-3.65%
<i>Liberty</i>	3.85	3.87	0.02	0.52%
<i>Montgomery</i>	15.88	15.83	-0.05	-0.31%
<i>Waller</i>	4.27	4.16	-0.11	-2.58%
<b><i>8-County Total</i></b>	<b>199.82</b>	<b>192.45</b>	<b>-7.37</b>	<b>-3.69%</b>

**3.5.3.2 Low Emission Diesel**

Based on a September 27, 2001 EPA Memorandum entitled *Texas Low Emission Diesel (LED) Fuel Benefits*, a 4.8 percent NO<sub>x</sub> LED benefit should be claimed for 2002-and-newer diesel vehicles and a 6.2 percent NO<sub>x</sub> LED benefit should be claimed for 2001-and-older diesel vehicles. In order to determine the specific LED adjustment factors that should apply to each of the 13 diesel vehicle types from MOBILE6.2, MOBILE6.2 runs were performed for the HGB area to determine both VMT and NO<sub>x</sub> emission rates by model year. By using these data, the 4.8 percent and 6.2 percent reduction factors were weighted according to NO<sub>x</sub> model year contributions for each vehicle type. The resulting LED adjustment factors and benefits for 2007 are summarized in Table 3.5-41, *LED Fuel NO<sub>x</sub> Adjustments Applied to 2007 On-road HGB Inventory*. These LED factors were incorporated by TTI into the on-road inventories by post-processing the MOBILE6.2 diesel NO<sub>x</sub> emission rates. Because the LED rule does not go into effect until 2005, the adjustment factors do not apply to the 2000 on-road inventory.

**Table 3.5-41: LED Fuel NO<sub>x</sub> Adjustments Applied to 2007 Onroad HGB Inventory**

<i>Diesel Vehicle Type</i>	<i>2007 LED Adjustments</i>		
	<i>NO<sub>x</sub> Reduction</i>	<i>Adjustment Factor</i>	<i>Benefit (tpd)</i>
<i>LDDV</i>	6.09%	0.9391	0.004
<i>LDDT12</i>	6.20%	0.9380	0.001
<i>HDDV2b</i>	5.09%	0.9491	0.204
<i>HDDV3</i>	5.29%	0.9471	0.135
<i>HDDV4</i>	5.37%	0.9463	0.099
<i>HDDV5</i>	5.27%	0.9473	0.069
<i>HDDV6</i>	5.43%	0.9457	0.316
<i>HDDV7</i>	5.53%	0.9447	0.247
<i>HDDV8a</i>	5.84%	0.9416	0.722
<i>HDDV8b</i>	5.61%	0.9439	3.783
<i>HDDBT</i>	5.81%	0.9419	0.157
<i>HDDBS</i>	5.82%	0.9418	0.198
<i>LDDT34</i>	5.40%	0.9460	0.007
<b><i>Total Diesel</i></b>	<b>5.60%</b>	<b>0.9440</b>	<b>5.940</b>

### 3.5.3.3 Idling

EPA issued a document in January 2004 entitled *Guidance for Quantifying and Using Long Duration Truck Idling Emission Reductions in State Implementation Plans and Transportation Conformity*. This EPA guidance states that “extended idling” emissions account for 3.4 percent of the total emissions calculated with MOBILE6.2 for the HDDV8a and HDDV8b vehicle classes. As previously stated, the CNTLEM module was used to remove 3.4 percent of the hourly NO<sub>x</sub>, VOC, and CO emissions from the link-based “running” emissions prepared for photochemical model input from the HDDV8a and HDDV8b classes. Using a combination of SAS and UNIX code, these extended idling emissions from each hour were grouped into an 8-county 24-hour total and spatially assigned to known truck stop locations. The extended idling emissions were then processed through EPS2x as if they were stationary low-level point sources. The emissions were temporally allocated as the inverse of HDDV8a/HDDV8b VMT. Consequently, more of the extended idling emissions were allocated during overnight hours rather than daytime hours. The extended idling emissions were also run through the CNTLHR module to receive a temperature/humidity NO<sub>x</sub> correction. Provided in Table 3.5-42, 2000 HDDV8a & HDDV8b “Extended Idling” Emissions for 8-County HGB Area, and Table 3.5-43, 2007 HDDV8a & HDDV8b “Extended Idling” Emissions for 8-County HGB Area, are summaries of the total NO<sub>x</sub>, VOC, and CO extended idling emissions for both the 2000 and 2007 Wednesday, August 30 episode days, respectively.

**Table 3.5-42: 2000 HDDV8a & HDDV8b “Extended Idling” Emissions for 8-County HGB Area**

County	Total Emissions (tpd)		
	NO <sub>x</sub>	VOC	CO
Brazoria	0.024	0.001	0.004
Chambers	0.292	0.007	0.047
Fort Bend	0.490	0.012	0.075
Galveston	0.076	0.002	0.013
Harris	2.942	0.071	0.461
Liberty	0.080	0.002	0.012
Montgomery	0.666	0.015	0.100
Waller	0.363	0.009	0.058
8-County Total	4.933	0.119	0.770

**Table 3.5-43: 2007 HDDV8a & HDDV8b “Extended Idling” Emissions for 8-County HGB Area**

County	Total Emissions (tpd)		
	NO <sub>x</sub>	VOC	CO
Brazoria	0.011	0.001	0.003
Chambers	0.140	0.006	0.034
Fort Bend	0.236	0.010	0.054
Galveston	0.036	0.002	0.009
Harris	1.416	0.061	0.333
Liberty	0.039	0.002	0.009
Montgomery	0.322	0.013	0.072
Waller	0.175	0.008	0.042
8-County Total	2.375	0.103	0.556

### 3.5.4 TCMs, TERP, VMPE

For the 2007 inventory, additional post-processing adjustments were necessary to model the

On-road inventory benefits to accrue from TCMs, TERP, and VMEP.

Table 3.5-45, *2007 On-road TCM, TERP, & VMEP Benefits for 8-County HGB Area*, summarizes the 2007 8-county HGB on-road TCM, TERP, and VMEP benefits. Appendix F.6 is an Excel spreadsheet from HGAC detailing the 2007 on-road TCM benefits for the 8-county HGB area. Appendix F.7 is a report from HGAC detailing the 2007 VMEP benefits for the 8-county HGB area. For additional information on the TERP program benefits, refer to Section 5.3.17 of this SIP revision.

**Table 3.5-45: 2007 Onroad TCM, TERP, & VMEP Benefits for 8-County HGB Area**

<i>8-County HGB Area</i>	<i>Total Emissions (tpd)</i>		
	<i>NO<sub>x</sub></i>	<i>VOC</i>	<i>CO</i>
<i>TCM</i>	0.85	0.52	0.00
<i>TERP</i>	3.00	0.00	0.00
<i>VMEP</i>	3.60	0.60	0.00
<i>8-County Total</i>	7.45	1.12	0.00

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**3.5.4.1 Development of 2007 Attainment Demonstration Motor Vehicle Emissions Budget for HGB**

By definition, the on-road emissions inventory input into the final attainment demonstration photochemical modeling run should establish the MVEB. However, use of the EPS2x processor introduces unique adjustments to the on-road emissions inventory which are necessary for photochemical modeling efforts. One of the primary adjustments relates to the speciation performed by the EPS2x CHMSPL module referred to in Table 3.5-36. CHMSPL categorizes the total VOCs reported into various groupings based on their reactivity with respect to forming ozone. Because each of these reactivity groupings has a different molecular weight, the VOC totals input to CHMSPL differ from those outputs. In a similar fashion, NO<sub>x</sub> emissions are divided by CHMSPL into 90 percent NO and 10 percent NO<sub>2</sub>, each with a distinct molecular weight.

Another processing step necessary for photochemical model input involves the use of Central Standard Time (CST) instead of Central Daylight Time (CDT). All photochemical modeling inventory files must be in CST to be consistent with how meteorological data are reported and modeled. However, emission inventory files are typically developed in CDT. As an example, the on-road emissions inventory data for the 2007 Wednesday, August 30 episode day is received from TTI in CDT. However, the on-road inventory data input into EPS2x begins at 1:00 a.m. CDT on August 30 and ends at 1:00 a.m. on August 31, which is 12:00 a.m. CST on August 30 and 12:00 a.m. CST on August 31, respectively.

When governmental organizations need to demonstrate conformity to the MVEB, they will not be developing photochemical modeling inventories and therefore will not apply these necessary speciation and time-shift steps. Consequently, the 2007 MVEB for the 8-county HGB area will start with the Wednesday, August 30 on-road inventory as received from TTI in CDT format. Then, adjustments for the federal motorcycle requirements, I/M program revision, temperature/humidity NO<sub>x</sub> correction, and TCM/TERP/VMEP will be applied outside of EPS2x, but in a manner consistent with the descriptions included above. Table 3.5-48, *2007 Attainment Demonstration Motor Vehicle Emissions Budget for HGB*, summarizes this approach. The appropriate reference is noted for each inventory description/adjustment. The slight differences between the 8-county NO<sub>x</sub>, VOC, and CO totals in Tables 3.5-47 and

3.5-48 are due solely to the manner in which the EPS2x system converts text-based, non-speciated inventory data in CDT into a binary, gridded, and speciated format in CST appropriate for photochemical model input.

**Table 3.5-48: 2007 Attainment Demonstration Motor Vehicle Emissions Budget for HGB**

<i>8-County HGB Area</i>	<i>Total Emissions (tpd)</i>		
	<i>NO<sub>x</sub></i>	<i>VOC</i>	<i>CO</i>
<i>Onroad Inventory From TTI (Table 3.5-33) Includes RFG, I/M, LED, &amp; 65 mph Speed Limit for 8 Counties</i>	200.09	90.44	1,282.97
<i>Motorcycle Rule (Table 3.5-37)</i>	-0.01	-0.01	0.00
<i>Removal of Chambers, Liberty, &amp; Waller Counties from the I/M Program (Table 3.5-38)</i>	0.87	0.68	13.72
<i>Temperature/Humidity NO<sub>x</sub> Correction (Table 3.5-40)</i>	-7.37	0.00	0.00
<i>TCM (Table 3.5-45 &amp; Appendix F.6)</i>	-0.85	-0.52	0.00
<i>TERP (Table 3.5-45 &amp; Section 5.3.17)</i>	-3.00	0.00	0.00
<i>VMEP (Table 3.5-45 &amp; Appendix F.7)</i>	-3.60	-0.60	0.00
<i>Final 8-County HGB MVEB</i>	186.13	89.99	1,296.69

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**5.3.3 Vehicle Inspection/Maintenance Program**

In the December 2000 Attainment Demonstration, the commission adopted an enhanced vehicle I/M program for the entire HGB area with a May 1, 2004 implementation date for Chambers, Liberty, and Waller Counties. On October 8, 2003, the commission delayed the implementation date of the program in the three counties until May 1, 2005. As part of this revision, the TCEQ evaluated this control strategy and the photochemical modeling shows that this strategy is no longer necessary to attain the 1-hour ozone standard. As a result, the commission adopted the removal of Chambers, Liberty, and Waller Counties from the Vehicle I/M Program on September 15, 2004.

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**5.3.7 Voluntary Mobile Emission Reduction Program**

For a revised program description, see the Houston/Galveston Area Council's (HGAC) Report Detailing the 2007 VMEP benefits for the 8-County HGB Area in Appendix O, Section O.7.

**5.3.9 Speed Limit Strategy**

In September 2002, the commission revised the existing speed limit strategy to suspend the 55 mph speed limit until May 1, 2005 and to increase speeds to 5 mph below what was posted before May 1, 2002, where speeds were 65 mph or higher. In 2003, the 78th Texas Legislature removed authority to determine speed limits for environmental purposes. Therefore, this revision removes the reinstatement of the 55 mph speed limit on May 1,

2005. The currently posted speed limits remain at 5mph below the posted limit before May 1, 2002.

#### **5.3.12 Vehicle Idling Restriction**

As part of this revision, the TCEQ evaluated this control strategy and the photochemical modeling shows that this strategy is no longer necessary to attain the 1-hour ozone standard. As a result, this revision repeals the Vehicle Idling Restriction.

#### **5.3.14 Transportation Control Measures (TCMs)**

The HGAC is revising the region's TCMs. Appendix F6 is a list of the revised measures, with reductions of .519 tpd of VOC and .847 tpd of NO<sub>x</sub> in 2007.

Appendix I of the HGB December 2000 SIP revision, lists the TCMs in place (2.13 of VOC reductions and 1.06 tpd of NO<sub>x</sub>) until EPA approves this revision. TCMs can be modified upon EPA approval of SIP revisions or through the TCM substitution process outlined in 30 TAC §114.270. EPA approval thru the substitution process could expedite equivalent or better emission reduction measures in the region, as well as provide a public involvement process that focuses on these measures.

The list of revised measures in Appendix F6 is divided into two groups. The first group lists TCMs completed prior to 2000, as well as 25 projects that will not be completed by 2007 and are therefore removed. The second group lists TCMs in 2000 and later that are complete or to-be-completed. This group includes 19 projects replacing the removed projects.

The 25 removed projects, which include rail, bicycle and pedestrian, and park-and-ride lots, are deleted because they will not be completed by 2007, have been withdrawn by project sponsors, or have been incorporated into other programs such as VMEP. The cumulative emission reductions to be replaced are .044 tpd of VOC and .084 tpd of NO<sub>x</sub>. Nineteen projects replace these, with reductions of .056 VOC and .100 NO<sub>x</sub>. The completed projects are the commitments that have met and reporting requirements fulfilled. Full documentation of TCMs are found in the region's transportation conformity determination.

Emission reductions for TCM projects completed before 2000 are captured in the 2000 episode modeling. Emission reductions for projects to be completed in the year 2000 and after, are captured in the 2007 attainment year analysis and, therefore, reflected in the motor vehicle emissions budget (see Chapter 3).