CHAPTER 4: CONTROL STRATEGIES AND REQUIRED ELEMENTS

4.1 OVERVIEW AND EXISTING CONTROL STRATEGIES

The Houston-Galveston-Brazoria (HGB) eight-hour ozone nonattainment area includes one of the most comprehensively controlled industrial complexes in the world. The Texas Commission on Environmental Quality (TCEQ) has developed stringent and innovative regulations that address nitrogen oxides (NO_X), volatile organic compounds (VOC), and the most reactive ozone precursors in the HGB area, highly-reactive volatile organic compounds (HRVOC). Table 4-1: *Existing One-hour Ozone Control Strategies*, lists the existing ozone control strategies that were implemented for the one-hour ozone standard in the HGB nonattainment area. As Chapter 3 demonstrates, significant ozone reductions have resulted from the implementation of one-hour ozone control strategies.

Table 4-1: Existing One-Hour Ozone Control Strategies

Measure	Description	Area(s) Affected	Start Date(s)
POINT SOURCE MEASURES			
Point Source NO_X	Overall 80 percent 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, and industrial boilers.	8-county area	April 1, 2003, and phased in through April 1, 2007
Emissions Bank and Trade /Mass Emission Cap and Trade (MECT)	NO_X trading program for HGB area.	8-county area	January 2002; First step-down April 1, 2004
AREA/NON-ROAD MEASRUES			
HRVOC Requirements	Affects fugitive, cooling tower, and vent gas control and flares, and establishes an annual emissions cap with a cap and trade program and a short-term, 1200 pounds per hour not-to-exceed limit for each site in Harris County.	8-county area	Monitoring Requirement: Jan. 31, 2006 Cap and Trade Program: Jan. 1, 2007
Federal Area/Non-Road Measures	The United States Environmental Protection Agncy (EPA) has implemented a series of strategies for area and non-road sources. Some of these include the gas engine rule and marine recreational engine standards.	Nationwide	Through 2007
Texas Emission Reduction Plan (TERP) (See also on-road TERP reductions)	Provides grant funds for heavy-duty diesel engine replacement/retrofit. Replaces construction restrictions and Tier 2/3 accelerated purchase.	8-county area	January 2002
California Gasoline Engines	California standards for non-road gasoline engines 25 horsepower and larger.	Statewide	May 1, 2004

Measure	Description	Area(s) Affected	Start Date(s)
Stationary Diesel Engines	Emission standards on stationary diesel engines.	8-county area	April 1, 2002
Gas-Fired Heaters and Small Boilers	Rule limiting NO_x emissions from these small-scale residential and industrial sources.	Statewide	2002
VOC Control Measures	Additional control technology requirements for batch processes, bakeries, and offset lithographic printers.	8-county area	
Texas Low Emission Diesel (TxLED)	Requires all diesel for both on-road and non-road use to have a lower aromatic content and a higher cetane number.	110 East Texas counties	October 31, 2005
VMEP	Voluntary measures administered by the Houston-Galveston Area Council (H-GAC). (see Appendix F7 for 2004 SIP Mid-Course Review.)	8-county area	Through 2007
ON-ROAD MEASRUES			
Federal On-Road Measures	The EPA has implemented a series of strategies for on-road vehicles. Some of these include Tier 1/2 vehicle standards, low sulfur diesel standards, National Low Emission Vehicle standards, and reformulated gasoline.	Nationwide	Through 2007
TERP (See also area/non-road TERP reductions)	Provides grant funds for heavy-duty diesel engine replacement/retrofit. Replaces construction restrictions and Tier 2/3 accelerated purchase.	8-county area	January 2002
Vehicle Inspection/ Maintenance	Yearly treadmill-type testing for pre-1996 vehicles and computer checks for 1996 and newer vehicles. -Begin May 1, 2002, in Harris County. -Begin May 1, 2003, in Brazoria, Fort Bend, Galveston, and Montgomery Counties.	5-county area	May 1, 2002 May 1, 2003
Speed Limit Reduction	Speed limits remain at 5 miles per hour (mph) below what was posted before May 1, 2002, where speeds were 65 mph or higher.	8-county area	September 2003
TxLED	Requires all diesel for both on-road and non-road use to have a lower aromatic content and a higher cetane number.	110 East Texas counties	Phase in began October 31, 2005

Measure	Description	Area(s) Affected	Start Date(s)
VMEP	Voluntary measures administered by the H-GAC. (see Appendix F7 for 2004 SIP Mid-Course Review.)	8-county area	Through 2007
Transportation Control Measures	Various measures in H-GAC's long-range transportation plan.	8-county area	Through 2007
OTHER			
Portable Fuel Containers Rule	Establishes new design "no spill" criteria requirements for portable fuel containers sold, offered for sale, manufactured, and/or distributed in Texas.	Statewide	December 31, 2004
Voluntary Energy Efficiency/Renewable Energy	Senate Bill (SB) 5 and SB 7 have encouraged energy efficiency and renewable energy projects. Specific credit is difficult to assign in HGB due to the MECT program.	Statewide	December 2000

A control strategy to reduce point source NO_X emissions an overall 80 percent will be fully implemented in 2007, as will HRVOC rules that better quantify and reduce emissions of HRVOC from four key industrial sources: fugitives, flares, process vents, and cooling towers. These two programs represent a regulatory structure for significant reductions in key ozone precursors in the HGB airshed and will further reduce ozone in the eight-county area.

A complicating factor in the overall ozone attainment planning picture is that the TCEQ is federally preempted from establishing mobile source emission standards. Therefore, the TCEQ directly regulates only point and area sources, accounting for approximately 45 percent (~202 tpd) of the NO_X remaining in the 2009 HGB airshed. Even when the innovative TERP for on-road and non-road mobile sources, discussed further in this chapter, is taken into account, mobile sources account for ~ 55 percent (~242 tpd) of the NO_X emissions in the projected 2009 emission inventory. See Figure 4-1: *2009 NO_X Source Category Estimates* and Figure 4-2: *2009 NO_X Emissions Directly Regulated by the TCEQ*. While the phased implementation of the federal emission standards for on-road and non-road engines will be well underway by 2009, the full emissions benefit for most engine categories will not be realized until a later date.

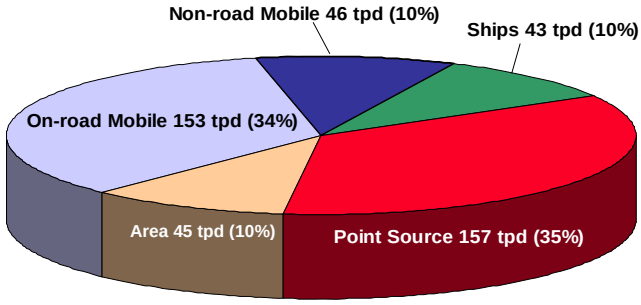

Figure 4-1: 2009 NO_X Source Category Estimates

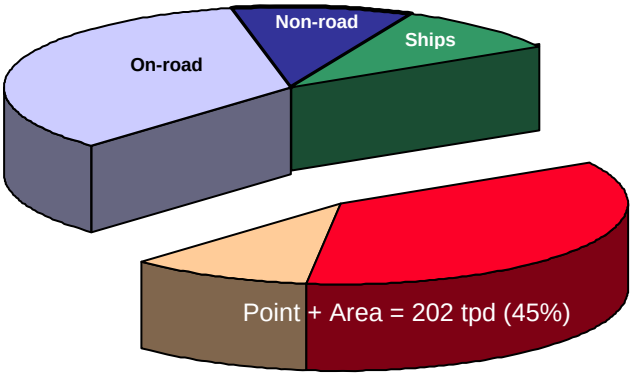

Figure 4-2: 2009 NO_X Emissions Directly Regulated by the TCEQ

The TCEQ, Houston-Galveston Area Council (H-GAC), and local leaders have worked to address on-road and non-road sources for which they cannot set emission standards. On-road and non-road measures include TERP, TxLED across East Texas, federal reformulated gasoline in the HGB area, low Reid vapor pressure gasoline in the attainment counties of East Texas, speed limit reductions, vehicle inspection and maintenance, and VMEPs. Existing controls are listed in section 4-1. This SIP revision also includes an additional 0.9 tpd of NO_X from the TxLED Marine rule and 2.82 tpd of NO_X from local area on-road VMEP measures to be implemented by 2009.

The TCEQ continues to work on control strategy development, emission inventory improvement, and improving the science of ozone formation in the HGB area. This chapter outlines both quantifiable control strategies and control strategies of a more qualitative nature that are part of this SIP revision, as well as covers the reasonably available control technology (RACT) analysis, and emission inventory updates. Chapter 5 discusses ongoing efforts by the TCEQ to improve the substance and the science of the SIP.

4.2 NO_X AND VOC CONTROL MEASURES

4.2.1 Texas Low Emission Diesel for Marine Fuels

Concurrent with this SIP revision, the commission is adopting rule revisions to the low emission fuel definitions of diesel fuel in 30 TAC Chapter 114.6(7) (project number 2006-036-114-EN). This revision requires that any fuel that is commonly or commercially known, sold, or represented as DMA, DMX, or Marine Gas Oil (MGO) that is sold for use in marine vessels in the counties listed in §114.319(b)(2) (Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller Counties), must meet low emission diesel (LED) requirements. By regulating these marine fuels the commission will be able to reduce NO_X in the HGB nonattainment counties.

DMX, DMA, 1-D, and 2-D diesel fuels are all light distillates and share many fuel parameters. Therefore, the commission does not anticipate major difficulties in the process of either changing vessels back to 1-D and 2-D or having these marine fuels tested under the LED approved test methods of §114.315.

The grades of marine fuel that are included in this revision are normally only used by harbor craft vessels (e.g. crew and supply boats, charter fishing vessels, commercial fishing vessels, ferry/excursion vessels, pilot vessels, towboat or push boats, tug boats and work boats). Ocean-going vessels will not be included in these regulations because they typically use heavier marine

residual fuels such as DMB, DMC, or other marine residual fuels that do not share the characteristics of lighter 1-D and 2-D diesel fuels.

The concurrent rulemaking revises the types of fuels for analysis in §114.315(c)(1)(C). DMX and DMA will be added to the fuel types for analysis to require that they meet specifications as set out in the International Organization for Standardization 8217 Specifications of Marine Fuels. This requirement is a quality assurance measure to ensure uniformity between candidate test fuels and fuels used by the end user in marine vessels.

The commission expects this rule to reduce NO_X by 0.9 tpd by 2009. VOC reductions from this rule are likely to be negligible because diesel fuel has low levels of VOC.

4.2.2 Control of VOC Emissions from Storage Vessels and Degassing Operations

Concurrent with this SIP revision, the commission is adopting rule revisions to 30 TAC Chapter 115 that would subject owners or operators of VOC storage tanks, transport vessels, and marine vessels located in the HGB eight-hour ozone nonattainment area to revised control, monitoring, testing, recordkeeping, and reporting requirements (project number 2006-038-115-EN). The revised requirements have been developed to reduce VOC emissions that have previously been under-reported in emissions inventories.

When the TCEQ and its research partners began the second Texas Air Quality Study (TexAQS II) in May 2005, one of the study's primary goals was to identify VOC emission sources that have been historically under-estimated, unreported, or under-reported in the TCEQ Emissions Inventory (EI) and could potentially be contributing to a discrepancy between measured and reported emissions.

TexAQS II remote sensing VOC project results indicate that certain types of storage tank emissions, including degassing, flash, and landing loss emissions, generally have been under-estimated, unreported, or under-reported in the EI. Recent data analysis, a landing loss emissions survey, and other TCEQ studies indicate that these under-estimated, unreported, or under-reported emissions could total several thousand tons per year. Under-estimated, unreported, or under-reported landing loss emissions alone in the HGB area totaled approximately 7,250 tons in 2003. This rulemaking will reduce emissions from the affected sources.

The amendments to 30 TAC, Chapter 115 include more stringent controls for tank fittings on floating roof tanks, such as slotted guidepoles and other openings in internal and external floating roofs. The circumstances under which tank landings are allowed limits convenience landings unless a control device is used to control the VOC emissions or landing loss emissions are authorized under an emission limit or cap in a permit issued under 30 TAC Chapter 116. Crude and condensate storage tanks at upstream oil and gas exploration and production sites or midstream pipeline breakout stations with uncontrolled flash emissions greater than 25 tons per year are also controlled under the rule. Control of VOC emissions from degassing operations is required for storage tanks with a nominal capacity of 75,000 gallons or more storing materials with a true vapor pressure greater than 2.6 psia, or with a nominal capacity of 250,000 gallons or more storing materials with a true vapor pressure of 0.5 psia or greater. Degassing of vapors from storage vessels, transport vessels, and marine vessels is required to vent to a control device until the VOC concentration of the vapors is reduced to less than 34,000 parts per million by volume as methane.

The amendments are described in more detail in the concurrent rule project (project number 2006-038-115-EN).

4.2.3 Voluntary Mobile Source Emission Reduction Programs (VMEP)

The Federal Clean Air Act (FCAA) Amendments of 1990 increased the responsibility of states to demonstrate progress toward attainment of the National Ambient Air Quality Standard (NAAQS). Voluntary mobile source measures have the potential to contribute, in a cost-effective manner, emission reductions needed for progress toward attainment and maintenance of the NAAQS.

Historically, federal mobile source control strategies have focused primarily on reducing emissions per mile through vehicle and fuel technology improvements. Tremendous strides have been made resulting in new light-duty vehicle emission rates that are 70 to 90 percent less than those for the 1970 model year. However, transportation emissions continue to be a significant source of air pollution due to population and employment growth as well as an increase in daily vehicle miles traveled per person. Therefore, mobile source strategies are being explored and developed that attempt to complement existing regulatory programs through voluntary, nonregulatory changes in local transportation sector activity levels or changes in vehicle and engine fleet composition.

Increasing interest by the public and business sectors in creating alternatives to traditional emission reduction strategies have resulted in a number of innovative voluntary mobile source and transportation programs. Some examples include economic and market-based incentive programs, trip reduction programs, growth management strategies, ozone action programs, and targeted public outreach. These programs attempt to gain additional emissions reductions beyond mandatory FCAA programs by engaging the public to make changes in activities that will result in reducing mobile source emissions.

Table 4-2: *Eight-Hour Ozone Voluntary Mobile Source Emission Reduction Programs* summarizes the new HGB voluntary commitments under this SIP revision. The estimated benefits listed are calculated for the year 2009 only and may not be forecasted to estimate emission reductions for any other year. Appendix A: *Voluntary Mobile Source Emission Reduction Programs for the HGB Eight-Hour SIP* more fully describes these VMEP measures. The 2.82 tpd NO_X reductions are referred to as the H-GAC reductions.

Table 4-2: Eight-Hour Ozone Voluntary Mobile Source Emission Reduction Programs

Measure	NO_X Reductions in tons per day (tpd)
Public and Private Sector Clean Fuel Fleet	2.0
Commute Solutions (5 measures)	0.77
Pooled Ownership of Vehicles	0.05
Total	**2.82**

4.2.4 Texas Emission Reduction Plan (TERP)

To date, the Texas Legislature has committed more than $413 million to TERP to encourage voluntary emission reductions from on-road and non-road engines which are significant emissions sources that cannot be directly regulated by the TCEQ. Over $200 million of that commitment has been awarded to the HGB area, to achieve more than 21 tpd in emissions reductions.

The 80th Texas Legislature is considering the appropriation of additional funds, above and beyond those already appropriated through 2007, to TERP. The commission anticipates that additional funds may be appropriated to TERP in FY 2008-2009, resulting in continued reductions in the significant emission source categories of on-road and non-road engines. This funding increase

will allow the commission to fund emission reduction projects that will help the HGB area in attaining the eight-hour ozone standard, above and beyond TERP reductions under the one-hour ozone standard.

4.2.5 Texas Low Emission Diesel for Locally Operated Locomotive Engines

Locomotive switcher engines are almost exclusively operated on a local level, and are typically used to move railcars around a yard. Since these engines are locally operated and use TxLED compliant fuel, there is an associated quantifiable local reduction in NO_X due to TxLED fuel use. These reductions will be accounted for in the HGB eight-hour ozone attainment demonstration.

4.2.6 Energy Efficiency and Renewable Energy

Energy efficiency efforts are typically programs that reduce the amount of electricity and natural gas consumed by residential, commercial, industrial, and municipal energy consumers. Examples include increased insulation in homes, installing compact fluorescent light bulbs and other high efficiency lighting, replacing motors and pumps with high efficiency units, and replacing traffic signal lights with light emitting diode fixtures. Renewable energy efforts include programs that generate energy in a less polluting manner than conventional energy production. Examples include wind energy and solar energy projects.

A variety of energy efficiency and renewable energy (EE/RE) measures potentially reduce demand for traditionally-produced electricity in the HGB area. SB 5 (77^{th} Texas Legislature, 2001), sets goals for political subdivisions in affected counties to implement measures to reduce energy consumption by existing facilities by 5 percent each year for five years from January 1, 2002. The State Energy Conservation Office is charged with tracking the implementation of SB 5. SB 7 (76^{th} Texas Legislature) sets goals for each electric utility to reduce projected growth in demand by 10 percent by EE/RE measures each year starting January 1, 2004. The Public Utility Commission of Texas (PUC) is in charge of this program. SB 20 (79^{th} Texas Legislature, First Called Session) requires that the PUC work with electric utilities to assure that the target levels of renewable energy are generated within specified time frames.

The complex nature of the electrical grid makes accurately quantifying emission reductions from EE/RE projects difficult. At any given time, it is impossible to determine exactly where on the electrical grid electricity comes from for any certain electrical user. The electricity for a user could be from a power plant in west Texas, a nearby attainment county, or from within the nonattainment area. If electrical demand is reduced in the HGB nonattainment area due to these kinds of measures, then emission reductions from less electricity being produced may occur in any number of locations around the state.

As summarized in the December 2002 HGB SIP revision, staff has developed a methodology designed to estimate NO_X emission reductions resulting from EE/RE measures. This method has been improved with the support of EPA and the Energy Systems Laboratory (ESL), which is part of Texas Engineering Experiment Station of the Texas A&M University System. EPA's Emissions and Generation Resource Integrated Database (E-GRID – 2007) was used to spatially allocate the electric energy reductions in each county to electric generating units (EGU) located in the HGB counties and counties outside the HGB area. E-GRID – 2007 then estimated the EGU emissions reductions. For natural gas reductions at project sites, ESL used AP-42 emissions factors to calculate the emissions reductions. The latest projected estimate for NO_X emissions reductions in the eight-county HGB area on an ozone season day in 2009 is 5.07 tpd.

This methodology, though, does not address the complication created from the NO_X cap and trade program in the HGB area. The MECT Program caps the NO_X emissions at point sources, including EGUs, in the HGB nonattainment area. If an EGU is located within the HGB nonattainment area and demand on that EGU is reduced due to effective EE/RE programs, then the EGU may emit less NO_X than its cap allows. The EGU could then have excess NO_X

allowances that could be sold or traded in the HGB area, resulting in no net reduction in NO_X emissions. Therefore, in the HGB area, SIP-quality reductions from EE/RE cannot be directly credited in the SIP.

4.2.7 Urban Heat Island Measures

The term "urban heat island effect" refers to the observation that urban areas are hotter on average than surrounding rural areas. Urban heat island measures attempt to mitigate the occurrence of this phenomenon by decreasing the amount of heat that is absorbed into surfaces like roads, buildings, and parking lots. Examples include planting trees for shade and paving or painting surfaces with lighter colored materials or paint. In Houston, these kinds of measures are being promoted by Cool Houston!, a program at the Houston Advanced Research Center designed to help reduce urban temperatures through use of cool technologies - reflective and green roofing, paving with light colored or porous materials, and a greatly expanded forest canopy.

The overall effect of urban heat island measures must be determined in order to accurately estimate any ozone reductions for use in the SIP. Urban heat island measures may increase energy efficiency because cooler temperatures, even on a house by house scale, can reduce air conditioner use and result in reduced energy consumption at a micro level. Strategically placed trees can increase shade and provide a secondary energy efficiency benefit by reducing air conditioner use.

The most sophisticated studies on tree planting to date, however, show that ozone will decrease in some areas and increase in other areas if widespread tree planting occurs. With the planting of new vegetation, additional biogenic VOC emissions are created. Studies also show that increasing biogenic VOC emissions in the urban core is likely to increase ozone formation on most days because the ozone chemistry in the urban core is complex and can be VOC-limited. Additionally, if urban temperatures go down, the depth of the mixing layer may decrease, which means that emissions could be trapped in a smaller volume of air, resulting in higher concentrations of emissions and their byproducts. Further, most of the studies that estimate possible ozone reductions from measures like tree planting were done in smaller, arid cities like Sacramento, California. Results in a large, humid city such as Houston will likely differ considerably. At this time, modeling is not capable of determining the effects of urban heat island measures, like tree planting, in the HGB area using the most currently available data.

Since the science and the modeling tools are not adequate for accurately estimating ozone reductions, these measures can only be examined in a qualitative rather than a quantitative way. As the science around the effect of urban heat island measures progresses, the TCEQ will take new information into account as part of the ongoing effort to appropriately account for useful air quality improvement measures in the HGB SIP.

4.2.8 SmartWay Transport Partnership and the Blue Skyways Collaborative

Among its various efforts to improve air quality in Texas, the TCEQ is currently partnering in two voluntary programs in cooperation with the EPA: the SmartWay Transport Partnership and the Blue Skyways Collaborative.

The SmartWay Transport Partnership is a collaborative, voluntary program between the EPA and the freight transport industry that promotes strategies and technologies to help improve fleet efficiency while also reducing air emissions. Fleets participating in the SmartWay Transport Partnership commit to implementing these voluntary measures over three years, providing the EPA with annual updates of their progress throughout that period.

SmartWay carriers will typically commit to integrating fuel saving strategies and technologies into their fleet including: improved aerodynamics, single-wide tires, lighter wheels and rims, idle reduction, automatic tire inflation systems, driver training, and advanced powertrain technologies.

Unfortunately, the transient nature of freight transportation makes it difficult to isolate emissions reductions to a certain region, or even a certain state. As a result, any estimates of the impact of these technologies will largely rely on estimates of accumulated reductions based on estimated levels of overall fleet integration. Current estimates of potential fuel savings and emissions reductions that these technologies can produce are based on the results of several recent EPA studies. Ongoing research conducted by the EPA, in conjunction with the more than 300 companies already committed as SmartWay partners, should help to provide a better understanding of potential emisisons reductions, while also helping to identify additional technologies and strategies that can help to improve fuel economy and reduce emissions.

Rolling resistance is estimated by the EPA to account for as much as 13 percent of a heavy-duty vehicle's fuel consumption. By reducing rolling resistance, as well as vehicle weight, the EPA believes that single-wide tires will help to improve fuel economy and reduce NO_X emissions by an average of five percent. On the other hand, aerodynamic drag accounts for most of a long-haul truck's energy losses at highway speeds. As a result, the EPA estimates that improving the aerodynamics of both a long-haul truck and its trailer can help to improve fuel economy and reduce NO_X emissions by another five percent.

The extended periods of idling typically associated with long-haul trucks will consume an average of one gallon of fuel per hour, while also generating the associated emissions. New technologies such as auxiliary power units (APU) and truck stop electrification (TSE) reduce vehicle idling by providing power for air conditioning, heating, and onboard electrical accessories, even when the vehicle is not in operation. The EPA estimates that, assuming typical idling levels, idling reduction technologies such as APU and TSE can reduce NO_X emissions by approximately ten percent.

The Blue Skyways Collaborative is a related effort, spearheaded by the EPA Region 6 office in Dallas and the Region 7 office in Kansas City, Missouri.

Partnering with the EPA through this effort are the environmental and energy agencies from the ten states along the I-35 corridor, including Texas, New Mexico, Louisiana, Arkansas, Oklahoma, Kansas, Missouri, Nebraska, Iowa, and Minnesota. In implementing the Blue Skyways Collaborative, the EPA and the participating states recognize that because air quality is often a regional concern, greater reductions are possible through cooperative efforts as opposed to individual efforts initiated independently in each state.

The primary objective of the Blue Skyways Collaborative is to improve air quality in these states by promoting innovative technologies in a variety of sectors. In addition to promoting reduction strategies through the SmartWay Partnership for freight transportation via air, water, and rail, Blue Skyways also focuses on promoting emissions reduction strategies for other on-road sources, non-road sources, and highway fueling and idling reduction infrastructure, while also promoting renewable, efficient, and alternative energy sources.

To achieve these objectives, the collaborative will try to develop partnerships among international, federal, state, and local governments, as well as non-profit organizations, environmental groups and private industries. These partnerships will identify ways to reduce emissions along the key transportation corridors by sharing technology and leveraging financial resources from a variety of sources.

4.2.9 Clean Air Interstate Rule (CAIR)

EPA projects that CAIR Phase I regional controls will improve air quality in the HGB area. Since May 2005, Texas has regulated electric generating units to a higher level of control that is "beyond" the current level for CAIR in East Texas and the HGB area. The TCEQ continues to assess federal changes to CAIR and resulting CAIR Phase II reductions that begin in 2015 to determine their impact on the HGB area as a part of the eight-hour ozone attainment demonstration SIP.

4.3 WATER HEATER RULE AMENDMENT OFFSETS

Concurrent rule project (2006-034-117-EN) amends 30 TAC Chapter 117, Subchapter E: Division 3--Multi-Region Combustion Control, Water Heaters, Small Boilers, and Process Heaters (§§117.3200-3215), to repeal the current statewide emission standard of 10 nanograms NO_X per Joule heat input (ng/J) due to the inability of water heater manufacturers to produce compliant units. Under these rules, manufacturers, distributors, retailers, and installers of natural gas-fired water heaters with a maximum rated capacity of no more than 75,000 British thermal units per hour, designated as a "Type 0 unit" in the rules, manufactured, distributed, sold, or installed on or after July 1, 2002, but no later than December 31, 2004, are required to meet an emission limit of 40 ng/J. Type 0 units manufactured, distributed, sold, or installed on or after January 1, 2007, were required to meet a 10 ng/J heat input limit. The adopted rules repeal the lower standards and reinstate the 40 ng/J emission limit in force since July 1, 2002.

House Bill (HB) 965, from the 79th Texas Legislative Session, authorized this amendment and required emission reductions to offset the loss of SIP credits due to the potential repeal of the rule. Reductions from a currently effective rule that were not claimed for the HGB one-hour ozone attainment demonstration will offset the 0.5 tpd of NO_X attributed to the water heater rule provision for the HGB area. Specifically, 30 TAC Chapter 117, Subchapter D, Division 2, was adopted in April 2000 and applies to minor sources of NO_X in the HGB area. While the rule is mentioned in the HGB SIP, specific reductions associated with the rule from sites that are not subject to the NO_X MECT program were not claimed or modeled for the HGB one-hour ozone attainment demonstration. A minimum of 0.7 tpd NO_X reductions will be achieved from these sources. This estimate is based only on gas-fired boilers subject to 30 TAC Chapter 117, Subchapter D, Division 2 that were not included in the MECT program. Furthermore, the 0.7 tpd estimate is conservative because it does not include reductions from other sources subject to this rule that were also excluded from the MECT program. These reductions will be accounted for in the eight-hour ozone attainment demonstration SIP.

4.4 REASONABLY AVAILABLE CONTROL TECHNOLOGY AND EMISSIONS INVENTORY

4.4.1 Reasonably Available Control Technology (RACT) Analysis

The HGB eight-county area is currently classified as a moderate nonattainment area for the new EPA eight-hour ozone NAAQS. Under the eight-hour ozone standard, the HGB area is required to meet the RACT mandates of the FCAA under §§172(c)(1), 182(b)(2) and 182(f). According to EPA's Final Rule to Implement the Eight-Hour Ozone NAAQS – Phase 2 (40 CFR §51.912, November 29, 2005), areas classified as moderate nonattainment or higher must demonstrate, by revision to their SIP, that their current rules fulfill eight-hour ozone RACT for all Control Technique Guidelines (CTG) categories and all non-CTG major sources of NO_X and VOC emissions. The TCEQ is demonstrating that the RACT requirements are being fulfilled in the HGB eight-hour ozone nonattainment area by (1) identifying all CTG and non-CTG major source categories of VOC and NO_X emissions within the HGB area; (2) identifying the state regulation that implements or exceeds RACT for that source category; (3) describing the basis for concluding that these regulations fulfill the RACT requirements; and (4) submitting negative declarations for categories where there are no major emission sources within the HGB area.

Appendix B: *Reasonably Available Control Technology Analysis* provides the full RACT Analysis.

4.4.2 Emissions Inventory

As required by 40 CFR 51.915, the HGB 2002 Emissions Inventory was submitted to the EPA as part of the Dallas-Fort Worth (DFW) 5 Percent Increment of Progress SIP Revision in April 2005 (Appendix A of the DFW SIP, and may be viewed at http://www.tceq.state.tx.us/implementation/air/sip/apr2005dal_iop.html.) Tables 1 and 2 of the 2002 Periodic Emissions Inventory are resubmitted as part of this SIP submittal, as Appendix F, to comply with the public comment, public notice, and public hearings requirements.