Emissions Banking and Trading Area and Mobile Source Credit Generation Potential Rulemaking

Donna Huff
Air Quality Planning
Air Quality Division

December 2016

Overview

- Background
- Timeline
- Rules affected
- Staff recommendations
- Examples
- Next Steps

Background

- Current rules
  - Area and mobile sources can generate credits.
- Federal requirements and implementation issues
  - Surplus and Real
  - Quantifiable
  - Permanent and Enforceable
- Commission direction
- Public input to draft strategy

Timeline

- Proposal: March 2017
- Public hearings: April 2017
- Adoption: August 2017

Rules Affected

- 30 Texas Administrative Code Chapter 101, Subchapter H
  - Emission Credit Program, Division 1
    - Commonly known as Emission Reduction Credit (ERC) Program
  - Discrete Emission Credit Program, Division 4
    - Commonly known as Discrete Emission Reduction Credit (DERC) Program

Staff Recommendations

- Overview:
  - Credit generation requirements for area and mobile sources
  - Transition timing for area and mobile credit applications
  - Rule “clean-up” for credit use
  - Rule clarifications that also influence point sources

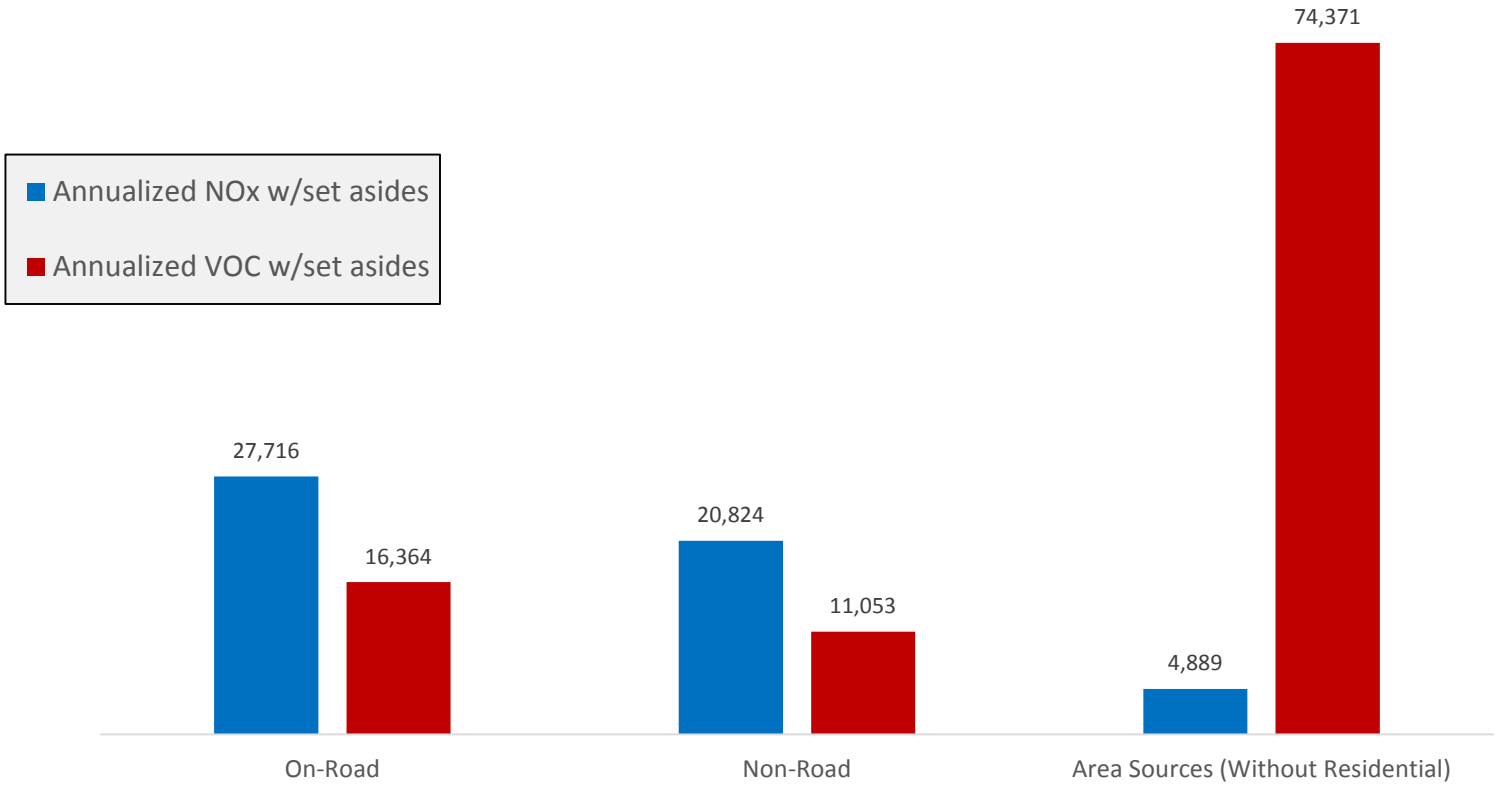
Staff Recommendations

- Reduce SIP emissions available for credit by:
  - 25% for area and non-road mobile source categories
  - 15% for on-road mobile source category
  - Draft strategy discussed reductions of:
    - 20% to 30% for area and non-road mobile
    - 5% to 15% for on-road mobile

- As area and mobile emissions estimation uncertainties diminish, commission may determine that a greater proportion of SIP emissions could be creditable without risking:
  - noncompliance with requirement to be surplus to SIP; and
  - having a negative impact on the relevant air shed.

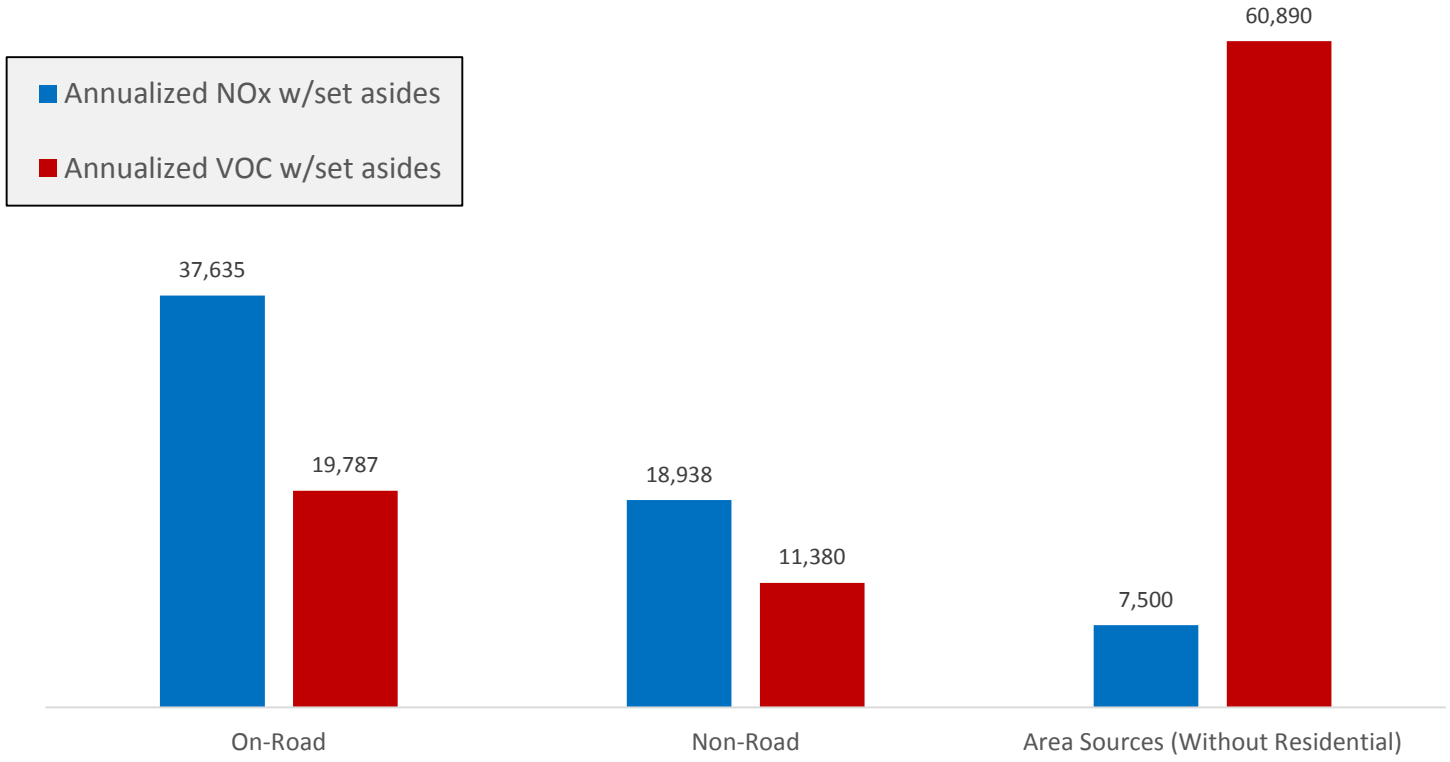
Potentially Creditable SIP Emissions: HGB

Estimates Shown are based on the
HGB Proposed 2016 Attainment Demonstration SIP



Potentially Creditable SIP Emissions: DFW

Estimates Shown are based on the
DFW Adopted 2016 Attainment Demonstration SIP



Staff Recommendations

- At minimum, cannot generate credits from:
  - residential area sources;
  - sources without records for approved/approvable emissions estimation methods;
  - on-road mobile sources that are not part of a fleet;
  - mobile sources not primarily operated within the nonattainment area;
  - sources that did not operate in SIP emissions year;
  - reductions <0.1 ton after all adjustments;
  - shutting down inelastic area sources (e.g., restaurants, concrete batch plants, gas stations, and dry cleaners);
  - shifting activity; and
  - mobile source shutdown/replacement unless it is made permanently inoperable.

Staff Recommendations

- Reduce credits for shutdown by 15%.
  - Draft strategy: 20%.
- Reduce credits based on emissions estimation data.
  - No adjustment for records required for same facility type at a point source.
  - Reduce 15% for alternative methods.
  - Draft strategy discussed:
    - Source-specific continuous monitoring: 0% to 10%;
    - Source-specific non-continuous monitoring: 5% to 15%; and
    - Alternative methods: 10% to 20%.
- Total combined adjustment of no more than 20%
  - Draft strategy: 20% to 30%

Staff Recommendations

- Determine historical adjusted emissions from two of five years before reduction.
  - Can "look back" six to ten years when detailed operational records are available.
  - Draft strategy only allowed five year look back.
- Mobile SIP and historical adjusted emissions set based on actual emissions in nonattainment area.
- Mobile credits set based on remaining useful life, annualized over 25 years.
  - SIP fleet turnover assumptions

Staff Recommendations

- EPA-approved/approvable protocols are required for emissions estimation.
- Generator must comply with required conditions.
  - Monitoring, testing, recordkeeping
  - Specified in Emissions Banking and Trading Emission Reduction Certification Form (Form EBT-CERT)
- EBT-CERT may contain special conditions including, but not limited to:
  - Vehicle Replacements
    - proof the vehicle is permanently inoperable
    - certified or duplicate Texas Nonrepairable Vehicle Title
  - Vehicle Repower
    - Proof the engine is permanently inoperable

Staff Recommendations

- Area and mobile credit generation applications may be submitted up to three years after the emissions reduction.
  - This provision applies to reductions that occurred after 12/31/14 but before 1/1/16.
  - This provision expires 1/1/19.

- With the exception of the provisional time extension, all ERC applications must be submitted no more than two years after the reduction in the facility's actual emissions occurs.

Staff Recommendations

- After 1/1/18, applications for credit generation must be submitted through State of Texas Environmental Reporting System (STEERS).
  - May request approval to apply using paper forms.

- Substitute “emission credit” for “ERC” and “discrete emission credit” for “DERC” to make requirements for use of credits from stationary and mobile sources consistent.
  - Use application deadline
  - Use date
  - Inter-pollutant use

Staff Recommendations

- Definition changes primarily clarify existing procedures.

- New definitions:
  - point source
  - primarily operated
  - projection-base year

- Revised definitions:
  - baseline emissions
  - real reduction
  - SIP emissions
  - historical adjusted emissions
  - generation period

Area Source Example

- Area Source Project - Tanker Vessel Hoteling
  - Capture/Control for one Handymax Tanker
  - Max Calls per Year: 365
  - Utilization of Port: 62.5%
  - Average NOx emissions per call (tons)
    - auxiliary engine: 0.1956 / boilers: 0.1286
  - Pre-control Potential Emissions are **73.96 tpy** of NOx
    - Max Calls * Utilization * Average NOx

      365 * .625 * (0.1956 + 0.1286)

Area Source Example

- Area Source Project - Tanker Vessel Hoteling
  - Advanced Maritime Emissions Control System (AMECS)
    - Capture Efficiency (CAP EFF): 90%
    - Control Efficiency (CON EFF): 90%
    - Uncertainty: 50%

    - Potential Reductions are **29.95 tpy**
      - NOx * CAP EFF * CON EFF * Uncertainty

        73.96 * 0.9 * 0.9 * 0.5

  - Potential additional reduction of up to 15% would be based on operational records to quantify emissions

Area Source Record Examples

Source Category	Records
Solvent use and surface coating	Solvent/coating usage: quantity, type MSDS or other data on VOC content, composition, and solids content
Storage tanks	Storage start and end dates, throughput True vapor pressure at storage temperature Liquid identity and density; Gas and liquid analysis reports Tank maintenance and inspection information
Tank truck/railcar loading	Liquid throughput; VOC density and vapor pressure for each loading operation
Fugitives	Gas and liquid analysis reports; Number of components; Emissions factors Inspection and monitoring information
Gas dehydrators	Wet gas analysis; Lab analysis of enriched/lean glycol samples Glycol recirculation rate; Hours of operation; Design documents, process simulator results; Inspection and maintenance information
Oil well heaters	Fuel consumption, heat value (Btu/standard cubic foot) Operating hours; Inspection and maintenance information
Natural gas fired compressor engines	Engine make and model, rating, manufacturer's specifications Typical operating horsepower; Engine emission test report, emission factor Fuel consumption, heat value; Brake specific fuel consumption Hours of operation; Continuous emissions monitor data
Industrial fuel combustion	Fuel usage, heat value; Operating hours; Testing and monitoring data
Vapor controls	Vapor capture system/control device destruction efficiency Operating parameters, conditions; Monitoring, maintenance information

Mobile Source Example

- Mobile Source Project - Tug Boat Engine Repower
  - Tier 2 engine to Tier 4 engine
    - ERC only generated for Tier 3 engine to Tier 4 engine
    - Annual Hours of Operation (AHO): 3,000 hours
    - Engine Kilowatt (EkW): 2,908 kW
    - Tier 3 NOx Standard: 6.2 g/kWh
    - Tier 4 NOx Standard: 1.8 g/kWh
    - TERP Default Load Factor (TERP LF): 0.43
    - TxLED Correction Factor (TxLED CF): 0.93
    - Baseline NOx = **23.8 tpy**
      - ekW * Tier 3 NOx * TERP LF * TxLED CF * AHO

        2,908 * 6.2 * 0.43 * 0.93 * 3,000
    - Reduction Strategy NOx = **6.9 tpy**
      - ekW * Tier 4 NOx * TERP LF * TxLED CF * AHO

        2,908 * 1.8 * 0.43 * 0.93 * 3,000

Mobile Source Example

- Mobile Source Project - Tug Boat Engine Repower
  - Annual NOx Reduction = **16.9 tpy**
    - Baseline NOx – Reduction Strategy NOx

      23.8 - 6.9

  - Tier 2 engine to Tier 4 engine
    - Potential annual reductions of up to **6.8 tpy** of NOx per vessel with consideration to useful life and amortized over 25 years
      - 100% remaining useful life and amortized: **6.8 tpy**
      - 75% remaining useful life and amortized: **5.1 tpy**
      - 50% remaining useful life and amortized: **3.4 tpy**
      - 25% remaining useful life and amortized: **1.7 tpy**
  - Potential reduction of up to 15% would be based on operational records used to quantify emissions

Note: conversion from grams to tons (1 gram = 1.10231e-6)

Mobile Source Example

- Mobile Source Project – Refuse Truck Replacement
  - Old Vehicle: Model Year 2006 Diesel
    - Baseline Emissions Standard (BES): 2.375 g/bhp-hr
    - Annual Fuel Consumption (AFC): 5000 gal/yr
    - Energy Consumption Factor (ECF): 18.8 hp-hr/gal
    - TxLED Correction Factor (TxLED CF): 0.93
  - New Vehicle: Model Year 2016 Compressed Natural Gas (CNG)
    - Baseline Emissions Standard (BES): 0.2 g/bhp-hr
    - Annual Fuel Consumption (AFC): 5000 gal/yr
    - Energy Consumption Factor (ECF): 19.3 hp-hr/gal
  - 2006 Diesel Refuse Truck NOx Emissions = **0.23 tpy**
    - BES * ECF * AFC * TxLED CF

      2.375 * 18.8 * 5,000 * 0.93

Mobile Source Example

- Mobile Source Project – Refuse Truck Replacement
  - 2016 CNG Refuse Truck NOx Emissions = **0.02 tpy**
    - BES * ECF * AFC

      0.2 * 19.5 * 5000
  - Annual NOx Reduction = **0.21 tpy**
    - 2006 Refuse Truck NOx - 2016 Refuse Truck

      0.23 - 0.02
    - Potential annual reductions is reduced to **0.1 tpy** of NOx per refuse truck with consideration to useful life of 2006 refuse truck and NOx reduction amortized over 25 years
    - Replacing a 2007 and newer diesel vehicle with a CNG vehicle would not qualify for an ERC as the NOx emissions factors are the same
  - Potential reduction of up to 15% would be based on operational records used to quantify emissions

Note: conversion from grams to tons (1 gram = 1.10231e-6)

Mobile Source Record Examples

Source Category	Records
Repowering Technologies Replacing Older Vehicles Marine Vessel Repowering	Vehicle category, description, make, model, model year; Vehicle Identification Number (VIN); Engine identification number, make, model, manufacture year; Gross Vehicle Weight Rating; Fuel type; Usage range; Engine family or test group name/code; fuel usage; mileage; hours; load factors; route data
On-road or Off-road Fuel Switching	Vehicle category, description, make, model, model year; Fuel type; Engine family or test group name/code; Fuel capacity in gallons equivalent; Certified NOx emissions (grams per brake horsepower-hour or grams per mile); fuel usage; mileage; hours; load factors; route data
Marine Vessel Clean Fuels	Engine make, model, manufacture year; Fuel type; Engine family or test group name/code; Fuel capacity in gallons equivalent; Certified NOx emissions; fuel usage; hours; load factors
Upgrade/Retro-fit Auxiliary Motors/Units	Engine make, model, manufacture year; Engine Horse Power/AMP; Engine family or test group name/code; Certified NOx emissions; fuel usage; mileage; hours; load factors; route data
Idling Reduction – Auxiliary Power Units	Engine make, model, manufacture year; Engine Horse Power/AMP; Engine family or test group name/code; Certified NOx emissions; fuel usage; hours; load factors

Next Steps

- Continue to seek input on types of credit generation projects anticipated.
- Rule is undergoing management review.
- Rule language will be public when the Commission's Agenda Back-up is filed.
  - Late February
- We encourage comment submission early in the public comment period.

Contact Information

- Daphne McMurrer
  - Daphne.McMurrer@tceq.texas.gov
  - (512) 239-5920
- Guy Hoffman
  - Guy.Hoffman@tceq.texas.gov
  - (512) 239-1981
- Donna Huff
  - Donna.Huff@tceq.texas.gov
  - (512) 239-6628