

## **APPENDIX 2**

### **DEVELOPMENT OF REASONABLE FURTHER PROGRESS POINT SOURCE EMISSIONS INVENTORIES FOR THE HOUSTON-GALVESTON-BRAZORIA (HGB) NONATTAINMENT AREA**

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### 2.1 UPDATED ANALYSIS YEAR INVENTORIES

Updated analysis year inventories were developed according to the general requirements described in Chapter 2: *Emissions Inventories*, Section 2.1: *Introduction*. The Texas Commission on Environmental Quality (TCEQ) designated the 2014 inventory as the starting point for emission inventory projections because 2014 point source data are the most recent data available. The 2014 point source inventory data were extracted from State of Texas Air Reporting System (STARS) on July 29, 2016. The dataset included reported ozone season daily emissions of NO<sub>x</sub> and VOC for each site in the HGB area that submitted a 2014 emissions inventory questionnaire and reflected revisions made on or before the extract date.

The TCEQ requested regulated entities submit revisions to the 2014 point source emissions inventory by August 1, 2016. The point source emissions estimates in this reasonable further progress (RFP) state implementation plan (SIP) revision are preliminary as the schedule for the inventory development did not allow time to incorporate these updates to the point source inventory. Final point source emissions estimates are anticipated to differ slightly from those reported in this proposal; however, revisions are expected to add less than one ton per day each of volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>) emissions to the current point source emissions estimates. As a result, the SIP narrative may change between proposal and adoption to reflect updates to the point source emissions inventories.

In the development of the 2017 attainment year inventory, the TCEQ projected future emissions from major and minor sources separately as appropriate and then applied available emissions credits to the inventories.

For both major and minor sources, NO<sub>x</sub> emissions from sites with equipment applicable to the Mass Emissions Cap and Trade (MECT) Program were projected using the MECT cap. MECT data were retrieved from the emissions banking and trading database and reviewed to identify sites with applicable units. For both major and minor sources, it was assumed that the majority of NO<sub>x</sub> emissions are from MECT-applicable units. Since the MECT cap is an annual value, it was prorated by the ratio of the aggregate of the 2014 ozone season daily emissions to the aggregate of the 2014 annual emissions for applicable sites to project future daily emissions for the HGB area. That is, the MECT cap was multiplied by the ratio of the 2014 ozone season daily emissions to the 2014 annual emissions to determine the 2017 emissions.

Title V operating permit data from 2016 were reviewed to identify major sources of VOC emissions. VOC emissions from these sites were projected by adding emissions growth allowed under the major modification thresholds. To be conservative, the moderate nonattainment major modification threshold for ozone precursors of 40 tons per year was applied, although the eight-county HGB area is currently classified as severe nonattainment for the 1997 eight-hour ozone standard. A daily average of this growth was calculated for each site by multiplying the threshold by the ratio of the ozone season daily emissions to the annual emissions for the site. This value was

added to each site's 2014 emissions value to provide a one-time growth in emissions. To maintain a conservative approach, all growth was taken in to account by 2017, the first analysis year.

NO<sub>x</sub> emissions from sites not listed in the MECT Program and VOC emissions from sources not identified as major for VOC were assumed to be minor source emissions and were projected using growth factors for each analysis year. Growth factors were derived from the 2016 Eastern Research Group (ERG) factor set. Documentation for the development of these emissions growth factors can be found in Appendix 3: *Growth Factors for Area and Point Sources*.

Finally, to account for the possible use of the banked NO<sub>x</sub> and VOC emissions, unused Emissions Reduction Credits (ERCs) and Discrete Emissions Reduction credits (DERCs) were applied to each of the analysis year inventories. Emissions credits are banked emissions reductions that may be added back to the airshed in the future; through their use either to modify existing facilities or construct new facilities, or by facilities to demonstrate compliance with emissions limit obligations where provided for in commission rules.

Projected ERC use was determined by assuming that banked ERCs would be used for offsets in permitting new or modified sources. In ozone nonattainment areas, ERCs used to permit new or modified sources must be reduced by a factor called the offset ratio to assist with ensuring progress towards attaining air quality standards. Therefore, available ERCs were divided by 1.15 to account for the Nonattainment New Source Review permitting offset ratio for moderate ozone nonattainment areas. All available ERCs listed in the emissions banking and trading database as of July 20, 2016 were added to each analysis year. This includes transactions with available information from 2010 through 2015 to account for credits taken from the bank and applied to projects that may not have been completed when the 2014 emissions inventory was due (March 31, 2015).

Projected DERC use was determined by assuming that all available credits would be used and averaging the resulting credits over the 2017 through 2028 projected timespan to obtain a daily contribution. The 2017 through 2028 future year timespan was used for several reasons. First, the total amount of available DERCs was calculated in August 2016; it was assumed the majority of these available credits would be used beginning in 2017. Additionally, the longer timespan also provides a more realistic, although conservatively high, daily DERC use rate; averaging the use of all available DERCs over the projection years for this SIP revision (2015, 2016, and 2017) would artificially inflate projected DERC use.

The resulting daily DERC contribution was added to the 2015, 2016, and 2017 projected inventories. This approach is conservative and simplified; historical use has been considerably less (less than 10% of the projected rate)<sup>1</sup> and this is not anticipated to change significantly. Completed DERC transactions for calendar years 2011 through

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<sup>1</sup> Texas Commission on Environmental Quality. "Discrete Emission Credit Banking and Trading Program Audit." Accessed July 29, 2016. <http://www.tceq.texas.gov/assets/public/implementation/air/banking/reports/2013decprogramaudit.pdf>.

2014 listed in the emissions banking and trading database as of July 20, 2016 were not added, as they were used for one-time compliance projects applicable to, and reflected in, emissions for those years only.

The rules detailed below were accounted for in the base year, 2014, and the attainment year inventories. No additional controls were incorporated into the 2017 attainment year inventory. No further reductions, including Federal New Source Performance Standards Subpart OOOO emissions reductions were necessary to meet RFP requirements, and no new reductions were applied as point source control strategies for this RFP SIP revision.

Industrial source NO<sub>x</sub> controls are reflected in the MECT 2008 NO<sub>x</sub> cap. The MECT NO<sub>x</sub> emissions allocations account for NO<sub>x</sub> controls, including controls applied to electric generating units (EGU) and large stationary engines as defined by 30 Texas Administrative Code (TAC) Chapter 117, Subchapters C: *Combustion Control at Major Utility Electric Generation Sources in Ozone Nonattainment Areas* and D: *Combustion Control at Minor Sources in Ozone Nonattainment Areas*.

The VOC controls are reflected in the highly reactive volatile organic compounds emissions cap and trade program (HECT) and 30 TAC Chapter 115 changes that limit tank landings. The HECT cap is an annual cap on sitewide highly reactive volatile organic compounds (HRVOC) emissions from equipment that are subject to the HRVOC control requirements of 30 TAC Chapter 115, Subchapter H, Division 1: *Vent Gas Control* or Division 2: *Cooling Tower Heat Exchange Systems* for applicable sites listed in the cap. Other 30 TAC Chapter 115 changes limit convenience landings unless an abatement 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.