APPENDIX E

POINT SOURCE INVENTORY PROJECTION METHODOLOGY

APPENDIX E: POINT SOURCE INVENTORY PROJECTION METHODOLOGY

E.1 EMISSIONS INVENTORY COMPILATION

Stationary point source emissions data are collected annually from sites that meet the reporting requirements of 30 Texas Administrative Code §101.10. To collect the data, the TCEQ mails emissions inventory questionnaires (EIQ) to all sites identified as meeting the reporting requirements. Companies are required to report emissions data and to provide sample calculations used to estimate the emissions. Information characterizing the process equipment, the abatement units, and the emission points is also required.

All data submitted in the EIQ are reviewed for quality assurance purposes and then stored in the State of Texas Air Reporting System (STARS) database. The following TCEQ web page contains EIQ guidance documents and historical point source emissions of major pollutants: http://www.tceq.state.tx.us/implementation/air/industei/psei/psei.html. Additional information is available upon request from the TCEQ's Air Quality Division.

E.2 UPDATED 2005 BASE YEAR INVENTORY

The TCEQ extracted the 2005 base year inventory data from STARS on February 15, 2008. The extracted data were reported ozone season daily emissions of NO_X and VOC from each site in the BPA area that submitted an EIQ for 2005 and reflect revisions made on or before that date.

E.3 UPDATED UNCONTROLLED MILESTONE YEARS INVENTORIES

In developing the milestone years inventories, the TCEQ projected the 2005 inventory using the following approaches: normalizing the 2005 emissions for refineries that are expanding operations; employing Clean Air Interstate Rule (CAIR) allowable NO_X emissions for electric generating units subject to CAIR; applying projection factors for the remaining sources; and adding unused emissions credits.

E.3.1 Refineries With Permitted Expansions

Three refineries are increasing daily production levels, in accord with recent permit actions. Motiva Enterprises, LLC (Motiva) is doubling the capacity at its Port Arthur refinery to 600,000 barrels per day, the Premcor Refining Group (Valero) is expanding its capacity to 420,000 from 300,000 barrels per day, and Total Petrochemicals USA Incorporated (Total) is increasing the capacity of its Port Arthur refinery by 50,000 barrels per day.

To account for the expansion at these refineries, projected emissions were developed by multiplying the 2005 actual emissions by the ratio of the future allowable emissions to the 2005 allowable emissions. For sites where future allowable emissions appeared to decrease compared to the 2005 allowable emissions, no change from 2005 actual emissions was projected.

The TCEQ conducted a detailed permit review to collect 2005 allowable emissions data from available New Source Review (NSR) permits that authorize ozone precursor emissions for the sites. Future allowable data associated with the Motiva and Total refineries was obtained from a TCEQ contract with Environ (contract number 582-07-84005-FY08-08). For Valero, sitewide emissions were determined from flexible permit 6825A and a table of exempted units provided by the Air Permits Division.

E.3.1.1 Motiva

Motiva will construct a new, stand-alone refinery line with a nominal capacity of 325,000 barrels per day that will operate side-by-side with the existing refinery. Permit 8404 authorizes the expansion. See NSR document 331991 for the technical review of the expansion project. 2005

allowables were obtained from the following permits: 8404 (NSR document 326926, dated May 8, 2006); 6056; 3415; and 56287.

Motiva will reduce NO_X emissions by shutting down several combustion units as required by special condition 59C of permit 8404. These units were active in 2005 with sufficient NO_X emissions to offset project increases. As permitted, the expansion will increase VOC allowable emissions from the 2005 allowable level.

E.3.1.2 Total

As part of its expansion, Total will construct a 50,000 barrel per day coker unit, a desulfurization unit, a vacuum distillation unit, and associated process equipment. This expansion, also known as the Deep Conversion Project, is expected to be completed by 2011. Permit 46396 authorizes the expansion. 2005 allowables were obtained from multiple permits associated with the refinery.[1]

Permit 46396 (NSR document 343614) increases NO_X allowable emissions by 70 tpy and VOC allowable emissions by 150 tpy. According to TCEQ Air Permits staff, Total provided enough contemporaneous reductions in emissions as outlined in Permit 54026 (authorizing a flare system) to compensate for anticipated increases in VOC emissions. However, these reductions could not be verified from 2005 emissions, and were therefore not incorporated into emissions projections. As a result, the future VOC allowable emissions used in the emissions projections increased from the 2005 allowable level.

E.3.1.3 Valero

The Valero expansion is ongoing and will be completed in two phases. Crude Oil Expansion I expanded Valero's upstream capacity and was completed in January 2007. Crude Oil Expansion II will expand downstream capacity and is expected to be complete by the middle of 2011. The permit amendment for this project has been issued and Valero has approved the capital investment as of March 2008. See NSR document number 354732 for a technical review of phase two of the expansion, represented in permit 6825A. Both 2005 and future allowable emissions information was obtained from this permit, dated February 5, 2008 (NSR document 354709). This permit authorizes emissions for the entire site, excepting certain tanks and fugitive areas.

Valero had implemented the offsets used for VOC allowable emissions increases by 2005; therefore, the project increases were added to the 2005 allowables to determine future allowable emissions. Valero had also implemented the offsets used for NO_X allowable emissions increases by 2005, but these offsets equal future NO_X emissions reductions from an EPA consent decree, so no net change in future allowable emissions will occur. As part of this consent decree, Valero plans to shut down five older boilers and a turbine, and replace these units with three package boilers equipped with selective catalytic reduction NO_X controls.

E.3.1.4 Conclusion

Slight increases in future NO_X and VOC allowable emissions were obtained from reviewing permits associated with these refineries' expansions. Therefore, ozone precursor emissions are projected to increase from 2005 to 2021. See Table E-1 for a summary.

[1] The TCEQ used data from the following permits: 2347; 3615; 16840; 17352; 18936; 19490; 19965; 20381; 43109; 46396; 49136; 49940; 54026; 56385; 56409; 5694A; 8983A; 9193A; 9194A; and 9195A.

Table E-1: Allowable increase ratios used for refineries with permitted expansions

Company	Pollutant	2005 tpd	allowable ratio
Motiva	NO_X	6.73	1.00
Motiva	VOC	3.69	1.30
Total	NO_X	2.19	1.04
Total	VOC	1.39	1.23
Valero	NO_X	5.42	1.00
Valero	VOC	1.10	1.18

E.3.2 Electric Generating Units Subject to the Clean Air Interstate Rule (CAIR)

The TCEQ projected ozone season day NO_X emissions for electric generating units subject to CAIR by using adjusted CAIR allocations for these units. Annual CAIR allocations were adjusted for the operation of the units during the summer ozone season. The projected emissions were determined by multiplying the annual CAIR allocation for each unit by the ratio of the 2005 ozone season emissions to the 2005 annual emissions for each unit. Since CAIR allocations are reduced in 2015, NO_X emissions are projected to decrease between 2014 and 2017.

E.3.3 Other Sites

For sites other than refineries and CAIR-authorized electric generation units, the TCEQ estimated projection rates by comparing projection factors (refer to the paragraph below for discussion of projection factors) to emissions changes from 2002 to 2005 for each contaminant and for each industrial category at the county level. For industries with emissions increases, the projection factor set closest to the actual change was used to project the 2005 base inventory. For sectors with emissions decreases, the TCEQ did not apply a growth factor to the 2005 emissions. None of the projections employed showed a decline in emissions from these sources from 2005 to 2021.

Using EGAS 5.0, the TCEQ derived projection factors from both the Regional Economic Modeling, Inc. (REMI) 5.5 factor set and the Moody's Economy, Inc. factor set at the countywide level for Texas. The above two sets were employed because the economic information was available at the county rather than at the state level. The projection factors, available only to 2020, were projected to 2021 by applying a linear regression on the 2017 to 2020 factors.

E.3.4 Emissions Credits

The growth in NO_X and VOC emissions in the BPA area was adjusted to account for emissions credits. Emissions credits are emissions reductions that may return to the air shed in the future. To account for the possible use of these banked NO_X and VOC emissions, the TCEQ applied emissions credits extracted from the TCEQ Emissions Banking and Trading database on March 17, 2008. There are two kinds of credits: emissions reduction credits (ERC) are long-term credits typically used for permit offsets. Discrete emissions reduction credits (DERC) are short-term, one-time use credits. The TCEQ applied an environmental offset of 1.1 to all credits. The TCEQ projected future DERC use based on the average of 2003 to 2005 DERC use, and projected that future DERC will be generated at the same rate as those used. For NO_X, ERC values were 1.3 tpd and DERC values were 4.8 tpd. For VOC, ERC values were 0.6 tpd and DERC values were zero.