REVISIONS TO THE STATE OF TEXAS AIR QUALITY IMPLEMENTATION PLAN FOR THE CONTROL OF OZONE AIR POLLUTION

HOUSTON-GALVESTON-BRAZORIA 1997 EIGHT-HOUR OZONE STANDARD NONATTAINMENT AREA

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
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HOUSTON-GALVESTON-BRAZORIA REASONABLY AVAILABLE CONTROL TECHNOLOGY ANALYSIS UPDATE STATE IMPLEMENTATION PLAN REVISION FOR THE 1997 EIGHT-HOUR OZONE STANDARD

PROJECT NUMBER 2010-028-SIP-NR

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EXECUTIVE SUMMARY

The eight-county Houston-Galveston-Brazoria (HGB) nonattainment area (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties) is currently classified as severe under the 1997 eight-hour ozone National Ambient Air Quality Standard (NAAQS) of 0.08 parts per million (ppm) with an attainment date as expeditiously as practicable but no later than June 15, 2019. Texas was required to submit a state implementation plan (SIP) revision addressing the severe ozone nonattainment area requirements of the 1990 Federal Clean Air Act Amendments (FCAA) to the United States Environmental Protection Agency (EPA) by April 15, 2010.

On March 10, 2010, the Texas Commission on Environmental Quality (TCEQ) adopted two revisions to the Texas SIP for the HGB ozone nonattainment area. The Houston-Galveston-Brazoria Attainment Demonstration State Implementation Plan Revision for the 1997 Eight-Hour Ozone Standard (HGB AD SIP revision) includes a photochemical modeling analysis and a weight of evidence analysis to demonstrate attainment of the 1997 eight-hour ozone NAAQS by June 15, 2019. In addition, the HGB AD SIP revision incorporates revisions to 30 Texas Administrative Code Chapters 101 and 115, also adopted on March 10, 2010, which include the Mass Emissions Cap and Trade Program Cap Integrity, the Highly Reactive Volatile Organic Compounds Emissions Cap and Trade Program Cap Reduction and Allowance Reallocation, and the Volatile Organic Compounds (VOC) Control Techniques Guidelines (CTG) Update. The HGB Reasonable Further Progress SIP Revision for the 1997 Eight-Hour Ozone Standard demonstrates that an 18% emissions reduction requirement will be met for the analysis period from 2002 through 2008 and an average of 3% per year emissions reduction for each of the milestone years 2008, 2011, 2014, 2017, and 2018.

For nonattainment areas classified as moderate and above, FCAA, §182(b)(2) requires states to submit a SIP revision that implements reasonably available control technology (RACT) for VOC emission sources addressed in a CTG document issued by the EPA from November 15, 1990, through the area's attainment date. CTG documents provide information to assist states in determining RACT for specific emission sources and provide the EPA's RACT recommendations. FCAA, §183(e)(3) requires the EPA to regulate VOC emissions from consumer and commercial products by issuing national regulations or by issuing CTG documents in lieu of national regulations. The EPA issued 11 CTG documents from 2006 through 2008 with RACT recommendations for controlling VOC emissions from a variety of consumer and commercial products.

Of the 11 CTG documents, the commission has acted on four. On March 10, 2010, with the adoption of the HGB AD SIP revision, the commission adopted portions of the Offset Lithographic and Letterpress Printing CTG recommendation and provided a negative declaration for the Flat Wood Paneling Coatings CTG, Fiberglass Boat Manufacturing Materials CTG, and Automobile and Light-Duty Truck Assembly Coatings CTG source categories. The commission determined that no sources meeting the applicability criteria recommended in these CTG documents were located in the HGB area. Additionally, due to the EPA's concerns regarding federal enforceability, staff recommended withdrawing the two RACT recommendations for the Flexible Package Printing Materials and the Paper, Film, and Foil Coatings CTG categories that were proposed on September 23, 2009. RACT determinations were not made for the following five CTG emission source categories at that time because additional research was necessary to determine the number of sources affected by the CTG recommendations and the EPA had not formally responded to Texas' December 8, 2008, request for clarification regarding the CTG recommendations: Industrial Cleaning Solvents; Large Appliance Coatings; Metal Furniture Coatings; Miscellaneous Industrial Adhesives; and

Miscellaneous Metal and Plastic Parts Coatings. On March 17, 2011, the EPA issued a guidance memorandum entitled *Approving SIP Revisions Addressing VOC RACT Requirements for Certain Coatings Categories* regarding the following three CTG categories: Large Appliance Coatings; Metal Furniture Coatings; and Miscellaneous Metal and Plastic Parts Coatings. Additional discussion regarding the EPA's guidance on these three CTG categories is provided in Appendix A: *Reasonably Available Control Technology Analysis*.

The following seven CTG categories for the HGB area have pending RACT determinations to be submitted to the EPA:

- Flexible Package Printing, Group II, issued in 2006;
- Industrial Cleaning Solvents, Group II, issued in 2006;
- Large Appliance Coatings, Group III, issued in 2007;
- Metal Furniture Coatings, Group III, issued in 2007;
- Paper, Film, and Foil Coatings, Group III, issued in 2007;
- Miscellaneous Industrial Adhesives, Group IV, issued in 2008; and
- Miscellaneous Metal and Plastic Parts Coatings, Group IV, issued in 2008.

This SIP revision provides a RACT analysis update to include the seven CTG documents listed above issued by the EPA from 2006 through 2008 that were not addressed in the HGB AD SIP revision adopted on March 10, 2010, and incorporates concurrent CTG-related rulemaking for the HGB area (Rule Project No. 2010-016-115-EN) into the Texas SIP. The associated rulemaking revises Chapter 115, Subchapter E, to implement RACT for the previously listed CTG emission source categories in the HGB area as required by FCAA, §172(c)(1) and §182(b)(2).

SECTION V: LEGAL AUTHORITY

General

The Texas Commission on Environmental Quality (TCEQ) has the legal authority to implement, maintain, and enforce the National Ambient Air Quality Standards and to control the quality of the state's air, including maintaining adequate visibility.

The first air pollution control act, known as the Clean Air Act of Texas, was passed by the Texas Legislature in 1965. In 1967, the Clean Air Act of Texas was superseded by a more comprehensive statute, the Texas Clean Air Act (TCAA), found in Article 4477-5, Vernon's Texas Civil Statutes. The legislature amended the TCAA in 1969, 1971, 1973, 1979, 1985, 1987, 1989, 1991, 1993, 1995, 1997, 1999, 2001, 2003, 2005, 2007, 2009, and 2011. In 1989, the TCAA was codified as Chapter 382 of the Texas Health and Safety Code.

Originally, the TCAA stated that the Texas Air Control Board (TACB) is the state air pollution control agency and is the principal authority in the state on matters relating to the quality of air resources. In 1991, the legislature abolished the TACB effective September 1, 1993, and its powers, duties, responsibilities, and functions were transferred to the Texas Natural Resource Conservation Commission (TNRCC). With the creation of the TNRCC, the authority over air quality is found in both the Texas Water Code and the TCAA. Specifically, the authority of the TNRCC is found in Chapters 5 and 7. Chapter 5, Subchapters A - F, H - J, and L, include the general provisions, organization, and general powers and duties of the TNRCC, and the responsibilities and authority of the executive director. Chapter 5 also authorizes the TNRCC to implement action when emergency conditions arise and to conduct hearings. Chapter 7 gives the TNRCC enforcement authority. In 2001, the 77th Texas Legislature continued the existence of the TNRCC until September 1, 2013, and changed the name of the TNRCC to the Texas Commission on Environmental Quality (TCEQ). In 2009, the 81st Texas Legislature, during a special session, amended §5.014 of the Texas Water Code, changing the expiration date of the TCEQ to September 1, 2011, unless continued in existence by the Texas Sunset Act. In 2011, the 82nd Texas Legislature continued the existence of the TCEQ until 2023.

The TCAA specifically authorizes the TCEQ to establish the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general, comprehensive plan. The TCAA, Subchapters A - D, also authorize the TCEQ to collect information to enable the commission to develop an inventory of emissions; to conduct research and investigations; to enter property and examine records; to prescribe monitoring requirements; to institute enforcement proceedings; to enter into contracts and execute instruments; to formulate rules; to issue orders taking into consideration factors bearing upon health, welfare, social and economic factors, and practicability and reasonableness; to conduct hearings; to establish air quality control regions; to encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities.

Local government authority is found in Subchapter E of the TCAA. Local governments have the same power as the TCEQ to enter property and make inspections. They also may make recommendations to the commission concerning any action of the TCEQ that affects their territorial jurisdiction, may bring enforcement actions, and may execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce

ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA and the rules or orders of the commission.

Subchapters G and H of the TCAA authorize the TCEQ to establish vehicle inspection and maintenance programs in certain areas of the state, consistent with the requirements of the Federal Clean Air Act; coordinate with federal, state, and local transportation planning agencies to develop and implement transportation programs and measures necessary to attain and maintain the National Ambient Air Quality Standards; establish gasoline volatility and low emission diesel standards; and fund and authorize participating counties to implement vehicle repair assistance, retrofit, and accelerated vehicle retirement programs.

Applicable Law

The following statutes and rules provide necessary authority to adopt and implement the state implementation plan (SIP). The rules listed below have previously been submitted as part of the SIP.

Statutes

All sections of each subchapter are included, unless otherwise noted.

TEXAS HEALTH & SAFETY CODE, Chapter 382	September 1, 2011
TEXAS WATER CODE	September 1, 2011

Chapter 5: Texas Natural Resource Conservation Commission
- Subchapter A: General Provisions
- Subchapter B: Organization of the Texas Natural Resource Conservation Commission
- Subchapter C: Texas Natural Resource Conservation Commission
- Subchapter D: General Powers and Duties of the Commission
- Subchapter E: Administrative Provisions for Commission
- Subchapter F: Executive Director (except §§5.225, 5.226, 5.227, 5.2275,5.231, 5.232, and 5.236)
- Subchapter H: Delegation of Hearings
- Subchapter I: Judicial Review
- Subchapter J: Consolidated Permit Processing
- Subchapter L: Emergency and Temporary Orders (§§5.514, 5.5145, and 5.515 only)
- Subchapter M: Environmental Permitting Procedures (§5.558 only)

Chapter 7: Enforcement
- Subchapter A: General Provisions (§§7.001, 7.002, 7.0025, 7.004, and 7.005 only)
- Subchapter B: Corrective Action and Injunctive Relief (§7.032 only)
- Subchapter C: Administrative Penalties
- Subchapter D: Civil Penalties (except §7.109)
- Subchapter E: Criminal Offenses and Penalties: §§7.177, 7.179-7.183

Rules

All of the following rules are found in 30 Texas Administrative Code, as of the following latest effective dates:

Chapter 7: Memoranda of Understanding, §§7.110 and 7.119
December 13, 1996 and May 2, 2002

Chapter 19: Electronic Reporting March 15, 2007

Chapter 35: Subchapters A-C, K: Emergency and Temporary Orders and Permits; Temporary Suspension or Amendment of Permit Conditions — July 20, 2006

Chapter 39: Public Notice, §§39.201; 39.401; 39.403(a) and (b)(8)-(10); 39.405(f)(1) and (g); 39.409; 39.411 (a), (b)(1)-(6), and (8)-(10) and (c)(1)-(6) and (d); 39.413(9), (11), (12), and (14); 39.418(a) and (b)(3) and (4); 39.419(a), (b), (d), and (e); 39.420(a), (b) and (c)(3) and (4); 39.423 (a) and (b); 39.601-39.605 — June 24, 2010

Chapter 55: Requests for Reconsideration and Contested Case Hearings; Public Comment, §§55.1; 55.21(a) - (d), (e)(2), (3), and (12), (f) and (g); 55.101(a), (b), and (c)(6) - (8); 55.103; 55.150; 55.152(a)(1), (2), and (6) and (b); 55.154; 55.156; 55.200; 55.201(a) - (h); 55.203; 55.205; 55.209, and 55.211 — June 24, 2010

Chapter 101: General Air Quality Rules — May 15, 2011

Chapter 106: Permits by Rule, Subchapter A — May 15, 2011

Chapter 111: Control of Air Pollution from Visible Emissions and Particulate Matter — July 19, 2006

Chapter 112: Control of Air Pollution from Sulfur Compounds — July 16, 1997

Chapter 113: Standards of Performance for Hazardous Air Pollutants and for Designated Facilities and Pollutants — May 14, 2009

Chapter 114: Control of Air Pollution from Motor Vehicles — August 11, 2011

Chapter 115: Control of Air Pollution from Volatile Organic Compounds — February 17, 2011

Chapter 116: Permits for New Construction or Modification — March 17, 2011

Chapter 117: Control of Air Pollution from Nitrogen Compounds — May 15, 2011

Chapter 118: Control of Air Pollution Episodes — March 5, 2000

Chapter 122: §122.122: Potential to Emit — December 11, 2002

Chapter 122: §122.215: Minor Permit Revisions — June 3, 2001

Chapter 122: §122.216: Applications for Minor Permit Revisions — June 3, 2001

Chapter 122: §122.217: Procedures for Minor Permit Revisions — December 11, 2002

Chapter 122: §122.218: Minor Permit Revision Procedures for Permit Revisions Involving the Use of Economic Incentives, Marketable Permits, and Emissions Trading — June 3, 2001

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      Chapter 4: Control Strategies and Required Elements (Revised)
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      Chapter 6: Ongoing and Future Initiatives (No change)
   3. Beaumont-Port Arthur (No change)
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   5. Regional Strategies (No change)
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D. Carbon Monoxide (No change)
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LIST OF ACRONYMS

ACT	alternative control techniques
AD	attainment demonstration
CFR	Code of Federal Regulations
CTG	Control Techniques Guidelines
DMA	Marine Distillate Fuel A
DMX	Marine Distillate Fuel X
EPA	United States Environmental Protection Agency
FCAA	Federal Clean Air Act
HECT	Highly Reactive Volatile Organic Compound Emissions Cap and Trade Program
H-GAC	Houston-Galveston Area Council
HGB	Houston-Galveston-Brazoria
HRVOC	highly reactive volatile organic compounds
LDAR	leak detection and repair
MECT	Mass Emissions Cap and Trade Program
mph	miles per hour
MVEB	motor vehicle emissions budget
NAAQS	National Ambient Air Quality Standard
NO_X	nitrogen oxides
ppm	parts per million
RACM	reasonably available control measures
RACT	reasonably available control technology
RFP	reasonable further progress
RVP	Reid vapor pressure
SB	Senate Bill
SIP	state implementation plan
TACB	Texas Air Control Board
TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Quality (commission)
TNRCC	Texas Natural Resource Conservation Commission
tpy	tons per year
TxLED	Texas Low Emission Diesel
VOC	volatile organic compounds

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CHAPTER 1: GENERAL

1.1 BACKGROUND

The *History of the Texas State Implementation Plan*, a comprehensive overview of the state implementation plan (SIP) revisions submitted to the United States Environmental Protection Agency (EPA) by the State of Texas, is available on the Introduction to the SIP Web page (http://www.tceq.texas.gov/airquality/sip/sipintro.html#History) on the Texas Commission on Environmental Quality's (TCEQ) Web site (http://www.tceq.texas.gov/).

1.2 INTRODUCTION

The Houston-Galveston-Brazoria (HGB) area presents a complex air pollution challenge because of the nature of the emissions and meteorology of the area. The HGB area's hot, sunny climate, large urban population activities, and extensive, highly concentrated industrial complex provide the ingredients for ozone formation: sunlight, nitrogen oxides (NO_X), and volatile organic compounds (VOC). The Houston area's significant biogenic VOC emissions and complex meteorology, which includes land/sea breeze air parcel recirculation, complicate photochemical modeling. Economic and population growth continue to create air quality challenges for the HGB area. Despite these challenges, key ozone-targeting regulatory programs have reduced the number and magnitude of ozone exceedances, the area of exceedance, and the population exposed to exceedances of the ozone National Ambient Air Quality Standard (NAAQS).

Summaries of HGB area 1997 eight-hour ozone NAAQS SIP revisions, as well as information regarding this HGB Reasonably Available Control Technology Analysis Update SIP Revision for the 1997 Eight-Hour Ozone Standard (HGB RACT SIP revision) are provided.

1.2.1 One-Hour Ozone National Ambient Air Quality Standard (NAAQS) History (No change)

1.2.2 1997 Eight-Hour Ozone NAAQS History

In 1997, the EPA revised the health-based NAAQS for ozone, setting it at 0.08 parts per million (ppm) based on the three-year average of the annual fourth-highest daily maximum eight-hour average ozone concentrations measured at each monitor within an area. The final 1997 eight-hour ozone NAAQS was published in the *Federal Register* on July 18, 1997 (62 FR 38856), and became effective on September 16, 1997. On April 30, 2004, the EPA finalized nonattainment designations and promulgated the first phase of its implementation rule for the 1997 eight-hour ozone standard (69 FR 23951). These actions became effective on June 15, 2004. The EPA classified the HGB area as a moderate nonattainment area for the standard. The TCEQ was required to submit a SIP revision for the 1997 eight-hour ozone NAAQS to the EPA by June 15, 2007, and demonstrate attainment of the standard by June 15, 2010. In the November 29, 2005, issue of the *Federal Register* (70 FR 71612), the EPA published the second phase of the implementation rule for the 1997 eight-hour ozone NAAQS, which addressed the control obligations that apply to areas designated nonattainment for the standard.

The commission adopted the 1997 eight-hour ozone nonattainment area SIP revision and the reasonable further progress (RFP) SIP revision for the HGB area on May 23, 2007. These SIP revisions were the first step in addressing the 1997 eight-hour ozone standard in the HGB area. The TCEQ demonstrated reasonable further progress toward attaining the 1997 eight-hour ozone standard and committed to developing an HGB 1997 eight-hour ozone attainment demonstration SIP revision to attain the 1997 standard as expeditiously as practicable. On June 15, 2007, these two revisions to the Texas SIP and a letter from the governor of Texas requesting

that the HGB ozone nonattainment area be reclassified from a moderate nonattainment area to a severe nonattainment area were submitted to the EPA.

The EPA granted the governor's request to voluntarily reclassify the HGB ozone nonattainment area from a moderate to a severe nonattainment area for the 1997 ozone NAAQS in the October 1, 2008, issue of the *Federal Register* (73 FR 56983). The EPA set April 15, 2010, as the date for the state to submit a revised SIP addressing the severe ozone nonattainment area requirements of the Federal Clean Air Act (FCAA) (42 United States Code, §§7401 *et seq*.). The area's new attainment date for the 1997 eight-hour ozone standard is as expeditiously as practicable but no later than June 15, 2019.

1.2.2.1 May 23, 2007 (No change)

1.2.2.2 March 10, 2010

On March 10, 2010, the commission adopted two revisions to the Texas SIP for the HGB ozone nonattainment area. The HGB Attainment Demonstration SIP Revision for the 1997 Eight-Hour Ozone Standard (HGB AD SIP revision) included a photochemical modeling analysis and a weight of evidence analysis to demonstrate attainment of the 1997 eight-hour ozone NAAQS by the June 15, 2019, deadline. This SIP revision also included a motor vehicle emissions budget (MVEB), a VOC RACT analysis, a NO_X RACT analysis, a reasonably available control measures analysis, a contingency plan, and a mid-course review commitment. In addition, the HGB AD SIP revision incorporated revisions to 30 Texas Administrative Code Chapters 101 and 115, also adopted on March 10, 2010, which included the Mass Emissions Cap and Trade Program Cap Integrity, the Highly Reactive Volatile Organic Compounds Emissions Cap and Trade Program Cap Reduction and Allowance Reallocation, and the VOC Control Techniques Guidelines (CTG) Update for offset lithographic printing.

The HGB RFP SIP Revision for the 1997 Eight-Hour Ozone Standard (HGB RFP SIP revision), as required by the EPA, demonstrated that an 18% emissions reduction requirement was met for the analysis period from 2002 through 2008 and an average of 3% per year emissions reduction will be met for each of the milestone years 2008, 2011, 2014, 2017, and 2018. The RFP SIP revision established baseline emission levels, calculated reduction targets, identified control strategies to meet emission target levels, and tracked actual emission reductions against established emissions growth. An MVEB for each milestone year and a contingency plan were also included in the RFP SIP revision.

In the January 25, 2011, issue of the *Federal Register* (76 FR 4342), the EPA published a notice of its determination that the MVEBs in the HGB AD and RFP SIP revisions were adequate for transportation conformity purposes, effective February 9, 2011.

1.2.3 Existing Ozone Control Strategies (No change)

1.2.4 Current SIP Revision

Because this SIP revision focuses specifically on the seven CTG documents issued by the EPA from 2006 through 2008 that were not addressed in the HGB AD SIP revision adopted March 10, 2010, the RACT analysis in this SIP revision only provides an update to the HGB VOC RACT demonstration.

Although the FCAA requires the state to implement RACT, EPA guidance on RACT indicates that states may choose to implement the CTG recommendations, implement an alternative approach, or demonstrate that additional controls for the CTG emission source category are not technologically or economically feasible in the area. The following seven CTG documents have

been evaluated during the concurrent associated rulemaking (Rule Project No. 2010-016-115-EN) to determine if additional VOC controls are necessary to fulfill RACT requirements:

- Flexible Package Printing, Group II, issued in 2006;
- Industrial Cleaning Solvents, Group II, issued in 2006;
- Large Appliance Coatings, Group III, issued in 2007;
- Metal Furniture Coatings, Group III, issued in 2007;
- Paper, Film, and Foil Coatings, Group III, issued in 2007;
- Miscellaneous Industrial Adhesives, Group IV, issued in 2008; and
- Miscellaneous Metal and Plastic Parts Coatings, Group IV, issued in 2008.

This SIP revision provides a detailed RACT analysis update for the HGB area and incorporates the concurrent rulemaking, which revises Chapter 115, Subchapter E, to implement RACT for the previously listed CTG emission source categories in the HGB area.

1.3 HEALTH EFFECTS (NO CHANGE)

1.4 STAKEHOLDER PARTICIPATION AND PUBLIC HEARINGS

1.4.1 Stakeholder Participation

The TCEQ held a stakeholder meeting on December 1, 2010, and accepted informal comments until January 11, 2011, for the associated Chapter 115 rulemaking (Rule Project No. 2010-016-115-EN). For further information, please refer to the CTG Stakeholder Group Web page (http://www.tceq.texas.gov/implementation/air/rules/ctg/control_techniques_stakeholder.html).

1.4.2 Public Hearings and Comment Information

The commission held public hearings for this SIP revision and associated rulemaking on July 18, 2011, at 6:30 p.m. at the Houston-Galveston Area Council office in Houston and on July 22, 2011, at 10:00 a.m. at the TCEQ headquarters in Austin. Question and answer sessions were held 30 minutes prior to the hearings. One person presented oral comments at the July 18, 2011, hearing applicable to this HGB RACT SIP revision. The July 22, 2011, hearing in Austin was not officially opened because no party indicated a desire to provide comment.

The public comment period opened on June 24, 2011, and closed on August 8, 2011. Written comments were accepted via mail, fax, and through the eComments system (http://www5.tceq.texas.gov/rules/ecomments/). Nine written comments were received. Summaries of public comments and TCEQ responses applicable to this HGB RACT SIP revision are addressed in the Response to Comments section of this SIP revision. Comments received applicable to the Chapter 115 CTG rulemaking (Rule Project No. 2010-016-115-EN) are addressed in the preamble to those rules.

An electronic version of the SIP revision and appendix can be found at the TCEQ's Texas State Implementation Plan Web page (http://www.tceq.texas.gov/airquality/sip/texas-sip).

1.5 SOCIAL AND ECONOMIC CONSIDERATIONS

There are no social or economic issues of concern attributable to this HGB RACT Analysis Update SIP Revision. For a detailed explanation of any social and economic issues involved with the associated Chapter 115 rulemaking (Rule Project No. 2010-016-115-EN), please refer to the preamble that precedes those rules, accessed from the TCEQ Air Quality Rule Projects Web page (http://www.tceq.texas.gov/airquality/stationary-rules/rule_log.html).

1.6 FISCAL AND MANPOWER RESOURCES (NO CHANGE)

CHAPTER 2: ANTHROPOGENIC EMISSIONS INVENTORY (EI) DESCRIPTION (NO CHANGE)

CHAPTER 3: PHOTOCHEMICAL MODELING (NO CHANGE)

CHAPTER 4: CONTROL STRATEGIES AND REQUIRED ELEMENTS

4.1 INTRODUCTION (NO CHANGE)

4.2 EXISTING CONTROL MEASURES

Over several years of ozone planning in the Houston-Galveston-Brazoria (HGB) area, a broad range of control measures have been implemented for each emission source category. Table 4-1: *Existing Ozone Control Measures Applicable to the HGB Eight-County Nonattainment Area* lists the existing ozone control strategies that have been implemented for the one-hour and 1997 eight-hour ozone standards in the HGB area.

Table 4-1: Existing Ozone Control Measures Applicable to the HGB Eight-County Nonattainment Area

Measure	Description	Start Date(s)
Nitrogen Oxides (NO_X) Mass Emissions Cap and Trade (MECT) Program	Overall 80% NO_X reduction from existing industrial sources and utility power plants, implemented through a cap and trade program Affects utility boilers, gas turbines, heaters and furnaces, stationary internal combustion engines, industrial boilers, and many other industrial sources	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	Affects cooling towers, process vents, and flares, and establishes an annual emissions limit with a cap and trade for each site in Harris County Seven perimeter counties subject to permit allowable limits and monitoring requirements	Monitoring requirements began January 31, 2006 Cap and trade program implemented January 1, 2007 HECT cap incrementally stepped-down from 2014 through 2017 for a total 25% cap reduction
HRVOC Fugitive Rules	More stringent leak detection and repair (LDAR) requirements for components in HRVOC service Additional components included in LDAR program: more stringent repair times, lower leak detection, and third part audit requirements	March 31, 2004

Measure	Description	Start Date(s)
Volatile Organic Compounds (VOC) Rules – Storage Tanks	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 Eliminates exemption for storage tanks for crude oil or natural gas condensate, and regulates flash emissions from these tanks	January 1, 2009 Compliance with revised monitoring and testing requirements required by March 1, 2013
VOC Rules – Degassing Operations	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 Clarification of rule and monitoring and testing requirements, additional control options, and notification requirements	January 1, 2009 February 17, 2011
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	Additional control technology requirements for batch processes, bakeries, and offset lithographic printers by December 31, 2002 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: *Reasonably Available Control Technology Analysis* 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)	December 31, 2002, and earlier

Measure	Description	Start Date(s)
VOC Control Measures – Offset Lithographic Printers	Additional control technology requirements for offset lithographic printers 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)	December 31, 2002 March 1, 2011, for major sources March 1, 2012, for minor sources
Refueling – Stage I	Captures gasoline vapors that are released when gasoline is delivered to a storage tank Vapors returned to the tank truck as the storage tank is being filled with fuel, rather than released into the ambient air	1990
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

Measure	Description	Start Date(s)
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
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: *Evaluation of Mobile Source Control Strategies for the Houston-Galveston-Brazoria State Implementation Plan (With Detailed Strategies)*, 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

Measure	Description	Start Date(s)
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

4.3 UPDATES TO EXISTING CONTROL MEASURES (NO CHANGE)

4.4 REASONABLY AVAILABLE CONTROL TECHNOLOGY (RACT) ANALYSIS

4.4.1 General Discussion

The HGB area is currently classified as a severe nonattainment area for the 1997 eight-hour ozone National Ambient Air Quality Standard (NAAQS). Under the 1997 eight-hour ozone standard, the HGB area is required to meet the mandates of the Federal Clean Air Act (FCAA) under §172(c)(1) and §182(b)(2) and (f). According to the EPA's final rule to implement the 1997 eight-hour ozone NAAQS (40 Code of Federal Regulations §51.912, November 29, 2005), a state containing areas classified as moderate nonattainment and above must submit a state implementation plan (SIP) revision demonstrating that its current rules fulfill the RACT requirements for all Control Techniques Guidelines (CTG) emission source categories and all non-CTG major sources of NO_X and VOC. The major source threshold for severe nonattainment areas is a potential to emit 25 tpy or more of either NO_X or VOC.

In the September 17, 1979, issue of the *Federal Register* (44 FR 53762), RACT is defined as the lowest emissions limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT requirements for nonattainment areas classified as moderate and above are included in the FCAA to assure that significant source categories at major sources of ozone precursor emissions are controlled to a reasonable extent, but not necessarily to best available control technology levels expected of new sources or to maximum achievable control technology levels required for major sources of hazardous air pollutants. While RACT and reasonably available control measures (RACM) have similar consideration factors like technological and economic feasibility, there is a significant distinction between RACT and RACM. To be considered RACM, a control measure must advance attainment of the area towards meeting the NAAQS for that measure (see FCAA, §172(c)(1)). Advancing attainment of the area is not a factor of consideration when evaluating RACT because the benefit of implementing RACT is presumed under the FCAA.

Under the current state rules, the HGB area is subject to some of the most stringent NO_X and VOC emission control requirements in the country, and for many source categories, the existing rules are more stringent than recommended RACT standards for those categories. In the final approval notice for the revised HGB one-hour ozone attainment demonstration SIP revision published in the September 6, 2006, issue of the *Federal Register* (71 FR 52676), the EPA noted that the HGB VOC rules in 30 Texas Administrative Code Chapter 115 and NO_X rules in Chapter

117 were previously determined to meet the FCAA RACT requirements. Under the one-hour ozone NAAQS, the HGB area was also designated as a severe nonattainment area and the threshold for major stationary sources under the one-hour ozone nonattainment designation was identical to the current threshold under the 1997 eight-hour ozone nonattainment designation. Therefore, controls to satisfy RACT for sources addressed in CTG and alternative control techniques (ACT) documents issued prior to 2006 and most major sources under the 1997 eight-hour ozone designation were implemented by the Texas Commission on Environmental Quality (TCEQ) under the one-hour ozone attainment demonstration SIP revision and previously approved by the EPA.

4.4.2 NO_X RACT Determination (No change)

4.4.3 VOC RACT Determination

The TCEQ's analysis demonstrates that the current VOC rules and controls for the HGB area satisfy the FCAA requirements for RACT for all CTG or ACT VOC source categories specific to any CTG or ACT documents issued prior to 2006. For all non-CTG/ACT major VOC emission source categories that controls are technologically and economically feasible, RACT is fulfilled by the EPA-approved Chapter 115 rules or other federally enforceable measures.

The EPA issued 11 CTG documents from 2006 through 2008 with recommendations for VOC controls on a variety of consumer and commercial products. Some of the new CTG recommendations are updates to previously issued CTG documents and some are recommendations for new categories. The TCEQ evaluated these new CTG documents to determine if additional VOC controls were necessary to fulfill RACT requirements.

The RACT analysis included in the HGB AD SIP revision adopted March 10, 2010, addresses the following CTG documents:

- Flat Wood Paneling Coatings, Group II, issued in 2006;
- Offset Lithographic and Letterpress Printing, Group II, issued in 2006;
- Auto and Light-Duty Truck Assembly Coatings, Group IV, issued in 2008; and
- Fiberglass Boat Manufacturing Materials, Group IV, issued in 2008.

The RACT analysis included in this SIP revision addresses the following CTG documents:

- Flexible Package Printing, Group II, issued in 2006;
- Industrial Cleaning Solvents, Group II, issued in 2006;
- Large Appliance Coatings, Group III, issued in 2007;
- Metal Furniture Coatings, Group III, issued in 2007;
- Paper, Film, and Foil Coatings, Group III, issued in 2007;
- Miscellaneous Industrial Adhesives, Group IV, issued in 2008; and
- Miscellaneous Metal and Plastic Parts Coatings, Group IV, issued in 2008.

The remainder of this section includes brief summaries of the TCEQ's determinations regarding these seven CTG documents. Additional details regarding the evaluation of the seven CTG documents addressed in this SIP revision are provided in Appendix A: *Reasonably Available Control Technology Analysis*.

4.4.3.1 Flexible Package Printing

The TCEQ has determined that portions of the Flexible Package Printing CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting

rulemaking (Rule Project 2010-016-115-EN) to limit the VOC content of coatings used by flexible package printing sources in the HGB area. The rulemaking implements the CTG recommendations to reduce the VOC content of coatings and imposes work practices for cleaning materials used during flexible package printing.

4.4.3.2 Industrial Cleaning Solvents

The TCEQ has determined that the Industrial Cleaning Solvents CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to implement the CTG recommendations to limit the VOC content of industrial cleaning solvents used in the HGB area. The TCEQ revised the proposed rules for industrial cleaning solvents in response to comments received on the proposed rules and this SIP revision. Additional details regarding these changes are provided in Appendix A.

4.4.3.3 Large Appliance Coatings

The TCEQ has determined that portions of the Large Appliance Coatings CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to limit the VOC content of large appliance coatings in the HGB area. The rulemaking implements the CTG recommendations to reduce the VOC content of coatings and imposes work practices for cleaning materials used during large appliance coating. The TCEQ revised the proposed rules for large appliance coatings in response to comments received on the proposed rules and this SIP revision. Additional details regarding these changes are provided in Appendix A.

4.4.3.4 Metal Furniture Coatings

The TCEQ has determined that portions of the Metal Furniture Coatings CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to limit the VOC content of metal furniture coatings used in the HGB area. The rulemaking implements the CTG recommendations to reduce the VOC content of coatings and imposes work practices for cleaning materials used during metal furniture coating. The TCEQ revised the proposed rules for metal furniture coatings in response to comments received on the proposed rules and this SIP revision. Additional details regarding these changes are provided in Appendix A.

4.4.3.5 Paper, Film, and Foil Coatings

The TCEQ has determined that portions of the Paper, Film, and Foil Coatings CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to limit the VOC content of paper, film, and foil coatings in the HGB area. The rulemaking implements the CTG recommendations to reduce the VOC content of coatings and imposes work practices for cleaning materials used during paper, film, and foil coating.

4.4.3.6 Miscellaneous Industrial Adhesives

The TCEQ has determined that the Miscellaneous Industrial Adhesives CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to implement the CTG recommendations to limit the VOC content of miscellaneous industrial adhesives used in the HGB area. The TCEQ revised the proposed rules for miscellaneous industrial adhesives in response to comments received on the proposed rules and this SIP revision. Additional details regarding these changes are provided in Appendix A.

4.4.3.7 Miscellaneous Metal and Plastic Parts Coatings

The TCEQ has determined that portions of the Miscellaneous Metal and Plastic Parts Coatings CTG recommendations are RACT for the HGB area. Concurrent with this SIP revision, the commission is adopting rulemaking (Rule Project 2010-016-115-EN) to limit the VOC content of miscellaneous metal and plastic parts coatings used in the HGB area. The rulemaking implements the CTG recommendations to reduce the VOC content of coatings and imposes work practices for cleaning materials used during miscellaneous metal and plastic parts coating. The TCEQ revised the proposed rules for miscellaneous metal and plastic parts coatings in response to comments received on the proposed rules and this SIP revision. Additional details regarding these changes are provided in Appendix A.

4.5 REASONABLY AVAILABLE CONTROL MEASURES (RACM) ANALYSIS (NO CHANGE)

4.6 NEW CONTROL MEASURES (NO CHANGE)

4.7 MOTOR VEHICLE EMISSIONS BUDGET (MVEB) (NO CHANGE)

4.8 MONITORING NETWORK (NO CHANGE)

4.9 CONTINGENCY PLAN (NO CHANGE)

4.10 REFERENCES (NO CHANGE)

CHAPTER 5: WEIGHT OF EVIDENCE (NO CHANGE)

CHAPTER 6: ONGOING AND FUTURE INITIATIVES (NO CHANGE)