

## **Appendix 2**

### **Applicable SIP Excerpts**

The SIP excerpts contained within this appendix are from the AD and RFP SIPs. These SIPs can be found on the TCEQ website:

[http://www.tceq.texas.gov/airquality/sip/HGB\\_eight\\_hour.html](http://www.tceq.texas.gov/airquality/sip/HGB_eight_hour.html)

AD SIP Excerpts:

Appendix B, Section 3: page B-137

<b>Eight-County HGB Area</b>	<b>Total Emissions (tpd)</b>	
	<b>NO<sub>x</sub></b>	<b>VOC</b>
On-Road Inventory From TTI (Table 3.1-3) Includes I/M, RFG, & TxLED	52.55	45.97
Temperature/Humidity NO <sub>x</sub> Correction (Table 3.1-14)	1.78	0.00
On-Road VMEP Benefits (Table 3.1-36)	1.55	0.00
Final Eight-County HGB MVEB	49.22	45.97

RFP SIP Excerpts:

## **CHAPTER 5: MOTOR VEHICLE EMISSIONS BUDGETS**

### **5.1 INTRODUCTION**

This Houston-Galveston-Brazoria (HGB) reasonable further progress (RFP) state implementation plan (SIP) revision establishes motor vehicle emissions budgets (MVEB), which set the allowable HGB area on-road mobile emissions. The HGB RFP SIP revision MVEB are calculated by subtracting the on-road mobile control strategy emission reductions that are necessary to demonstrate RFP from the uncontrolled, projected on-road mobile source emissions for each RFP milestone year. Local transportation planning organizations use the MVEB to demonstrate that projected emissions from transportation plans, programs, and projects are equal to, or less than the budget, as required by the federal transportation conformity rule.

### **5.2 OVERVIEW OF METHODOLOGIES AND ASSUMPTIONS**

The Texas Commission on Environmental Quality (TCEQ) developed updated on-road mobile source emissions inventories (EI) and control strategy reduction estimates that use the latest planning assumptions and the newest version of the United States Environmental Protection Agency's (EPA) emission factor model. Updated inventory development included development of: a 2002 base year inventory; adjusted base year inventories for 2002, 2008, 2011, 2014, 2017, and 2018; 2008, 2011, 2014, 2017, and 2018 milestone year inventories; and control strategy reduction estimates for 2008, 2011, 2014, 2017, and 2018. The TCEQ worked with the Houston-Galveston Area Council (H-GAC) to develop these inventories. Appendix 9: *Houston-Galveston-Brazoria 1997 Eight-Hour Ozone Nonattainment Area Reasonable Further Progress On-Road Mobile Source Emissions Inventories* is a copy of the H-GAC contractor (ENVIRON International Corporation) report, which provides detailed documentation of the on-road mobile inventory development.

### **5.3 MOTOR VEHICLE EMISSIONS BUDGETS FOR RFP MILESTONE YEARS**

The RFP MVEB reflect the on-road mobile EI for each RFP milestone year, the on-road mobile reduction strategies used to demonstrate RFP, and a 10 percent transportation conformity safety margin. A transportation conformity safety margin is allowed when there is an excess in emission reductions required to demonstrate RFP for a milestone year. The amount of the safety margin is less than the total in excess emission reductions for nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) and, therefore, even if the safety margin is used for a transportation conformity determination, the HGB area will still meet the 1997 eight-hour ozone standard RFP requirements for all milestone years. Summaries of the calculation of the MVEB for each RFP milestone year are presented in Tables 5-1: *2008 RFP Motor Vehicle Emissions Budgets for the HGB Area*, 5-2: *2011 RFP Motor Vehicle Emissions Budgets for the HGB Area*, 5-3: *2014 RFP Motor Vehicle Emissions Budgets for the HGB Area*, 5-4: *2017 RFP Motor Vehicle Emissions Budgets for the HGB Area*, 5-5: *2018 RFP Motor Vehicle Emissions Budgets for the HGB Area*. The details of the calculation of the MVEB is documented in Sheets 10 through 14 of Appendix 1: *HGB RFP Demonstration Calculations Spreadsheet*. The RFP control strategy produces more than the required emissions reductions for each milestone year. Some of the excess in emissions reductions for each milestone year is used to provide a safety margin. This safety margin is less than the total emissions reductions needed for the RFP demonstration; therefore, even if this safety margin is used, the HGB area will still demonstrate RFP for each milestone.

**Table 5-1: 2008 RFP Motor Vehicle Emissions Budgets for the HGB Eight-County Ozone Nonattainment Area**

Description	NO <sub>x</sub> tons per day	VOC tons per day
2008 On-Road Emissions Projection Without Post-1990 FCAA Controls	363.05	194.89
<b>2008 On-Road Mobile Reasonable Further Progress Controls</b>		
Tier 1 Federal Motor Vehicle Control Program (Tier 1 FMVCP)	68.11	45.57
Federal Reformulated Gasoline (All 8 Counties)	46.75	34.24
I/M in Harris County	13.65	10.42
National Low Emission Vehicle Program (NLEV)	9.12	5.33
Expanded I/M (Brazoria, Fort Bend, Galveston, and Montgomery)	7.06	3.09
Tier 2 Federal Motor Vehicle Control Program (Tier 2 FMVCP)	24.98	9.91
2007 Heavy-Duty Diesel FMVCP	8.7	0.15
On-Road TxLED	8.87	0.04
2008 On-Road Emissions Projection With Post-1990 FCAA Controls (Uncontrolled inventory minus control reductions)	175.81	86.14
Add Transportation Conformity Safety Margin <sup>1</sup>	17.58	8.61
<b>2008 RFP Motor Vehicle Emissions Budgets</b>	<b>193.39</b>	<b>94.75</b>

<sup>1</sup> The 2008 RFP reductions exceed the required emissions reductions. Excess emissions equaling 10 percent of the 2008 on-road emissions projection with post-1990 FCAA controls for each NO<sub>x</sub> and VOC is used to provide a safety margin for 2008.

**Table 5-2: 2011 RFP Motor Vehicle Emissions Budgets for the HGB Eight-County Ozone Nonattainment Area**

Description	NO <sub>x</sub> tons per day	VOC tons per day
2011 On-Road Emissions Projection Without Post-1990 FCAA Controls	372.46	205.03
<b>2011 On-Road Mobile Reasonable Further Progress Controls</b>		
Tier 1 Federal Motor Vehicle Control Program (Tier 1 FMVCP)	62.24	63.02
Federal Reformulated Gasoline (All 8 Counties)	72.94	34.51
I/M in Harris County	16.07	11.35
National Low Emission Vehicle Program (NLEV)	9.31	4.81
Expanded I/M (Brazoria, Fort Bend, Galveston, and Montgomery)	5.12	3.3
Tier 2 Federal Motor Vehicle Control Program (Tier 2 FMVCP)	51.95	19.19
2007 Heavy-Duty Diesel FMVCP	28.22	0.45
On-Road TxLED	3.21	0.06
2011 On-Road Emissions Projection With Post-1990 FCAA Controls (Uncontrolled inventory minus control reductions)	123.40	68.34
Add Transportation Conformity Safety Margin <sup>1</sup>	12.34	6.83
<b>2011 RFP Motor Vehicle Emissions Budgets</b>	<b>135.74</b>	<b>75.17</b>

<sup>1</sup> The 2011 RFP reductions exceed the required emissions reductions. Excess emissions equaling 10 percent of the 2011 on-road emissions projection with post-1990 FCAA controls for each NO<sub>x</sub> and VOC is used to provide a safety margin for 2011.

**Table 5-3: 2014 RFP Motor Vehicle Emissions Budgets for the HGB Eight-County Ozone Nonattainment Area**

Description	NO <sub>x</sub> tons per day	VOC tons per day
2014 On-Road Emissions Projection Without Post-1990 FCAA Controls	407.05	222.41
<b>2014 On-Road Mobile Reasonable Further Progress Controls</b>		
Tier 1 Federal Motor Vehicle Control Program (Tier 1 FMVCP)	56.88	79.36
Federal Reformulated Gasoline (All 8 Counties)	104.41	37.17
I/M in Harris County	20.82	12.43
National Low Emission Vehicle Program (NLEV)	6.16	3.27
Expanded I/M (Brazoria, Fort Bend, Galveston, and Montgomery)	10.15	4.44
Tier 2 Federal Motor Vehicle Control Program (Tier 2 FMVCP)	53.79	16.87
2007 Heavy-Duty Diesel FMVCP	66.13	12.53
On-Road TxLED	2.11	0.12
2014 On-Road Emissions Projection With Post-1990 FCAA Controls (Uncontrolled inventory minus control reductions)	86.60	56.22
Add Transportation Conformity Safety Margin <sup>1</sup>	8.66	5.62
<b>2014 RFP Motor Vehicle Emissions Budgets</b>	<b>95.26</b>	<b>61.84</b>

<sup>1</sup> The 2014 RFP reductions exceed the required emissions reductions. Excess emissions equaling 10 percent of the 2014 on-road emissions projection with post-1990 FCAA controls for each NO<sub>x</sub> and VOC is used to provide a safety margin for 2014.

**Table 5-4: 2017 RFP Motor Vehicle Emissions Budgets for the HGB Eight-County Ozone Nonattainment Area**

Description	NO <sub>x</sub> tons per day	VOC tons per day
2017 On-Road Emissions Projection Without Post-1990 FCAA Controls	432.04	237.86
<b>2017 On-Road Mobile Reasonable Further Progress Controls</b>		
Tier 1 Federal Motor Vehicle Control Program (Tier 1 FMVCP)	49.05	91.17
Federal Reformulated Gasoline (All 8 Counties)	128.94	39.99
I/M in Harris County	25.11	13.49
National Low Emission Vehicle Program (NLEV)	3.42	1.97
Expanded I/M (Brazoria, Fort Bend, Galveston, and Montgomery)	8.63	4.32
Tier 2 Federal Motor Vehicle Control Program (Tier 2 FMVCP)	91.98	37.20
2007 Heavy-Duty Diesel FMVCP	61.69	1.00
On-Road TxLED	1.45	0.33
2017 On-Road Emissions Projection With Post-1990 FCAA Controls (Uncontrolled inventory minus control reductions)	61.77	48.39
Add Transportation Conformity Safety Margin <sup>1</sup>	6.18	4.84
<b>2017 RFP Motor Vehicle Emissions Budgets</b>	<b>67.95</b>	<b>53.23</b>

<sup>1</sup> The 2017 RFP reductions exceed the required emissions reductions. Excess emissions equaling 10 percent of the 2017 on-road emissions projection with post-1990 FCAA controls for each NO<sub>x</sub> and VOC is used to provide a safety margin for 2017.

**Table 5-5: 2018 RFP Motor Vehicle Emissions Budgets for the HGB Eight-County Ozone Nonattainment Area**

Description	NO <sub>x</sub> tons per day	VOC tons per day
2018 On-Road Emissions Projection Without Post-1990 FCAA Controls	443.70	242.84
<b>2018 On-Road Mobile Reasonable Further Progress Controls</b>		
Tier 1 Federal Motor Vehicle Control Program (Tier 1 FMVCP)	49.28	94.52
Federal Reformulated Gasoline (All 8 Counties)	135.65	40.97
I/M in Harris County	26.48	13.90
National Low Emission Vehicle Program (NLEV)	2.66	1.59
Expanded I/M (Brazoria, Fort Bend, Galveston, and Montgomery)	9.16	4.50
Tier 2 Federal Motor Vehicle Control Program (Tier 2 FMVCP)	96.36	39.39
2007 Heavy-Duty Diesel FMVCP	67.54	1.08
On-Road TxLED	1.19	0.21
2018 On-Road Emissions Projection With Post-1990 FCAA Controls (Uncontrolled inventory minus control reductions)	55.38	46.68
Add Transportation Conformity Safety Margin <sup>1</sup>	5.54	4.67
<b>2018 RFP Motor Vehicle Emissions Budgets</b>	<b>60.92</b>	<b>51.35</b>

<sup>1</sup> The 2018 RFP reductions exceed the required emissions reductions. Excess emissions equaling 10 percent of the 2018 on-road emissions projection with post-1990 FCAA controls for each NO<sub>x</sub> and VOC is used to provide a safety margin for 2018.