

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*DISCRETE EMISSION CREDIT BANKING AND TRADING
PROGRAM AUDIT*

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) is required by 30 Texas Administrative Code (TAC) §101.379 to audit the Discrete Emission Credit (DEC) Banking and Trading program every three years. This audit will evaluate a number of program-related topics including:

- timing of generation and use;
- the program's impact on attainment of the ozone National Ambient Air Quality Standard;
- emissions of hazardous air pollutants (HAP);
- availability and cost of DEC; and
- compliance by participants.

The data used in this audit was gathered from the banking database and available paper files. When possible, any errors or inconsistencies with the data were reviewed and corrected to match the paper files. Current banking procedures have minimized the occurrence of errors within the database so no recommendation is being made to address this as being an issue.

The DEC program is an economic incentive program that uses market-based principles to allow for the generation of DEC from emission reductions of volatile organic compounds (VOC), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter with an aerodynamic diameter of less than or equal to a nominal 10 microns (PM₁₀). Many VOCs are also classified as HAPs. In this audit, DEC generated from VOCs that are also HAPs will be identified as VOC-HAPs.

There are two types of DEC, discrete emission reduction credits (DERC) and mobile discrete emission reduction credits (MDERC). Both DERCs and MDERCs are similar except for the fact that MDERCs are generated from mobile sources. The term DEC, when used in this audit, refers to both DERCs and MDERCs. The terms DERCs and MDERCs are used when dealing with the specific subcategory of DEC.

The DEC program is an open market program where participation is voluntary. The availability of this program encourages emission reductions and provides participants flexibility in complying with certain federal and state air quality requirements.

1.2 OVERVIEW

In August 1995, the United States Environmental Protection Agency (EPA) introduced the concept of the DEC program through the Open Market Trading Rule. In accordance with EPA guidance, the TCEQ created the DEC program, adopted on December 3, 1997. A DEC is a certified actual emission reduction expressed in units of tons. Unlike emission credits that are quantified in tons per year, DEC are not associated with units of time and are only quantified in tons. DEC are generated during specific (i.e., discrete) periods of time and are always quantified after the reduction has occurred. The emission reduction generating DEC must be surplus at the time of generation but not at the time of use. DEC do not have an expiration date and do not devalue because of new regulatory limits or standards.

The online banking and trading registry displays available DECs. Each DEC receives a unique certificate number with four digits preceded by the letter "D." Once certified, DECs are freely transferable in whole or part and may be traded at any time. The program's scope extends to all attainment, nonattainment, and unclassified areas in Texas.

Program participants include a number of industries such as petroleum refining, utility electric generation, petroleum storage terminals, and commercial marine transportation. Participation is not limited to industry but also includes broker participation. Brokers cannot generate DECs but can buy DECs, sell DECs, and facilitate transfers between companies.

CHAPTER 2: GENERATION

2.1 METHODS OF GENERATION

To be creditable, an emission reduction must be real, quantifiable, and surplus at the time of generation. To be considered surplus, the emission reduction cannot be required by state or federal law, regulation, or agreed order and not relied upon in the state implementation plan (SIP). The reduction must have occurred after the most recent year of emissions inventory used in the SIP and must have been reported or represented in the emissions inventory used in that SIP. The methods of generation include:

- installation of pollution control equipment;
- process changes; and
- pollution prevention projects.

Before October 4, 2006, a permanent facility shutdown was considered an acceptable method of generation. However, the United States Environmental Protection Agency (EPA) argued that shutdowns were not innovative reduction strategies, could not be enforced under the program rules, and could potentially interfere with attainment. As a result, the EPA conditionally approved the discrete emission credit (DEC) program if the Texas Commission on Environmental Quality (TCEQ) took certain measures, including the removal of all DEC generated from shutdowns. The TCEQ amended the program rules and allowed the use of these DEC (specifically, DEC generated from shutdown strategies prior to September 30, 2002) until September 8, 2010. The TCEQ removed 24,317.7 tons of unused DEC generated from shutdowns.

In addition to shutdowns, there are other methods of generation that are not acceptable. For example, discrete emission reduction credits (DERC) cannot be generated from:

- curtailments in production;
- reductions that occurred as a result of transferring emissions to another facility at the same site;
- emissions reductions credited or used under any other emissions trading program;
- emission reductions that are mandated by state rule or federal law; and
- emissions reductions from a facility subject to the Mass Emissions Cap and Trade (MECT) program.

Companies attempting to certify reductions and generate DEC must submit a Form DEC-1 (Notice of Generation and Generator Certification of Discrete Emission Credits) within 90 days after the end of the generation period, not to exceed 12 months of generation. Upon completion of the review, the TCEQ deposits the DEC into the registry and sends a copy of the certificate to the company. All DEC certificates reference the amount in tons (reported to the tenth of a ton), the generating site, and the date of the reduction strategy.

Per 30 Texas Administrative Code (TAC) §101.372(f), the DEC program has five geographic areas: Beaumont-Port Arthur (BPA), Dallas-Fort Worth (DFW), Houston-Galveston-Brazoria (HGB), East and Central Texas (ECT), and West Texas (WT). The areas are set up based on their attainment, nonattainment, covered attainment (as defined in 30 TAC §115.10), and unclassified area classification.

DECs may be generated in any county regardless of attainment classification but there are limitations on the use of DECs from other geographic areas as discussed in Chapter 3 and 4 of this audit.

DEC generation information from the database that could not be linked to the paper files was not included in any table or figure in this chapter.

Table 2-1: *DEC Generation by Area* displays the amount of DECs generated in each area since program inception in 1997. The generation amounts include all pollutants. Most DEC generation is attributed to nitrogen oxides (NO_x) reductions achieved in the ECT and HGB areas. Combined, these two areas account for 92% of all NO_x DEC generation in Texas. During the first three years of the DEC program, HGB led in NO_x generation.

Table 2-1: DEC Generation by Area

| Area | NO _x | VOC | VOC-HAP | PM ₁₀ | SO ₂ | CO | Total Tons |
|------|-----------------|--------|---------|------------------|-----------------|---------|------------|
| BPA | 3,174.5 | 0.0 | 0.0 | 0.0 | 0.0 | 2,591.8 | 5,766.3 |
| DFW | 10,255.9 | 45.0 | 11.0 | 0.0 | 0.0 | 0.0 | 10,311.9 |
| ECT | 102,820.3 | 576.2 | 79.6 | 598.8 | 2.5 | 366.4 | 104,443.8 |
| HGB | 69,123.3 | 1186.6 | 780.2 | 46.4 | 1,643.2 | 1,488.4 | 74,268.1 |
| WT | 761.3 | 0.0 | 0.0 | 16.8 | 605.0 | 54.0 | 1,437.1 |

Table 2-2: *DEC Generation by Pollutant* provides the total amount of DECs generated from each pollutant since program inception in 1997.

Table 2-2: DEC Generation by Pollutant

| Pollutant | Tons | Percentage |
|------------------|-----------|------------|
| NO _x | 186,135.3 | 94.9 |
| VOC | 1,807.8 | 0.9 |
| VOC-HAP | 870.8 | 0.4 |
| CO | 4,500.6 | 2.3 |
| SO ₂ | 2,250.7 | 1.2 |
| PM ₁₀ | 662.0 | 0.3 |

2.2 ANNUAL BREAKDOWN OF GENERATION:

Figure 2-1: *Annual NO_x DEC Generation* shows the amount of NO_x DEC generated from 1997 through 2009. The data is based on the date in which the reductions occurred, not the date the DEC was certified. The data for 1997 incorporates all reductions from 1992 through 1997. The figure shows that NO_x generation peaked in 2002, steadily declined until 2006, and then completely stopped after 2009. Only NO_x emission reductions are represented because this pollutant accounts for the majority of all generation.

Figure 2-1: Annual NO_x DEC Generation

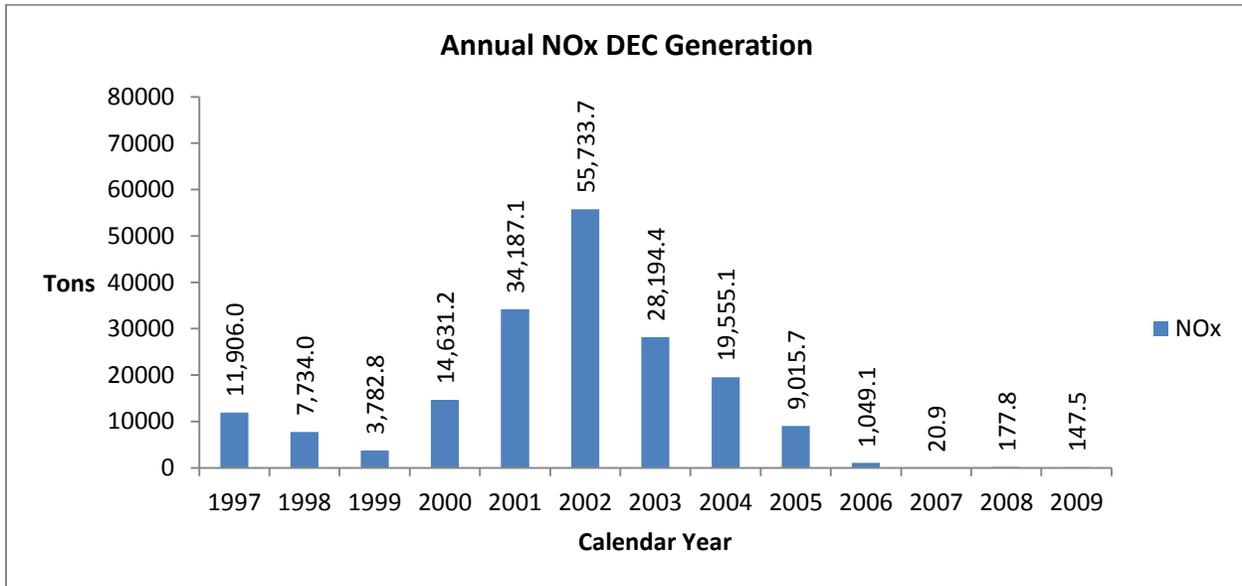


Table 2-3: *Annual DEC Generation by Pollutant* provides a breakdown of emission reductions by pollutant each year. The data is based on the date in which the reductions occurred, not the date the DEC was certified. The data for 1997 incorporates all reductions from 1992 through 1997. Fields with a zero indicate that there was no generation in that year.

Table 2-3: Annual DEC Generation by Pollutant

| Pollutant/Year | NO _x | VOC | VOC-HAP | PM ₁₀ | SO ₂ | CO |
|----------------|-----------------|---------|---------|------------------|-----------------|---------|
| 1997 | 11,906.0 | 1,137.0 | 686.8 | 0.0 | 605.0 | 9.0 |
| 1998 | 7,734.0 | 28.0 | 11.0 | 0.0 | 0.0 | 0.0 |
| 1999 | 3,782.8 | 10.0 | 0.0 | 0.0 | 0.0 | 38.0 |
| 2000 | 14,631.2 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2001 | 34,187.1 | 324.2 | 87.8 | 299.4 | 1.3 | 402.9 |
| 2002 | 55,733.7 | 284.4 | 54.9 | 305 | 1.2 | 822.3 |
| 2003 | 28,194.4 | 14.8 | 23.6 | 52 | 1,643.2 | 2,349.3 |
| 2004 | 19,555.1 | 6.4 | 6.7 | 5.6 | 0.0 | 879.1 |
| 2005 | 9,015.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2006 | 1,049.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2007 | 20.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 177.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 147.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

2.3 GENERATION TRENDS

NO_x generation declined from 1997 through 1999 and 2002 through 2007. This decline is, in part, attributed to new and revised emission control requirements in 30 TAC Chapter 117 implemented from 1999 through 2009 as part of the TCEQ's control strategies included in state implementation plan attainment demonstration for the one-hour ozone National Ambient Air Quality Standard (NAAQS) and the 1997 eight-hour ozone NAAQS. Examples of these rules and their associated rule project numbers include:

- 1998-030-117-AI: extended NO_x Reasonably Achievable Control Technology (RACT) requirements to the DFW area. This rule revision set emission specifications for rich-burn gas engines at a level consistent with RACT requirements for an area classified as serious nonattainment;
- 2000-011H-117-AI: created new NO_x emission specifications for electric utility boilers, auxiliary steam boilers, and stationary gas turbines in the HGB area; and
- 2001-007b-117-AI: added new emission specifications for attainment demonstration (ESAD) for duct burners in gas turbine exhaust ducts in the BPA and HGB areas. The rule revision specified that duct burners are subject to the same ESAD as stationary gas turbines.

In the HGB area, a contributor to NO_x generation trends is the MECT program. After implementation in 2002, regulated entities applicable to the MECT program were prohibited from generating DERCs. This change may contribute to the spike in DERC generation from 2001 through 2002 (before the program began) and the decline in generation thereafter.

Overall, generation is at an all-time low due, in part, to more stringent requirements and the MECT program. The last DEC generation project occurred from mobile source reductions achieved in 2009.

CHAPTER 3: CREDIT USE

3.1 USE REQUIREMENTS

Prior to use, the user must acquire an amount of discrete emission credits (DEC) sufficient to cover the compliance obligation for the specified use period (not to exceed 12 months) and submit a Form DEC-2 (Notice of Intent to Use). The Form DEC-2 allows the user to estimate and set aside an amount of DECs that may be needed for compliance. Once the use period is over, the user must submit a Form DEC-3 (Notice of Use). This form allows the user to report the exact amount of DECs needed for compliance for the specified use period. Any DECs that remain unused are returned and available for future use.

3.2 USES

DECs provide companies alternative means of compliance, including the following:

- to exceed a permit limit;
- as New Source Review (NSR) permit offsets;
- in lieu of allowances for compliance with the Mass Emissions Cap and Trade (MECT) program; and
- to comply with the regulatory requirements specified in 30 Texas Administrative Code (TAC) Chapters 114, 115, and 117.

A company planning to exceed a permitted emission limit in an ozone nonattainment area cannot use more than 10 tons of nitrogen oxides (NO_x) DECs or 5 tons of volatile organic compounds (VOC) DECs in a 12-month period. In counties designated as attainment or unclassified, DECs may be used to exceed a permitted emission limit up to the applicable prevention of significant deterioration significant level specified in 40 Code of Federal Regulations §51.21(b)(23). Permit limits may only be exceeded every other year or up to 12 months within any 24-month period. The company must demonstrate that there will be no adverse impact from the use. As of the date of this audit, no DECs were used for compliance with a permit exceedance.

Due to the limited availability of emission credits (EC), companies are looking for other ways to comply with the NSR permit offset requirement. One available alternative to ECs is the use of DECs. The program rules allow participants to use DECs to satisfy offset requirements if the user submits the appropriate forms and holds at least one additional year of offsets before continuing operation in each subsequent year. Unlike ECs, DECs cannot be set aside for periods longer than 12 months. To ensure that DECs intended to be used as offsets remain available for use periods longer than 12 months, the Texas Commission on Environmental Quality requires companies to reference the DEC certificate number and amount needed in the special conditions of the associated permit. Any DECs referenced in the special conditions that are not used for offsetting purposes may devalue or expire if such rulemaking is established.

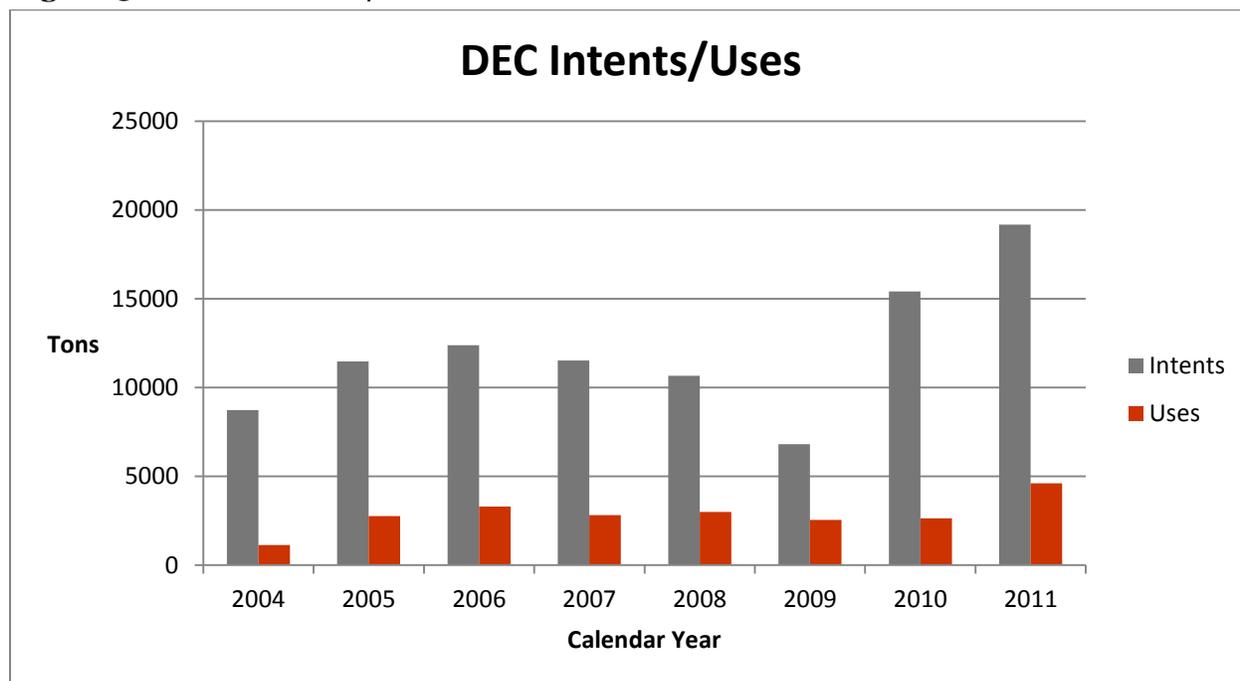
The MECT program rules allow the use of discrete emission reduction credits (DERC) in lieu of allowances at a ratio of 10:1 if they were generated prior to January 1, 2005. Mobile discrete emission reduction credits (MDERC) and any DERCs generated after January 1, 2005 may be used at a ratio of 1:1. An environmental contribution is not required. A site may use up to 250 DERCs per control period. If the site requests more than 250, the amount in excess may be reduced so that the total amount of DERCs used by all sites does not exceed 10,000 DERCs. MDERCs are not subject to the 250 and 10,000 DERC limit. As of 2012, a total of 14,239.8 tons of DERCs were intended (set aside) for use with only 200 actually being used at a ratio of 10:1.

The majority of DEC use is for 30 TAC Chapter 117 compliance. No DEC's have been used for compliance with 30 TAC Chapter 114, and only one company has used DEC's for compliance with 30 TAC Chapter 115. DEC's were mainly used for the following 30 TAC Chapter 117 requirements: Emission specifications (e.g., §§117.1310, 117.2010, 117.3010), the Dallas-Fort Worth System Cap (§117.1120), the East and Central Texas (ECT) System Cap (§117.3020), and the Houston-Galveston-Brazoria System Cap (§117.320).

3.3 INTENTS AND USES

Figure 3-1: *DEC Intents/Uses* shows the amount of DEC's set aside and used on a calendar-year basis from 2004 through 2011 for NO_x, VOC, VOC-hazardous air pollutants (HAP), and carbon monoxide (CO). The year that corresponds with the intent and use amount is based on the date in which the use period ended. The data incorporates the 10% environmental contribution required by rule. Figure 3-1 illustrates that the DEC intents and uses are disproportionate. From 2004 through 2011, a total of 96,155.1 tons were set aside for potential use. Of those set aside, only 22.4% (22,808.5 tons) were used. DEC use remained relatively constant from 2005 through 2011.

Figure 3-1: DEC Intents / Uses



Historically, intent amounts are significantly higher than the actual use amount. The following may account for the disproportion between the DEC's set aside and those actually used.

- In some cases, companies will use a worst-case operating scenario to determine the amount of DEC's to set aside. These scenarios may factor in the loss of pollution control equipment, increased demand, adverse weather conditions, and unforeseen events.
- The equations in 30 TAC §101.376(d)(2) used to determine the DEC's needed to comply with Source Caps and System Caps in Chapter 117 may over-estimate the DEC's that need to be set aside for each use period.

NO_x DEC use from 2004 through 2011 accounts for 99.96% of total use in those years. The use of CO, VOC-HAP, and VOC DECs account for the remaining percentage. There was no particulate matter with an aerodynamic diameter of less than or equal to a nominal 10 microns (PM₁₀) or sulfur dioxide (SO₂) DEC use.

Table 3-1: *DEC Use by Area* shows DEC use from 2004 through 2011 for each area. The data incorporates the 10% environmental contribution required by rule. The majority of DEC use occurs in the ECT area and is associated with NO_x compliance. All VOC-HAP DERCS and VOC DERCS represented were used to satisfy a 30 TAC Chapter 115 VOC requirement. None of the emitted VOCs associated with these DEC uses were HAPs.

Table 3-1: DEC Use by Area

| Pollutant/Area | HGB | DFW | BPA | ECT | WT |
|------------------|-------|-------|-------|----------|-----|
| NO _x | 408.3 | 145.2 | 474.5 | 21,773.0 | 0.0 |
| VOC | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| VOC-HAP | 6.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| CO | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| SO ₂ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PM ₁₀ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

CHAPTER 4: TRADING

4.1 TRADING LIMITATIONS

Trading of discrete emission credits (DEC) is limited by the geographic scope under 30 Texas Administrative Code (TAC) §101.372(f). The geographic scope specifies where DECs may be used and therefore has an impact on the trading between various areas throughout Texas.

Trading of volatile organic compounds (VOC) and nitrogen oxides (NO_x) DECs in Texas is limited by the following:

- DECs generated in an attainment area may only be used in another area designated as attainment or unclassified. This excludes nonattainment and “covered attainment counties” as defined in 30 TAC §115.10(9);
- DECs generated in a nonattainment area may be used in the nonattainment area of generation or an area designated as attainment or unclassified;
- DECs generated in a nonattainment area or a covered attainment county may be used in covered attainment counties (except those generated in El Paso); and
- DECs of carbon monoxide (CO), sulfur dioxide (SO₂), and particulate matter with an aerodynamic diameter of less than or equal to a nominal 10 microns (PM₁₀) must be used in the same metropolitan statistical area in which the reduction was generated.

The trading limitations are set up to protect nonattainment areas from being overwhelmed by increases in emissions without accompanying decreases within the same areas. The intent of the rule is to allow DECs generated in nonattainment areas to move freely to attainment and unclassified areas thereby improving air quality in the nonattainment areas.

DECs that are not set aside for use may be transferable in whole or in part at any time. Trading may be discontinued by the executive director, with commission approval, as a remedy for problems resulting from trading in a localized area of concern.

4.2 AVAILABLE DECS

Table 4-1: *DECs Available in the Bank* shows the amount of DECs available in the registry by area and pollutant. The amounts only include DECs that have not expired, been set aside, or used.

Table 4-1: DECs Available in the Bank

| Pollutant/Area | HGB | DFW | BPA | ECT | WT |
|------------------|----------|---------|---------|----------|-----|
| NO _x | 37,147.9 | 6,709.4 | 6,280.9 | 76,688.6 | 556 |
| VOC | 1,075.3 | 17.0 | 0.0 | 0.0 | 0.0 |
| VOC-HAP | 771.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| CO | 19.7 | 0.0 | 1,727.7 | 0.0 | 0.0 |
| SO ₂ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| PM ₁₀ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

NO_x discrete emission reduction credits (DERC) and mobile discrete emission reduction credits (MDERC) account for the majority of available DEC at 127,382.8 tons. Of this amount, 237.8 tons are MDERCs. The availability of VOC, VOC-hazardous air pollutants (HAP), and CO DERCs is much less at 1,092.3 tons, 771.2 tons, and 1,747.4 tons, respectively. There are no available MDERCs of other pollutants.

4.3 TRADING ACTIVITY

Table 4-2: *Annual NO_x DEC Trading Activity* shows the tons of NO_x DEC transferred on an annual basis. The table distinguishes between intra- and inter-company transfers. The price per ton is based on inter-company transfers. The table shows that 79% of NO_x DEC transfers occurred between sites under common control or ownership (i.e. intra-company transfers). Companies transferring between sites under common ownership or control are not required to list the purchase price on the transfer form, and these transfers are not considered when determining the average price per ton.

Table 4-2: Annual NO_x DEC Trading Activity

| Trade Received In | NO _x Transfers (Tons) | Intra-Company NO _x Transfers (Tons) | Inter-Company NO _x Transfers (Tons) | Average NO _x Price/Ton (in Dollars) | Total Inter-Company Sales |
|-------------------|----------------------------------|--|--|--|---------------------------|
| 2000 | 2,048.0 | 0.0 | 2,048.0 | \$1,049 | \$2,148,000 |
| 2001 | 1,710.0 | 910.0 | 800.0 | \$4,069 | \$3,255,000 |
| 2002 | 40.0 | 0.0 | 40.0 | \$1,100 | \$44,000 |
| 2003 | 4,040.0 | 4,000.0 | 40.0 | \$850 | \$34,000 |
| 2004 | 4,934.0 | 2,134.0 | 2,800.0 | \$767 | \$2,147,000 |
| 2005 | 7,979.6 | 4,655.6 | 161.0 | \$481 | \$77,500 |
| 2006 | 2,727.0 | 2,443.0 | 284.0 | \$276 | \$78,350 |
| 2007 | 4,182.6 | 4,000.0 | 182.6 | \$1,587 | \$289,795 |
| 2008 | 3,132.4 | 2,973.4 | 159.0 | \$9,070 | \$1,442,200 |
| 2009 | 2,256.4 | 2,239.9 | 16.0 | \$11,266 | \$180,250 |
| 2010 | 21,646.7 | 21,483.7 | 163.0 | \$6,529 | \$1,064,250 |
| 2011 | 36,386.4 | 36,210.4 | 176.0 | \$4,781 | \$841,500 |
| 2012 | 4,125.3 | 4,041.3 | 84.0 | \$4,750 | \$399,000 |

The highest average price for NO_x DEC occurred in 2008 and the lowest in 2006. The individual transfer price of NO_x DEC has also varied significantly. The least amount paid for a NO_x DEC was \$70/ton in 2007, and the most was \$25,000/ton in 2009 (data shown in Table 4-3: *NO_x Cost by Area*).

The trading of other pollutants is relatively small when compared to NO_x trading and is therefore not considered in Table 4-2 or 4-3. A total of 1,062.2 tons, or 91%, of all VOC trades were intra-company transfers. The remaining 9% were inter-company transfers. The highest individual transfer price for a VOC DEC was \$12,500/ton in 2000, and the lowest was \$833/ton in 2008. The average inter-company VOC DEC transfer price was \$1,615/ton.

A total of 712.5 tons of VOC-HAP DEC and 288.7 tons of CO DEC have been traded. All CO DEC were traded as intra-company transfers. Of the 712.5 tons of VOC-HAP DEC traded, less than 1% was inter-company transfers. The most and least paid for a VOC-HAP DEC did not vary significantly at \$2,500/ton in 2009 and \$1,300/ton in 2004, respectively. The average inter-company VOC-HAP DEC transfer price was \$1,967/ton.

There has been no trading of SO₂ or PM₁₀ DEC.

4.4 COST

Table 4-3: *NO_x DEC Cost per Area* shows the minimum and maximum dollar amounts and averages for DEC transfers in the Houston-Galveston-Brazoria (HGB) and Dallas-Fort Worth (DFW) areas. The prices are based on trades from 2000 through 2012.

Table 4-3: NO_x DEC Cost by Area

| Area ¹ | Min Price/Ton (In Dollars) | Max Price/Ton (In Dollars) | Average Price/Ton (in Dollars) | Total Inter-Company Sales |
|-------------------|-------------------------------|-------------------------------|-----------------------------------|---------------------------|
| HGB | \$70 | \$14,000 | \$1,645 | \$11,340,145 |
| DFW | \$1,710 | \$25,000 | \$11,391 | \$660,700 |

¹ No inter-company transfers have occurred in areas other than HGB and DFW.

The Texas Commission on Environmental Quality does not regulate DEC prices. The cost associated with DEC in Table 4-3 is attributed to a number of factors including DEC availability, demand, ownership, applicable regulations specific to each area, and alternative compliance methods.

The highest NO_x DEC prices are found in the DFW area. There are 7 companies in the DFW area that own NO_x DEC. One company owns 70% of these available DEC and was involved in all of the NO_x DEC inter-company transfers.

The prices for NO_x DEC in the HGB area are significantly lower than those seen in the DFW area. There are 27 companies in the HGB area that own NO_x DEC. One company owns 96% of these available DEC and has not traded to other companies. There are 6 times the amount of available NO_x DEC in the HGB area than in the DFW area.

There were no prices associated with any of the DEC generated in the East and Central Texas, Beaumont-Port Arthur, and West Texas areas.

CHAPTER 5: PROGRAM COMPLIANCE

Participation in the discrete emission credit (DEC) program is completely voluntary; however, program rules must be followed in order to generate and use DEC's for compliance. Historically, non-compliance is minimal.

The majority of the issued violations are associated with the submittal of late DEC-2 and DEC-3 forms. One violation was issued for failing to acquire additional DEC's during a use period after it was determined that the user did not possess sufficient DEC's for the period. These violations were resolved by either adjusting the use period, submitting the form, or obtaining the necessary DEC's. No violations are issued for the late submittal of DEC-1 forms. Instead, these forms are denied.

As allowed under 30 Texas Administrative Code §101.376(a)(6) and (d)(3), companies may submit a late DEC-2 form in response to an Electric Reliability Council of Texas-declared emergency, in the case of an emergency, or an exigent circumstance. The company must include a complete description of the situation in order for the Texas Commission on Environmental Quality to accept late forms.

All other DEC-2 forms must be submitted by the due dates specified in the rule. If the form is submitted late, the user can revise the form and adjust the use period to meet the submittal requirements. Most companies that submit late forms ensure compliance with due dates by revising the use period.

CHAPTER 6: FLOW CONTROL

Discrete emission reduction credit (DERC) flow control for the Dallas-Fort Worth (DFW) area was adopted on December 10, 2008. Flow control is an enforceable mechanism that limits the use of nitrogen oxides (NO_x) DERCs to a level consistent with attainment and maintenance of the 1997 eight-hour ozone National Ambient Air Quality Standard. This mechanism:

- ensures that the discrete emission credit (DEC) program does not adversely impact attainment;
- prevents emission spiking; and
- minimizes DERC use and the amount modeled in the state implementation plan (SIP).

The flow control equation in 30 Texas Administrative Code (TAC) §101.379(c)(2)(A) limits the daily use of DERCs in the DFW area. Each year, the Texas Commission on Environmental Quality (TCEQ) determines the flow control limit for the upcoming year and makes it available to the public. After the limit is set and all DERC use applications have been submitted, the TCEQ conducts a review and apportions the number of DERCs approved for use in the upcoming calendar year. The apportioned daily limits cannot be exceeded.

The use of the following types of DEC are not subject to flow control limits:

- MDERCs;
- DERCs for pollutants other than NO_x; and
- NO_x DERCs used in response to Electric Reliability Council of Texas-declared emergencies.

From 2009 through 2012, the number of companies using DERCs for compliance has declined from four to two. One company, operating under a system cap requirement, accounts for 97% of the DERCs set aside for use in the DFW area. Of the DERCs set aside by this company, around 2% are used on an annual basis.

The flow control limit for a particular year is the sum of the following:

- 2009 flow control limit (3.2 tons per day);
- the estimated emission reductions associated with fleet turnover that are not used to satisfy contingency requirements in the DFW attainment demonstration SIP; and
- the unused DERCs generated on or after March 1, 2009.

Prior to 2013, the reductions associated with fleet turnover were determined using the United States Environmental Protection Agency's (EPA) MOBILE6 model estimates. In 2010, EPA released a new model to determine emissions from mobile sources known as MOVES2010a. MOVES2010a was used to develop the most recent DFW attainment demonstration SIP revision and used to establish flow control limits for 2013.

CHAPTER 7: IMPACTS ON AIR QUALITY

The discrete emission credit (DEC) program directly impacts air quality when DECs are generated and used by companies.

7.1 ATTAINMENT

All available DECs in the bank that are not designated for use are considered in the model and therefore taken into account for purposes of demonstrating attainment. The DECs modeled for each area are limited by a number of factors including:

- industry growth projections;
- Mass Emissions Cap and Trade (MECT) program discrete emission reduction credit (DERC) use restrictions in the Houston-Galveston-Brazoria (HGB) area; and
- Dallas-Fort Worth flow control limits.

Growth projections used in the state implementation plan do not restrict DEC use.

7.2 HAZARDOUS AIR POLLUTANTS

Volatile organic compound-hazardous air pollutants (VOC-HAP) and VOC DERCs were used for compliance with a VOC emission specification for coating applications listed under 30 Texas Administrative Code §115.421(a)(9)(A)(iii) from 1999 through 2011. The emissions inventory (EI) data shows that VOC-HAP emissions from this source remained relatively consistent between periods of DEC use and non-use. Because no increases in VOC-HAP emissions were observed throughout these periods, no adverse impacts to public health or the environment are believed to have occurred as a result of the DEC program.

Table 7-1: *VOC-HAP Emissions* shows the minimum and maximum reported amounts of VOC-HAP emissions for each period from the source that used VOC-HAP DERCs for compliance. The annually reported VOC-HAP emissions were averaged for each period.

Table 7-1: VOC-HAP Emissions

| Period (Calendar Years) | Min Annual VOC-HAP Emissions (tpy) | Max Annual VOC-HAP Emissions (tpy) | Average Annual VOC-HAP Emissions for Each Period |
|-------------------------|------------------------------------|------------------------------------|--|
| 1990-1998 ¹ | 0.72 | 2.717 | 1.246 |
| 1999-2011 ² | 0.58 | 1.677 | 1.082 |

¹ No EI data is available for 1991. No VOC-HAP related DERC use occurred during this period.

² Period of DERC use.

7.3 ENVIRONMENTAL CONTRIBUTION

A benefit or improvement to air quality occurs when companies reduce the amount of emissions entering the air shed and generate DECs. Though these DECs may be used at some point in the future, program participants are required to retire 10% of any DECs to be used. Since program inception, approximately 2,300 tons of DECs were retired as an environmental contribution.

7.4 MECT USE

A benefit to air quality occurs when DERCs, generated prior to January 1, 2005, are used in lieu of MECT allowances. When these DERCs are used, a conversion ratio is applied. That ratio is 10:1, (i.e., 10 DERCs to 1 allowance).

The ratio was implemented because, unlike allowances, DERCs do not devalue. The benefit to air quality for using DERCs in lieu of MECT allowances is that the DERC amount loses 90% of its value (whereas the amount would remain the same if used outside the MECT program). As of 2012, a total of 14,239.8 tons of DERCs were set aside for use with only 200 DERCs actually being used. The use of these 200 DERCs allowed the company to emit 20 tons of NO_x.

CHAPTER 8: RECOMMENDATIONS AND ANALYSIS

The discrete emission credit (DEC) program is a proven benefit to air quality. Since program inception, over 100,000 tons of emissions were removed from the Texas air shed. An analysis of the trends in DEC use indicates that only a small portion of the available bank is used. Unless participation in this program increases, then this trend is anticipated to continue.

The following highlights issues and provides some recommendations to improve the DEC program.

8.1 AWARENESS

While accessibility to the program has increased, there are still companies unfamiliar with the program and its benefits. It may be beneficial to contact stakeholders to gather comments, identify concerns, and find ways to increase program activity. Training for companies throughout Texas would also increase program awareness and participation.

The data available to the public plays an important role in determining the market price for DEC. Unfortunately, the Texas Commission on Environmental Quality's (TCEQ) external registry does not provide the information needed in a clear format. Updates to the registry would allow companies to find data easily, such as current prices and available DEC. This registry update may also help increase generation, use, and prevent over-pricing.

8.2 CUSTOMER ACCESSIBILITY

In 2004 and 2005, the average price per ton was at a historical low and correlated to the highest trading activity. A look at 2010 and 2011 shows the complete opposite. The average price per ton was nearly 10 times the amount in 2004 and 2005, and trading activity was at least 15 times lower.

The TCEQ does not regulate prices, but it is necessary to provide companies with easy access to available DEC, current market prices, and potential sellers/buyers. The registry could be updated to provide easier access to this data. Access to this data will allow buyers to shop around when purchasing DEC and could help stabilize market prices.

8.3 NEW NONATTAINMENT DESIGNATIONS

On December 9, 2011, the United States Environmental Protection Agency sent a letter to the governor indicating that the DFW area would be expanded to include Wise County. With this change, the current program rules may impact the generation and use of DEC in Wise County.

Companies in Wise County may need to use DEC to comply with future rulemaking. The TCEQ should clarify or revise the rules to allow companies in Wise County to generate and use DEC without impacting air quality in the DFW area.

8.4 FLOW CONTROL IN THE DFW AREA

The flow control mechanism utilized in the DFW area may prohibit discrete emission reduction credit (DERC) use in the future as mobile source fleet turnover reductions decrease. With cleaner vehicles on the road each year, fleet turnover reductions decrease over time. Since these reductions are directly tied to the flow control equation, any decrease in fleet turnover reductions will affect the limit set each year.

Flow control in the DFW area should be revised to ensure the continued use of DERCs in the future while ensuring that it supports attainment and maintenance of the ozone National Ambient Air Quality Standard. If possible, any new flow control mechanism should not be associated with any specific attainment demonstration state implementation plan or depend on reductions that are projected to decrease over time.

8.5 MOVEMENT OF DECS

It is difficult to determine the movement of DECs from one area to another. Each site and certificate is associated with a county, but the database does not track DEC transfers or use from one location to another. The database should be updated to track trading and use across areas in Texas.

8.6 GUIDANCE

The DEC program rules are made up of nine sections. Companies have sought clarification and guidance from banking staff on many areas of the program rules. It is important that participants understand and utilize the program to ensure its success and air quality benefits. The TCEQ should create a guidance document and make it available to companies.

CHAPTER 9: RULE HISTORY

Rule 96-158-101-AI:

The program rules were adopted on December 3, 1997 after promulgation in consultation with the United States Environmental Protection Agency (EPA) to ensure consistency with federal guidance for open market trading programs. The rules provided incentive for companies and small businesses to achieve reductions for Reasonably Available Control Technology (RACT) requirements early and generate marketable discrete emission credits (DEC) for the period before the RACT reductions were mandatory.

Rule 1998-089-101-AI:

As part of the consolidation of the emission banking and trading rules in 30 Texas Administrative Code (TAC) Chapter 101, the program rules were moved to Subchapter H, Division 4, through amendments adopted on December 6, 2000. The rules were revised for consistency between the rules governing emission credits (EC) and DECs. The revisions address EPA concerns on how reductions are calculated as surplus and that banked DECs are not relied upon in the state implementation plan (SIP). The amendments limit discrete emission reduction credit (DERC) use in the Houston-Galveston-Brazoria (HGB) area to 10,000 tons per year and clarify that the EPA must approve the use of a reduction of one pollutant to meet the requirements of another pollutant. The amendments also state that only DECs that occurred after the most recent year of emissions inventory used for SIP determinations could be certified. The facility's emissions must have been represented in the attainment demonstration SIP as well. The amendments also prohibited DECs from being recertified as any other type of credit in Subchapter H.

Rule 2001-017-101-AI:

Amendments to the program rules were adopted on September 26, 2001 to provide flexibility and to clarify the type of activities that can generate DECs. The amendments also clarify that temporary shutdowns cannot generate DECs. The amendments add two steps to devaluation, in respect to allowances, of banked DECs and extend the date in which DERCs are devalued to a ratio of 10 DERCs to 1 allowance.

Rule 2001-063-101-AI:

Amendments were adopted on March 13, 2002 to implement Senate Bill 1561 (77th Legislature, 2001). This legislation allows surplus emission reductions achieved outside the United States to satisfy emission reduction requirements in Texas by allowing reductions of one nonattainment pollutant as a substitute for reductions in another nonattainment pollutant under certain circumstances.

Rule 2002-044-101-AI:

A reorganization of the program rules was adopted on January 3, 2003 to make the structure parallel with the EC rules. The rules were amended to address EPA concerns about quantification protocols for measuring baseline emissions for generating DECs and require signed DEC generation forms with supporting documentation. The amendments also prohibited the use of DECs generated in West Texas in East and Central Texas; the generation of DECs by shifting activity; the generation from reductions funded by state, federal, or local programs; the generation by facilities applicable to the Mass Emissions Cap and Trade (MECT) program; and

the generation from shutdowns of facilities that were not represented in the emissions inventory used in the most recent SIP. The amendments limit exceedences of permitted limits to 10 tons of nitrogen oxides per facility.

Rule 2003-064-101-AI:

The commission adopted amendments on November 10, 2004 to address the issue of DERC allocation in the HGB area and specify that up to 250 tons of DERCs will be approved per use and requests for more than 250 tons can be reduced to as low as 250 such that the area-wide use does not exceed 10,000 tons per year. The amendments also address the following for MECT compliance: the Form DEC-2 must be received by October 1 of the control period that DEC2s are to be used; an original DEC certificate must accompany the DEC-2 form; and the DEC-3 form must be submitted by March 31 along with the site's annual compliance report. The commission amended the DERC calculation equation to ensure that no credit is awarded for curtailment of activity and that incidental increases of other criteria pollutants or ozone precursors resulting from mobile discrete emission reduction credit generation are offset.

Rule 2005-054-101-PR:

The amendments prohibit future generation of DEC2s from permanent shutdowns and allow only DEC2s generated from permanent shutdowns before September 30, 2002 to remain available for use until September 8, 2010. The amendments also require EPA approval for individual transactions involving emission reductions generated in another state or nation as well as those transactions from one nonattainment area to another or from attainment counties into nonattainment areas. The amendments include program auditing provisions and reporting requirements to satisfy the EPA's requirements for open market trading programs and require the DEC-1 and DEC-2 form to include a waiver to federal statute of limitations defense for generators and users of DEC2s. The amendments also provide a 45-day period for the EPA to review a quantification protocol.

Rule 2006-053-101-PR:

On July 25, 2007, minor amendments were adopted to the program rules to be consistent with renumbering revisions made to 30 TAC Chapter 117.

Rule 2008-011-101-EN:

On December 10, 2008, amendments were adopted to the program rules to create an enforceable mechanism to limit the use of DERCs in the Dallas-Fort Worth (DFW) 1997 eight-hour ozone nonattainment area to a level consistent with the attainment and maintenance of the National Ambient Air Quality Standard. The amendments allow the executive director to approve the daily amount of DERCs used in the DFW area for any calendar year. The flow control rule requires the executive director to apportion DERCs on a case-by-case basis if the amounts requested exceed the set limit. The amendments also require participants to submit DEC-2 forms for use in the DFW area by August 1 prior to the year in which the DERCs are to be used (except in the case of emergencies declared by the Electric Reliability Council of Texas). The amendments also state that DEC-2 forms may be considered, if late, as long as the flow control limit has not been reached.