

Existing Ozone Control Measures Applicable to the Houston-Galveston-Brazoria (HGB) Eight-County Nonattainment Area

HGB Reasonably Available Control Technology Analysis Update State Implementation Plan (SIP) for the Eight-Hour Ozone Standard

(http://www.tceq.texas.gov/airquality/sip/HGB_eight_hour.html)

Measure	Description	Start Date(s)
Nitrogen Oxides (NO _x) Mass Emissions Cap and Trade (MECT) Program	<p>Overall 80% NO_x reduction from existing industrial sources and utility power plants, implemented through a cap and trade program</p> <p>Affects utility boilers, gas turbines, heaters and furnaces, stationary internal combustion engines, industrial boilers, and many other industrial sources</p>	April 1, 2003, and phased in through April 1, 2007
Highly Reactive Volatile Organic Compounds (HRVOC) Rules and HRVOC Emissions Cap and Trade (HECT) Program	<p>Affects cooling towers, process vents, and flares, and establishes an annual emissions limit with a cap and trade for each site in Harris County</p> <p>Seven perimeter counties subject to permit allowable limits and monitoring requirements</p>	<p>Monitoring requirements began January 31, 2006</p> <p>Cap and trade program implemented January 1, 2007</p> <p>HECT cap incrementally stepped-down from 2014 through 2017 for a total 25% cap reduction</p>
HRVOC Fugitive Rules	<p>More stringent leak detection and repair (LDAR) requirements for components in HRVOC service</p> <p>Additional components included in LDAR program: more stringent repair times, lower leak detection, and third part audit requirements</p>	March 31, 2004
Volatile Organic Compounds (VOC) Rules – Storage Tanks	<p>Requires controls for slotted guide poles and more stringent controls for other fittings on floating roof tanks, and control requirements or operational limitations on landing floating roof tanks</p> <p>Eliminates exemption for storage tanks for crude oil or natural gas condensate, and regulates flash emissions from these tanks</p>	<p>January 1, 2009</p> <p>Compliance with revised monitoring and testing requirements required by March 1, 2013</p>

Measure	Description	Start Date(s)
VOC Rules – Degassing Operations	<p>Requires vapors from degassing to be vented to a control device for a longer time period, and removes exemption from degassing to control for tanks with capacity of 75,000 to 1,000,000 gallons</p> <p>Clarification of rule and monitoring and testing requirements, additional control options, and notification requirements</p>	<p>January 1, 2009</p> <p>February 17, 2011</p>
NO _x Emission Standards for Nitric Acid and Adipic Acid Manufacturing	NO _x emission standards for nitric acid and adipic acid manufacturing facilities in the HGB area	November 15, 1999
Utility Electric Generation in East and Central Texas	NO _x control requirements (approximately 55 %) on utility boilers and stationary gas turbines at utility electric generation sites in East and Central Texas	May 1, 2003, through May 1, 2005
VOC Control Measures	<p>Additional control technology requirements for batch processes, bakeries, and offset lithographic printers by December 31, 2002</p> <p>Additional VOC measures adopted earlier for reasonably available control technology (RACT) purposes: storage, general vent gas, industrial wastewater, loading and unloading operations, general VOC LDAR, solvent using process, etc. (see Appendix D: <i>Reasonably Available Control Technology Analysis</i> of the Houston-Galveston-Brazoria Attainment Demonstration State Implementation Plan Revision for the 1997 Eight-Hour Ozone Standard (HGB AD SIP revision) adopted March 10, 2010, for more details)</p>	December 31, 2002, and earlier
VOC Control Measures – Offset Lithographic Printers	<p>Additional control technology requirements for offset lithographic printers</p> <p>Revision to limit VOC content of solvents used by offset lithographic printing facilities and to include smaller sources in rule applicability (see Appendix D of the HGB AD SIP revision adopted March 10, 2010, for more details)</p>	<p>December 31, 2002</p> <p>March 1, 2011, for major sources</p> <p>March 1, 2012, for minor sources</p>
Refueling – Stage I	<p>Captures gasoline vapors that are released when gasoline is delivered to a storage tank</p> <p>Vapors returned to the tank truck as the storage tank is being filled with fuel, rather than released into the ambient air</p>	1990

Measure	Description	Start Date(s)
Refueling – Stage II	Captures gasoline vapors when a vehicle is being fueled at the pump Vapors returned through the pump hose to the petroleum storage tank, rather than released into the air	1992
Federal Area/Non-Road Measures	Series of emissions limits, implemented by the United States Environmental Protection Agency (EPA), for area and non-road sources Examples: diesel and gasoline engine standards for locomotives and leaf-blowers	Through 2018
Texas Emissions Reduction Plan	Provides grant funds for on-road and non-road heavy-duty diesel engine replacement/retrofit	January 2002
California Gasoline Engines	California standards for non-road gasoline engines 25 horsepower and larger	May 1, 2004
Stationary Diesel Engines	Prohibition on operating stationary diesel and dual-fuel engines for testing and maintenance purposes between 6:00 a.m. and noon	April 1, 2002
Natural Gas-Fired Small Boilers, Process Heaters, and Water Heaters	NO _x emission limits on small-scale residential and industrial boilers, process heaters, and water heaters equal to or less than 2.0 million British thermal units per hour	2002
Minor Source NO _x Controls for Non-MECT Sites	NO _x emission limits on boilers, process heaters, stationary engines, and turbines at minor sites not included in the MECT program (uncontrolled design capacity to emit less than 10 tons per year (tpy))	March 31, 2005
VOC Control Measures	Additional control technology requirements for batch processes and bakeries by December 31, 2002 Additional VOC measures adopted earlier for RACT purposes: storage, general vent gas, industrial wastewater, loading and unloading operations, general VOC LDAR, solvent using process, cutback asphalt, etc. (see Appendix D of the HGB AD SIP revision adopted March 10, 2010, for more details)	December 31, 2002, and earlier
Texas Low Emission Diesel (TxLED)	Requires all diesels for both on-road and non-road use to have a lower aromatic content and a higher cetane number	Phase in began October 31, 2005
TxLED for Marine Fuels	Adds marine distillate fuels X and A, commonly known as DMX and DMA, or Marine Gas Oil, into the definition of diesel fuels, requiring them to be TxLED compliant	June 24, 2007

Measure	Description	Start Date(s)
Texas Low Reid Vapor Pressure (RVP) Gasoline	Requires all gasoline for both on-road and non-road use to have a RVP of 7.8 pounds per square inch or less from May 1 through October 1 each year	April 2000
Voluntary Mobile Emissions Reduction Program	Voluntary measures administered by the Houston-Galveston Area Council (H-GAC) (see Appendix F: <i>Evaluation of Mobile Source Control Strategies for the Houston-Galveston-Brazoria State Implementation Plan (With Detailed Strategies)</i>), prepared for H-GAC by ENVIRON International Corporation, of the HGB AD SIP adopted March 10, 2010)	Through 2018
Federal On-Road Measures	Series of emissions limits, implemented by the EPA, for on-road vehicles Examples: Tier 1 and Tier 2 vehicle standards, low sulfur diesel standards, National Low Emission Vehicle standards, and reformulated gasoline	Phase in through 2013
Vehicle Inspection/Maintenance	Yearly treadmill-type testing for pre-1996 vehicles and computer checks for 1996 and newer vehicles	May 1, 2002, in Harris County May 1, 2003, in Brazoria, Fort Bend, Galveston, and Montgomery Counties
Speed Limit Reduction	Five miles per hour (mph) below what was posted before May 1, 2002, on roadways where speeds were 65 mph or higher	September 2003
Transportation Control Measures	Various measures in H-GAC's long-range transportation plans (see Appendix F of the HGB AD SIP adopted March 10, 2010, for more details)	Phase in through 2018
Voluntary Energy Efficiency/Renewable Energy	Energy efficiency and renewable energy projects encouraged by Senate Bill (SB) 7, 76th Texas Legislature, 1999 and SB 5, 77th Texas Legislature, 2001	September 1, 1999, and September 1, 2001
Automotive Windshield Washer Fluid	VOC content limitation on automotive windshield washer fluid sold, supplied, distributed, or manufactured for use in Texas	January 1, 1995

The commission adopted this table December 7, 2011, as part of the SIP revision.

Voluntary Control Measures Applicable to the HGB Eight-County Nonattainment Area

HGB Mid-Course Review SIP Revision

(http://www.tceq.texas.gov/airquality/sip/dec2004hgb_mcr.html#revision)

Measure	Description	NO _x Reduction in 2007	VOC Reduction in 2007
Vehicle Scrappage	Emission reductions through H-GAC administered the AirCheck Texas Low-Income Vehicle Repair Assistance, Retrofit, and Accelerated Vehicle Retirement Program (LIRAP) to repair or replace high emitting vehicles	0.11 tons per day (tpd)	0.10 tpd
Smoking Vehicle/Clean Air Action	TCEQ program – marketing and advertising by H-GAC	0.05 tpd	0.04 tpd
Clean Cities/Vehicle Program	Public and private heavy-duty engine/vehicle replacement/retrofit	3.0 tpd	0.40 tpd
Commute Solutions	Vanpools, additional transit, alternative commuting, and other initiatives	0.30 tpd	0.40 tpd
Regional Computerized Traffic Signal System	Average speed on local streets increased by 21%	0.03 tpd	0.30 tpd
Locomotives	Memorandum of Agreement (MOA)	2.0 tpd	0.10 tpd
Commercial Marine	Tugs/Tows – MOA Ferries – MOA	1.1/0.4 tpd	0.0 tpd
Total 2007 Emission Reductions		7.0 tpd	0.8 tpd

The commission adopted these voluntary control measures December 1, 2004, as part of the SIP revision.

HGB 1997 Eight-Hour SIP Revision

(http://www.tceq.texas.gov/assets/public/implementation/air/sip/hgb/hgb_sip_2007/06027SIP_COMPLETE_DOCS.pdf)

Measure	Description	NO _x Reduction in 2009	VOC Reduction in 2009
Public and Private Sector Clean Fuel Fleet	Public and private heavy-duty engine/vehicle replacement/retrofit	2.0 tpd	not quantified
Commute Solutions	Vanpools, additional transit, alternative commuting, and other initiatives	0.77 tpd	not quantified
Pooled Ownership of Vehicles	Shared vehicles among a group of owners	0.05 tpd	not quantified
Total 2009 Emission Reductions		2.82 tpd	not quantified

The commission adopted these voluntary control measures May 23, 2007, as part of the SIP revision.

HGB Attainment Demonstration SIP Revision for the 1997 Eight-Hour Ozone Standard

(http://www.tceq.state.tx.us/assets/public/implementation/air/sip/hgb/hgb_sip_2009/09017SIP_completeNarr_ado.pdf)

Measure	Description	NO _x Reduction in 2018	VOC Reduction in 2018
Alternative Commuting	Bicycle and pedestrian actions, cleaner diesel fuel/alternative fuels, subscription bus service, public transit improvements, internet ride-matching services, and vanpooling	0.20 tpd	not quantified
Regional Traffic Flow Improvement	Local intersection signal improvements	0.05 tpd	not quantified
Vehicle Retrofit and Replacement	Public and private sector clean fuel fleets, dedicated funding for school bus replacement, and electric vehicles/increased use of hybrid buses	1.30 tpd	not quantified
Off-Road Measures	Voluntary non-road replacement and retrofit programs, government construction incentives, promote cleaner lawn and garden equipment, reduced idling, development of cleaner air action plans for regional port and marine operations, and rail efficiency measures	0.70 tpd	not quantified
Total 2018 Emission Reductions		2.25 tpd	not quantified

The commission adopted these voluntary control measures March 10, 2010, as part of the SIP revision.