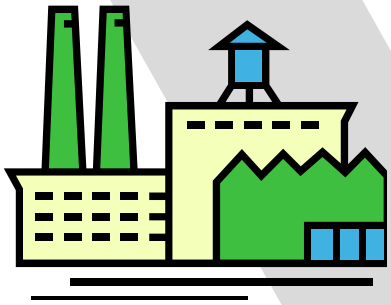
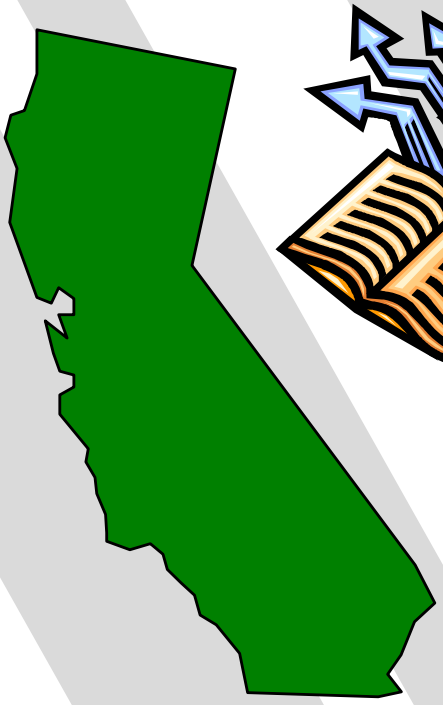
# Emission Reduction Offset Transaction Costs Summary Report for 2008

May 2011



Stationary Source Offsets



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**AIR RESOURCES BOARD**

# Emission Reduction Offset Transaction Costs Summary Report for 2008

May 2011

Prepared by

Project Support Section
Project Assessment Branch
Stationary Source Division

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## EXECUTIVE SUMMARY

### BACKGROUND

Since 1993, Health and Safety Code Sections 40709 and 40709.5 have required local air quality management districts/air pollution control districts (AQMDs/APCDs or districts) to collect information regarding the cost of offset transactions from stationary source owners who purchase offsets as required by district New Source Review (NSR) programs. State law also requires districts to adopt emission reduction credit banking programs. Districts are required to collect specific information about offset transactions including the price paid in dollars per ton, the pollutant traded, the amount traded and the year of the transaction. Districts are also required to annually publish this information without disclosing the identity of the parties involved with the transaction. Districts that are not required to submit a plan for attainment of state ambient air quality standards and those that also meet federal air quality standards are exempt from such requirements.

### SUMMARY OF 2008 DATA

The Air Resources Board (ARB) has compiled information regarding NSR offset transactions collected from all 35 districts and assembled it into this report. This report summarizes statewide emission reduction offset transactions in California for the year 2008. Districts reported to ARB regardless of whether they had any offset transactions or whether the reporting requirements apply. A total of 666 transactions were reported to have taken place in California in 2008. In this report, information covering 35 subsidiary transactions was not included because there were no associated costs. In addition, information covering 50 particulate matter with aerodynamic diameter less than 10 microns ($PM_{10}$) transactions from South Coast Air Quality Management District (SCAQMD) were included but not averaged with the rest of the state, due to permitting issues specific to this jurisdiction that have resulted in significantly higher $PM_{10}$ offset costs in recent years (Please see Tables 10-11 and Chart 4 for a separate analysis of SCAQMD $PM_{10}$ data). Of the remaining 581 transactions, 215 were for oxides of nitrogen (NOx), 188 were for hydrocarbons (HC), 93 were for $PM_{10}$, 3 were for carbon monoxide (CO), and 82 were for sulfur oxides (SOx). These transactions generally represent trades of offsets that are valid for the lifetime of the permitted source. This is in contrast to other types of credits that are valid for much shorter time frames (e.g., Regional Clean Air Incentives Market (RECLAIM) trading credits that are valid for one year).

Table 1 presents the average, median, high, and low costs for NOx, HC, $PM_{10}$, CO, and SOx offset transactions reported by 12 districts in 2008. Mean values in Table 1 represent the statewide average cost of a transaction, where each transaction is weighted equally in the calculation regardless of the number of tons traded per transaction. A specific breakdown of all transactions by district is presented in Table 2 (see page 10).

**Table 1**
**2008 Prices Paid in Dollars per Transaction per Ton of Offsets**

| | NOx | HC | $PM_{10}$ | CO | SOx |
|---|---|---|---|---|---|
| **Average** | $47,143 | $43,435 | $40,025 | $6,198 | $65,921 |
| **Median** | $47,500 | $34,000 | $51,879 | $5,593 | $36,500 |
| **High** | $216,216 | $344,828 | $77,000 | $12,500 | $421,918 |
| **Low** | $5,593 | $2,500 | $400 | $500 | $3,000 |

The following districts reported offset transactions: Bay Area AQMD, Butte County AQMD, Colusa County APCD, Feather River AQMD, Imperial County APCD, Placer County APCD, Sacramento Metro AQMD, San Diego County APCD, San Joaquin Valley Unified APCD, Santa Barbara County APCD, South Coast AQMD, and Ventura County APCD.

## DATA TRENDS

ARB has collected and reported statewide data on all offset transactions since 1993. The number of districts reporting transactions each year has stayed relatively the same, between 11-16 districts. In 2008, 12 districts reported transactions. The number of reported transactions has increased through the years, with the exemption of 2002 to 2004. 30 transactions were reported in 1993 and 666 transactions were reported in 2008.

Summary Charts A, B, and C illustrate the trends that have occurred during the past sixteen years for the average transaction cost per ton of the three most actively traded criteria pollutants (NOx, HC, and $PM_{10}$).

Summary Chart A illustrates that the average transaction cost of NOx emissions credits remained relatively constant between 1993 and 2000, at approximately $18,000 per ton. By 2003, the cost per transaction more than doubled to approximately $40,000 per ton. The cost fluctuated between 2004 and 2008, peaking at $80,000 per ton in 2006 before leveling off in 2007 and 2008 to approximately $40,000 per ton.

Summary Chart B shows that the average transaction cost of HC emission credits fluctuated slightly between 1993 and 2006, averaging approximately $10,000 per ton. The average cost more than doubled in 2007 to approximately $25,000 per ton, and increased again in 2008 to over $40,000 per ton.

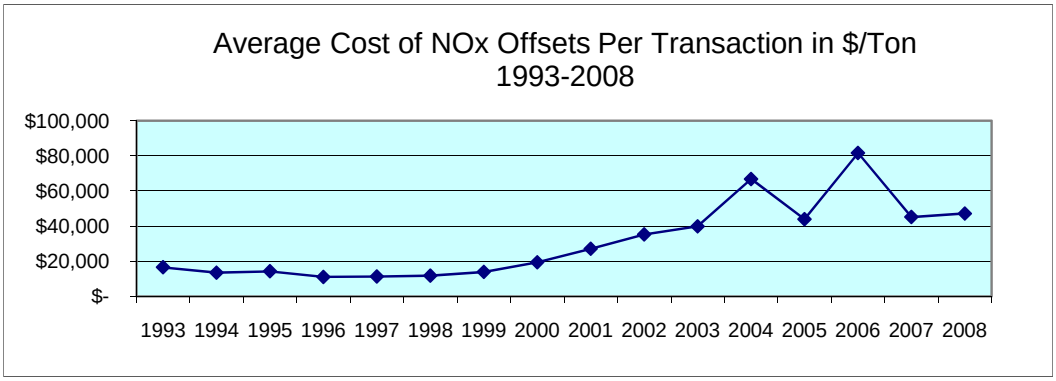
Summary Chart C shows that the average transaction cost of $PM_{10}$ emission credits stayed relatively constant until 2001, when it more than doubled to approximately $50,000 per ton. In 2005, it climbed to approximately $90,000 per ton but experience wide fluctuations after that ending with approximately $40,000 per ton in 2008.

Summary Charts D and E illustrate the trends for the number of transactions and the number of tons traded during the past sixteen years for the three most traded pollutants (NOx, HC, and $PM_{10}$). Summary Chart D illustrates that the number of transactions for all three pollutants generally increased between 1993 and 2001, decreased between 2002 and 2004, and started increasing again in 2005 for HC and in 2006 for $PM_{10}$ and NOx. However, in 2007 and 2008, the number of reported $PM_{10}$ transactions fluctuated. Over the years, HC transactions had consistently outnumbered those of other pollutants, except in 2008, when the number of NOx transactions outnumbered both HC and PM.

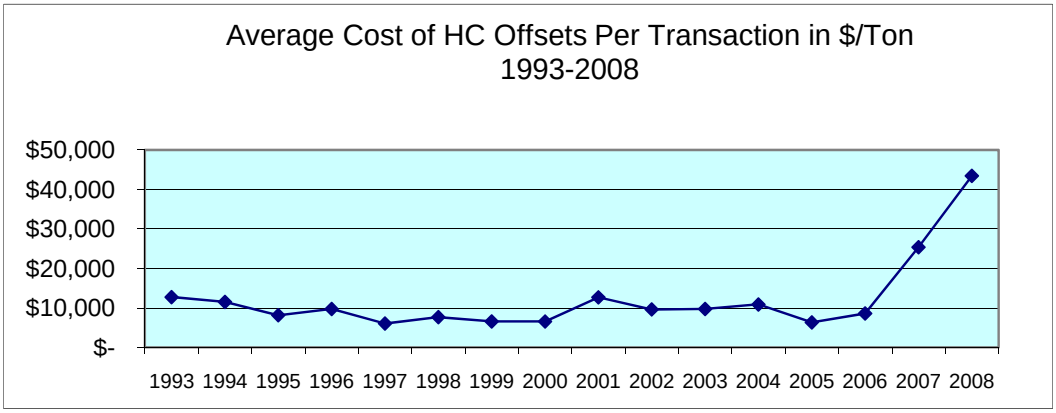
Summary Chart E shows that the number of tons traded by pollutant has remained fairly constant over the years, with the exception of a sharp increase in 2000 and 2001. In 2008, the number of tons traded remained about the same as previous years.

Further information on California offset transactions occurring from 1999 through 2008 can be found at ARB's Emission Reduction Credit Offsets webpage at: www.arb.ca.gov/nsr/erco/erco.htm.

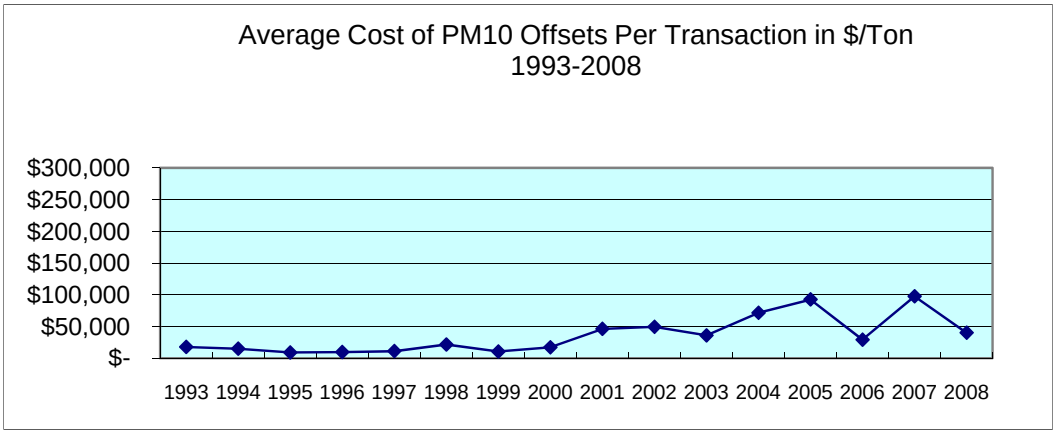
**Summary Chart A**




**Summary Chart B**

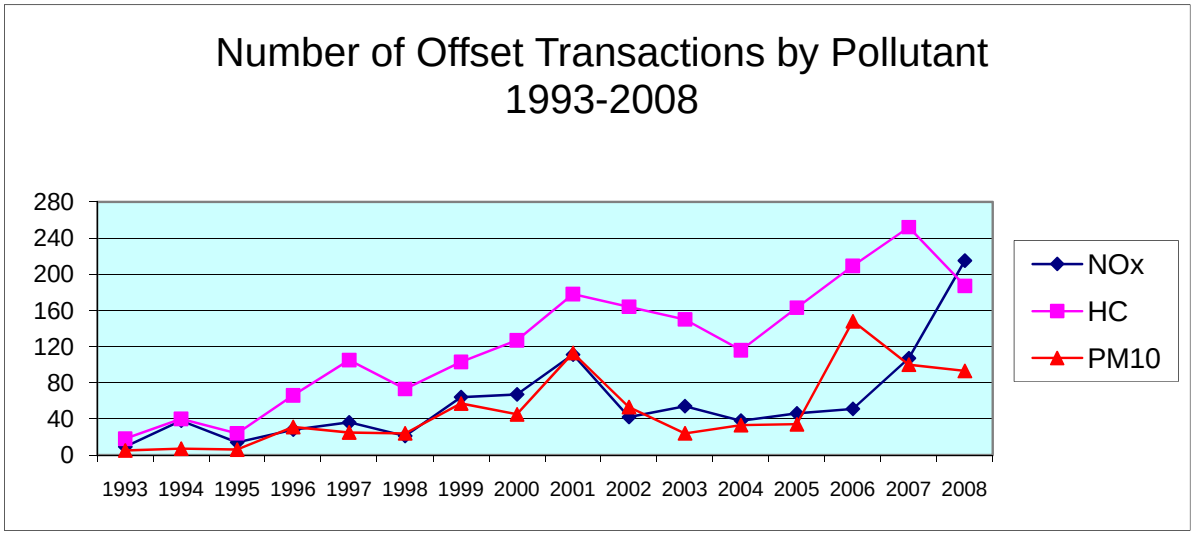



**Summary Chart C ***

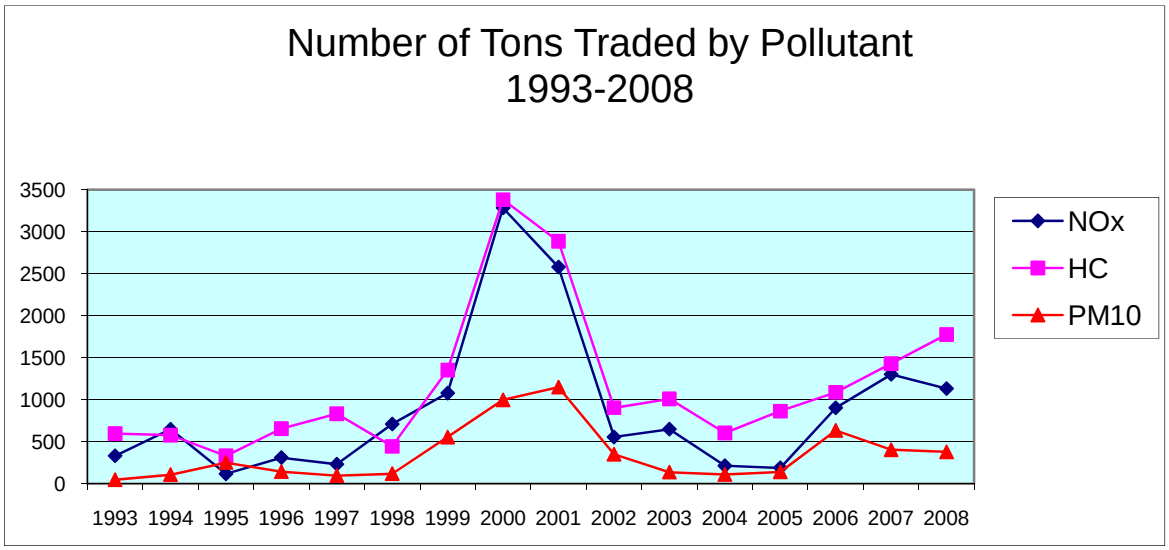



∗Does not include South Coast $PM_{10}$ data.

**Summary Chart D ***




**Summary Chart E ***




*Does not include South Coast $PM_{10}$ data.

## INTRODUCTION

Section 40709.5(e) of the Health and Safety Code mandates that local air quality management and air pollution control districts (districts), that are not exempted under Health and Safety Code Section 40709, collect information regarding the cost of offsets from stationary source owners who purchased offsets as required by district NSR programs. This report presents a compilation of the transactions in California from January 1 through December 31, 2008, as supplied by the districts.

California's NSR program is designed to accommodate industrial growth while protecting public health and the environment. The use of emission reduction credits that are purchased from the open market to offset emissions from new or modified sources gives industry the flexibility to mitigate emissions in the most cost-effective manner.

This report summarizes the prices paid for offsets. The report also presents a summary of the number and type of transactions taking place in California's Emission Credit market. This report does not attempt to analyze the cost data collected or attempt to predict future prices or offset availability. As required by Section 40709.5(e), this report does not contain information that identifies the parties involved in the transactions.

Trading credits from the South Coast Air Quality Management District's Regional Clean Air Incentives Market (RECLAIM) program are not included because they are not directly comparable to emission reduction credits used to satisfy NSR requirements. Also, tables and calculations do not include data on the cost of leasing credits from the SEED (Solutions for the Environment and Economic Development) program of the Sacramento Metropolitan Air Quality Management District.

## NEW SOURCE REVIEW AND CALIFORNIA'S AIR QUALITY MANAGEMENT PROGRAM

The responsibility for controlling emissions from stationary sources of air pollution rests with California's local districts. The California Clean Air Act requires districts to adopt a NSR program that results in no net increase in emissions from new and modified stationary sources that have the potential to emit over a specified amount of nonattainment pollutants or their precursors. As part of NSR, stationary sources are required to apply the Best Available Control Technology (BACT) to reduce emissions. In some cases, stationary sources must provide emission reduction offsets to mitigate the impact of emissions that remain from the source after the application of BACT. These emission reduction offsets are sometimes called emission reduction credits. To be used as mitigation, offsets must meet certain criteria: the emission reductions must be surplus to any federal, State or local laws or regulations and must be real, enforceable, quantifiable and permanent. California's offset requirements, reflected in district rules, generally apply to more permitting actions than federal offset requirements and are also triggered at smaller facilities.

## EMISSION REDUCTION CREDIT BANKING AND TRADING

Emission reduction credit banking is defined as "a system... by which reductions in emissions may be banked or otherwise credited to offset future increases... or a calculation method which enables internal emission reductions to be credited against increases" (Health & Safety Code Section 40709.5). Once created, emission reduction credits may be banked with the district for future use by the source that generated them, used concurrently to offset new projects, or sold to other sources for use as mitigation.

The most common method of creating emission reduction credits is to control or curtail the emissions from an existing stationary source. Control of emissions is generally from the application of emission control technology beyond that which is required by any regulation or rule. Curtailment could be from a change in operating hours of a source, or through the shutdown of a source. Another method of creating emission reduction credits is to reduce emissions from mobile sources beyond what is required. Additionally, credits may be generated from the reductions in emissions from agricultural operations, for example from curtailing field burning of agricultural wastes or from using agricultural water pumps equipped with cleaner engines. Credits must be generated pursuant to district rules and regulations, and must be reviewed and certified by the district. The legal requirements of credit generating programs are specified in the Health and Safety Code and further defined by rules in place in each district.

## REQUIREMENTS TO REPORT COST OF OFFSETS

Sections 40709 and 40709.5 of the Health and Safety Code requires districts that are not exempted to establish banking programs for emission reduction credits and establishes a mechanism for districts to collect data regarding the price paid for offsets. The text of Health and Safety Code Sections 40709 and 40709.5 and Government Code Section 6254.7 is in Appendix A. The following is a summary of the requirements of those sections of the Government Code and the Health and Safety Code:

- Section 6254.7(f) of the Government Code authorizes districts to obtain information on the cost of offsets from applicants.
- Section 40709 of the Health and Safety Code makes an emission reduction banking system mandatory in every district except any district that is not required to submit a plan for attainment of State ambient air quality standards and if
  - The district is not in a federal nonattainment area for any national ambient air quality standard unless the sole reason for nonattainment is air pollutant transport and
  - A source has not petitioned the district to establish a banking system.
- Section 40709(c) of the Health and Safety Code specifies that emission reductions proposed to offset simultaneous emissions increases within the same stationary source need not be banked prior to use as offsets.

- Section 40709.5(e) requires that any district that has established a banking system is required to develop a program that provides the following information as public record:
  - Annual publication of the costs in dollars per ton, of emission offsets purchased for new and modified emission sources, excluding the identity of the parties involved.
  - The annual publication shall specify for each offset purchase transaction:
    - The date of the offset transaction (year only)
    - The amount of offset purchased by pollutant
    - The total cost, by pollutant of the offsets purchased
  - Each application for use of emission reductions banked shall provide sufficient information, as determined by the district, to perform the cost analysis.

DATA COLLECTION PROCESS

In 1994, a subcommittee of the California Air Pollution Control Officers Association (CAPCOA) Engineering Managers worked with ARB to develop a uniform reporting form for collecting data from the districts for this report. The reporting form was designed to transmit information to ARB without disclosing the names of the transaction parties.

The form distinguishes between the methods of generating emission reduction credits. Possible generating methods include stationary, mobile, and agricultural offsets. The prices paid for credits may be affected by the type of source from which reductions are obtained. This is particularly true with mobile sources that have a finite life span.

The lifespan of the credit may significantly affect the price paid for offsets. The form allows the district to identify length of useful life if the credit life is limited. Mobile source credits and lease agreement transactions can be distinguished using this section of the form.

The reporting form records the type of payment agreement, such as direct sale of the credit, barter for services or equipment, a transaction between subsidiary parties, or an assets transfer within a company. In each case, the type of transaction agreement may affect the price of the transaction.

Knowing these facts about each transaction will aid in analysis of market values for credits by interested parties. A copy of the reporting form and instructions is in Appendix B and Glossary of Terms is located in Appendix C.

## DESCRIPTION OF 2008 DATA

The statewide average, median, high, and low costs for NOx, HC, $PM_{10}$, CO, and SOx offsets reported in 2008 were presented earlier in Table 1 (see page 2).

Table 2 presents the 666 reported pollutant transactions that took place in California in 2008, listed by individual districts.

There are 85 transactions listed in Table 2 that are not used in calculating the results of Tables 4 through 13, and Charts 1 through 5. As discussed earlier in this report, 35 were trades that were subsidiary transactions for which there are no associated costs and 50 were $PM_{10}$ transactions from South Coast Air Quality Management District (SCAQMD). In the SCAQMD, the availability of ERCs on the open market is scarce and in some cases very expensive, especially for $PM_{10}$. Since 2000, the cost of $PM_{10}$ ERCs has increased significantly relative to the drop in supply. According to information from SCAQMD, the $PM_{10}$ ERC supply has dropped by over 50 percent since 2000 and the cost of those ERCs has increased by over 3,000 percent. Because this degree of offset demand-supply imbalance is a situation unique to the SCAQMD, ARB staff excluded these transactions, because they would skew statewide average values. Although SCAQMD $PM_{10}$ data was not incorporated in the primary analysis, a separate analysis for SCAQMD $PM_{10}$ data is provided in Tables 10 and 11 and Chart 4.

Transactions which are not included, leased, or valid in specific quarters are identified as such in the “Notes” column of Table 2. Leased and quarterly transaction costs are annualized for inclusion in the average cost figures presented throughout the report. The methodology used to annualize transactions can be found on page 52.

The majority of the transactions that are reported are emission reductions from stationary sources. Of the 581 cost transactions, 215 were for NOx, 188 were for HC, 93 were for $PM_{10}$, 3 were for CO, and 82 were for SOx. Districts reported to ARB regardless of whether they had any offset transactions. Table 3 lists the districts that reported no transactions in 2008.

Tables 4, 6, 8, 10 and 12 present information by district for NOx, HC, $PM_{10}$, CO and SOx, respectively. Each table lists the cost per ton of pollutant, the total tons of pollutant traded, and additional explanatory notes. The price paid per ton was calculated by dividing the cost of the transaction by the number of tons traded in that transaction. The tables were grouped by district since offset markets and costs per ton may vary from district to district. Districts are reported alphabetically, and the districts' transactions are ordered by increasing cost per ton of pollutant.

Tables 5, 7, 9, 11 and 13 provide the average, the median, and the high and low of the price paid per transaction per ton of pollutant. These tables exclude asset transfer, subsidiary, barter, and other non-monetary transactions where there were no associated costs.

**Table 2**
**2008 California**
**Emission Reduction Credit Transaction Costs By District**
**Reported in Total Tons Traded**

| District | Pollutant | $/ton | Tons | Notes |
|---|---|---|---|---|
| **Bay Area** | HC | $10,000 | 1.50 | |
| Total of 17 Transactions | HC | $10,500 | 9.50 | |
| | HC | $11,500 | 0.40 | |
| | HC | $11,500 | 0.90 | |
| | HC | $11,500 | 1.00 | |
| | HC | $11,500 | 5.80 | |
| | HC | $11,500 | 16.26 | |
| | HC | $12,500 | 4.00 | |
| | HC | $12,600 | 10.51 | |
| | HC | $12,600 | 15.52 | |
| | HC | $12,600 | 15.86 | |
| | HC | $12,600 | 19.72 | |
| | HC | $12,600 | 23.40 | |
| | HC | $13,000 | 8.50 | |
| | HC | $13,026 | 38.00 | |
| | HC | $17,411 | 8.50 | |
| | NOx | $0 | 9.10 | Not Included |
| **Butte County** | CO | $12,500 | 69.00 | |
| Total of 4 Transactions | HC | $12,500 | 175.00 | |
| | NOx | $20,000 | 70.00 | |
| | PM10 | $25,000 | 67.00 | |
| **Colusa County** | HC | $15,000 | 0.86 | |
| Total of 45 Transaction | HC | $15,000 | 2.29 | |
| | HC | $15,000 | 6.59 | |
| | HC | $15,000 | 0.21 | |
| | HC | $15,000 | 0.54 | |
| | HC | $15,000 | 0.14 | |
| | HC | $15,000 | 1.78 | |
| | HC | $15,000 | 1.03 | |
| | HC | $15,000 | 5.58 | |
| | HC | $15,000 | 0.71 | |
| | HC | $15,000 | 6.03 | |
| | NOx | $20,000 | 3.39 | |
| | NOx | $20,000 | 9.06 | |
| | NOx | $20,000 | 1.28 | |
| | NOx | $20,000 | 0.94 | |
| | NOx | $20,000 | 2.54 | |
| | NOx | $20,000 | 0.11 | |
| | NOx | $20,000 | 0.24 | |
| | NOx | $20,000 | 0.08 | |
| | NOx | $20,000 | 1.04 | |
| | NOx | $20,000 | 5.74 | |
| | NOx | $20,000 | 0.76 | |

| | | | | |
|---|---|---|---|---|
| Colusa County (Cont'd) | NOx | $20,000 | 6.68 | |
| | PM10 | $12,000 | 25.48 | |
| | PM10 | $15,000 | 1.58 | |
| | PM10 | $15,000 | 1.39 | |
| | PM10 | $15,000 | 7.53 | |
| | PM10 | $15,000 | 0.91 | |
| | PM10 | $15,000 | 8.09 | |
| | SOx | $4,000 | 4.44 | |
| | SOx | $5,000 | 0.71 | |
| | SOx | $5,000 | 1.91 | |
| | SOx | $5,000 | 0.35 | |
| | SOx | $5,000 | 0.81 | |
| | SOx | $5,000 | 0.29 | |
| | SOx | $5,000 | 0.28 | |
| | SOx | $5,000 | 1.54 | |
| | SOx | $5,000 | 0.59 | |
| | SOx | $5,000 | 0.04 | |
| | SOx | $5,000 | 0.02 | |
| | SOx | $5,000 | 0.39 | |
| | SOx | $5,000 | 0.22 | |
| | SOx | $5,000 | 1.21 | |
| | SOx | $5,000 | 0.16 | |
| | SOx | $5,000 | 1.41 | |
| **Feather River** Total of 6 Transactions | HC | $9,000 | 0.54 | |
| | HC | $12,000 | 6.83 | |
| | NOx | $12,000 | 1.14 | |
| | NOx | $16,000 | 4.25 | |
| | PM10 | $3,000 | 0.45 | |
| | PM10 | $4,000 | 0.82 | |
| **Imperial County** Total of 54 Transactions | CO | $500 | 1.38 | |
| | CO | $5,593 | 6.78 | |
| | HC | $3,000 | 0.31 | |
| | HC | $3,000 | 0.42 | |
| | HC | $3,000 | 1.16 | |
| | HC | $3,000 | 1.18 | |
| | HC | $3,000 | 1.20 | |
| | HC | $3,000 | 1.20 | |
| | HC | $3,000 | 1.22 | |
| | HC | $3,000 | 1.30 | |
| | HC | $3,000 | 2.20 | |
| | HC | $3,000 | 2.33 | |
| | HC | $3,000 | 2.54 | |
| | HC | $3,000 | 2.74 | |
| | HC | $3,000 | 2.84 | |
| | HC | $3,000 | 3.32 | |
| | HC | $3,000 | 3.33 | |
| | HC | $3,000 | 3.33 | |
| | HC | $3,000 | 4.42 | |
| | HC | $3,000 | 4.61 | |

| | | | | |
|---|---|---|---|---|
| Imperial County (Cont'd) | HC | $3,000 | 4.69 | |
| | HC | $3,000 | 8.87 | |
| | HC | $5,593 | 2.50 | |
| | HC | $15,000 | 0.51 | |
| | NOx | $5,593 | 22.49 | |
| | NOx | $70,000 | 6.41 | |
| | PM10 | $400 | 0.33 | |
| | PM10 | $400 | 0.34 | |
| | PM10 | $400 | 0.72 | |
| | PM10 | $400 | 1.28 | |
| | PM10 | $400 | 1.28 | |
| | PM10 | $400 | 1.52 | |
| | PM10 | $400 | 1.97 | |
| | PM10 | $400 | 3.55 | |
| | PM10 | $400 | 3.94 | |
| | PM10 | $400 | 4.33 | |
| | PM10 | $400 | 4.42 | |
| | PM10 | $400 | 4.42 | |
| | PM10 | $400 | 7.15 | |
| | PM10 | $400 | 7.74 | |
| | PM10 | $400 | 7.74 | |
| | PM10 | $446 | 0.56 | |
| | PM10 | $450 | 0.66 | |
| | PM10 | $450 | 1.21 | |
| | PM10 | $450 | 1.30 | |
| | PM10 | $450 | 1.46 | |
| | PM10 | $450 | 2.00 | |
| | PM10 | $450 | 2.92 | |
| | PM10 | $450 | 3.77 | |
| | PM10 | $450 | 4.14 | |
| | PM10 | $5,593 | 2.21 | |
| | PM10 | $45,000 | 0.45 | |
| | SOX | $5,593 | 0.18 | |
| | SOX | $30,000 | 0.04 | |
| **Placer County** | HC | $12,179 | 31.20 | |
| Total of 1 Transactions | | | | |
| **Sacramento Metro** | NOx | $12,500 | 9.10 | |
| Total of 1 Transaction | | | | |
| **San Diego** | HC | $0 | 1.00 | Not Included |
| Total of 10 Transactions | HC | $2,500 | 0.20 | |
| | HC | $3,484 | 1.86 | |
| | HC | $4,633 | 0.18 | |
| | HC | $4,762 | 0.42 | |
| | HC | $20,280 | 21.18 | |
| | HC | $35,323 | 2.00 | |
| | HC | $36,500 | 2.00 | |
| | HC | $50,000 | 18.70 | |
| | HC | $50,000 | 18.70 | |

**Santa Barbara**

Total of 5 Transaction

| | | | |
|---|---|---|---|
| HC | $5,000 | 0.20 | |
| HC | $7,500 | 0.30 | |
| HC | $7,500 | 1.12 | |
| HC | $55,000 | 0.28 | |
| NOx | $41,783 | 1.86 | |

**San Joaquin Valley**

Total of 337 Transactions

| | | | |
|---|---|---|---|
| HC | $9,000 | 25.00 | |
| HC | $10,000 | 22.76 | |
| HC | $10,000 | 46.62 | |
| HC | $11,307 | 62.84 | |
| HC | $11,307 | 62.85 | |
| HC | $11,307 | 175.00 | |
| HC | $13,000 | 18.26 | |
| HC | $27,009 | 0.09 | |
| HC | $27,009 | 0.14 | |
| HC | $28,000 | 5.00 | |
| HC | $33,000 | 0.34 | |
| HC | $33,000 | 7.70 | |
| HC | $33,000 | 150.00 | |
| HC | $34,000 | 1.68 | |
| HC | $34,000 | 13.00 | |
| HC | $34,000 | 21.81 | |
| HC | $34,000 | 22.84 | |
| HC | $34,000 | 41.00 | |
| HC | $35,000 | 12.00 | |
| HC | $35,000 | 25.20 | |
| HC | $39,000 | 9.60 | |
| HC | $39,000 | 10.40 | |
| HC | $42,000 | 0.01 | |
| HC | $42,000 | 1.75 | |
| HC | $42,000 | 4.42 | |
| HC | $42,000 | 4.57 | |
| HC | $42,000 | 15.00 | |
| HC | $42,000 | 21.00 | |
| HC | $43,000 | 0.02 | |
| HC | $43,000 | 0.14 | |
| HC | $43,000 | 0.34 | |
| HC | $43,000 | 0.80 | |
| HC | $43,000 | 3.31 | |
| HC | $43,000 | 4.00 | |
| HC | $43,000 | 7.70 | |
| HC | $43,000 | 13.00 | |
| HC | $45,000 | 8.00 | |
| HC | $45,000 | 40.00 | |
| HC | $49,116 | 0.51 | |
| HC | $344,828 | 0.01 | |
| NOx | $13,000 | 4.04 | |
| NOx | $17,000 | 6.20 | |
| NOx | $17,000 | 8.14 | |
| NOx | $17,000 | 9.00 | |
| NOx | $17,000 | 14.28 | |
| NOx | $18,000 | 0.25 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| NOx | $18,000 | 5.20 | |
| NOx | $19,000 | 82.02 | |
| NOx | $22,500 | 0.20 | |
| NOx | $24,000 | 0.11 | |
| NOx | $24,000 | 0.13 | |
| NOx | $24,000 | 1.62 | |
| NOx | $24,000 | 2.42 | |
| NOx | $24,000 | 3.95 | |
| NOx | $24,000 | 4.26 | |
| NOx | $24,000 | 5.53 | |
| NOx | $24,000 | 38.14 | |
| NOx | $25,000 | 0.15 | |
| NOx | $25,000 | 0.16 | |
| NOx | $25,000 | 0.16 | |
| NOx | $25,000 | 0.30 | |
| NOx | $25,000 | 0.38 | |
| NOx | $25,000 | 0.92 | |
| NOx | $27,500 | 3.65 | |
| NOx | $30,000 | 0.41 | |
| NOx | $32,500 | < 0.01 | |
| NOx | $32,500 | 0.01 | |
| NOx | $32,500 | 0.01 | |
| NOx | $32,500 | 0.01 | |
| NOx | $32,500 | 0.02 | |
| NOx | $32,500 | 0.03 | |
| NOx | $32,500 | 0.04 | |
| NOx | $32,500 | 0.04 | |
| NOx | $32,500 | 0.04 | |
| NOx | $32,500 | 0.05 | |
| NOx | $32,500 | 0.06 | |
| NOx | $32,500 | 0.07 | |
| NOx | $32,500 | 0.08 | |
| NOx | $32,500 | 0.08 | |
| NOx | $32,500 | 0.08 | |
| NOx | $32,500 | 0.09 | |
| NOx | $32,500 | 0.09 | |
| NOx | $32,500 | 0.09 | |
| NOx | $32,500 | 0.09 | |
| NOx | $32,500 | 0.10 | |
| NOx | $32,500 | 0.10 | |
| NOx | $32,500 | 0.10 | |
| NOx | $32,500 | 0.10 | |
| NOx | $32,500 | 0.10 | |
| NOx | $32,500 | 0.11 | |
| NOx | $32,500 | 0.12 | |
| NOx | $32,500 | 0.13 | |
| NOx | $32,500 | 0.13 | |
| NOx | $32,500 | 0.15 | |
| NOx | $32,500 | 0.15 | |
| NOx | $32,500 | 0.17 | |
| NOx | $32,500 | 0.17 | |
| NOx | $32,500 | 0.18 | |
| NOx | $32,500 | 0.18 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| NOx | $32,500 | 0.20 | |
| NOx | $32,500 | 0.20 | |
| NOx | $32,500 | 0.21 | |
| NOx | $32,500 | 0.22 | |
| NOx | $32,500 | 0.26 | |
| NOx | $32,500 | 0.27 | |
| NOx | $32,500 | 0.28 | |
| NOx | $32,500 | 0.32 | |
| NOx | $32,500 | 0.59 | |
| NOx | $35,000 | 1.05 | |
| NOx | $35,000 | 1.09 | |
| NOx | $35,000 | 1.72 | |
| NOx | $35,000 | 3.00 | |
| NOx | $36,500 | 36.93 | |
| NOx | $40,000 | 10.97 | |
| NOx | $41,500 | 4.65 | |
| NOx | $45,000 | 0.81 | |
| NOx | $45,000 | 4.50 | |
| NOx | $45,000 | 5.01 | |
| NOx | $45,000 | 8.14 | |
| NOx | $45,000 | 9.00 | |
| NOx | $45,000 | 14.28 | |
| NOx | $45,000 | 14.82 | |
| NOx | $45,000 | 18.48 | |
| NOx | $45,000 | 25.18 | |
| NOx | $45,000 | 102.00 | |
| NOx | $46,000 | 0.77 | |
| NOx | $46,000 | 13.81 | |
| NOx | $47,500 | 0.11 | |
| NOx | $47,500 | 0.13 | |
| NOx | $47,500 | 0.14 | |
| NOx | $47,500 | 1.70 | |
| NOx | $47,500 | 1.76 | |
| NOx | $47,500 | 1.93 | |
| NOx | $47,500 | 2.10 | |
| NOx | $47,500 | 2.73 | |
| NOx | $47,500 | 3.03 | |
| NOx | $47,500 | 3.08 | |
| NOx | $47,500 | 32.30 | |
| NOx | $48,000 | 2.02 | |
| NOx | $48,000 | 10.98 | |
| NOx | $48,250 | 0.33 | |
| NOx | $48,250 | 2.07 | |
| NOx | $48,250 | 2.90 | |
| NOx | $48,250 | 2.97 | |
| NOx | $48,500 | 0.91 | |
| NOx | $48,500 | 0.92 | |
| NOx | $48,500 | 1.19 | |
| NOx | $48,500 | 1.86 | |
| NOx | $48,500 | 2.34 | |
| NOx | $48,500 | 15.77 | |
| NOx | $50,000 | 0.25 | |
| NOx | $50,000 | 0.52 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| NOx | $50,000 | 0.72 | |
| NOx | $50,000 | 0.73 | |
| NOx | $50,000 | 2.05 | |
| NOx | $50,000 | 2.35 | |
| NOx | $50,000 | 3.77 | |
| NOx | $50,000 | 5.20 | |
| NOx | $50,000 | 8.40 | |
| NOx | $50,000 | 8.62 | |
| NOx | $50,000 | 9.80 | |
| NOx | $50,000 | 12.74 | |
| NOx | $50,000 | 47.60 | |
| NOx | $51,000 | 30.00 | |
| NOx | $55,000 | 0.26 | |
| NOx | $55,000 | 3.00 | |
| NOx | $55,000 | 5.79 | |
| NOx | $56,500 | 150.00 | |
| NOx | $59,830 | 2.20 | |
| NOx | $59,830 | 15.80 | |
| NOx | $60,000 | 4.07 | |
| NOx | $60,000 | 10.54 | |
| NOx | $62,063 | 7.68 | |
| NOx | $62,063 | 8.32 | |
| NOx | $70,000 | 6.00 | |
| NOx | $71,000 | 3.00 | |
| NOx | $72,000 | 3.00 | |
| NOx | $73,008 | < 0.01 | |
| NOx | $73,008 | 0.01 | |
| NOx | $73,008 | 0.02 | |
| NOx | $73,008 | 0.02 | |
| NOx | $73,008 | 0.02 | |
| NOx | $73,008 | 0.03 | |
| NOx | $73,008 | 0.04 | |
| NOx | $73,008 | 0.04 | |
| NOx | $73,008 | 0.04 | |
| NOx | $73,008 | 0.04 | |
| NOx | $73,008 | 0.05 | |
| NOx | $73,008 | 0.06 | |
| NOx | $73,008 | 0.07 | |
| NOx | $73,008 | 0.08 | |
| NOx | $73,008 | 0.08 | |
| NOx | $73,008 | 0.08 | |
| NOx | $73,008 | 0.08 | |
| NOx | $73,008 | 0.09 | |
| NOx | $73,008 | 0.09 | |
| NOx | $73,008 | 0.09 | |
| NOx | $73,008 | 0.10 | |
| NOx | $73,008 | 0.10 | |
| NOx | $73,008 | 0.10 | |
| NOx | $73,008 | 0.10 | |
| NOx | $73,008 | 0.10 | |
| NOx | $73,008 | 0.11 | |
| NOx | $73,008 | 0.12 | |
| NOx | $73,008 | 0.13 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| NOx | $73,008 | 0.13 | |
| NOx | $73,008 | 0.15 | |
| NOx | $73,008 | 0.17 | |
| NOx | $73,008 | 0.17 | |
| NOx | $73,008 | 0.18 | |
| NOx | $73,008 | 0.18 | |
| NOx | $73,008 | 0.20 | |
| NOx | $73,008 | 0.20 | |
| NOx | $73,008 | 0.21 | |
| NOx | $73,008 | 0.22 | |
| NOx | $73,008 | 0.26 | |
| NOx | $73,008 | 0.27 | |
| NOx | $73,008 | 0.28 | |
| NOx | $73,008 | 0.29 | |
| NOx | $73,008 | 0.32 | |
| NOx | $73,008 | 0.52 | |
| NOx | $73,008 | 0.59 | |
| NOx | $73,008 | 0.88 | |
| NOx | $73,008 | 2.38 | |
| NOx | $73,008 | 4.50 | |
| NOx | $73,008 | 4.60 | |
| NOx | $73,008 | 5.59 | |
| NOx | $73,008 | 6.53 | |
| NOx | $73,008 | 6.92 | |
| NOx | $73,008 | 8.12 | |
| NOx | $73,008 | 8.77 | |
| NOx | $73,008 | 9.00 | |
| NOx | $73,078 | 0.01 | |
| PM10 | $6,600 | 0.15 | |
| PM10 | $13,000 | 0.31 | |
| PM10 | $40,000 | 0.16 | |
| PM10 | $40,000 | 0.66 | |
| PM10 | $46,500 | 0.13 | |
| PM10 | $46,500 | 0.55 | |
| PM10 | $47,000 | 5.00 | |
| PM10 | $51,879 | 0.05 | |
| PM10 | $51,879 | 1.13 | |
| PM10 | $51,879 | 2.77 | |
| PM10 | $51,879 | 3.09 | |
| PM10 | $51,879 | 4.41 | |
| PM10 | $58,500 | 1.50 | |
| PM10 | $59,830 | 3.31 | |
| PM10 | $60,000 | 0.71 | |
| PM10 | $60,000 | 0.98 | |
| PM10 | $60,000 | 1.45 | |
| PM10 | $60,000 | 2.19 | |
| PM10 | $60,000 | 2.79 | |
| PM10 | $60,000 | 2.92 | |
| PM10 | $60,000 | 14.99 | |
| PM10 | $61,800 | 0.51 | |
| PM10 | $61,800 | 6.96 | |
| PM10 | $62,500 | 1.24 | |
| PM10 | $62,500 | 3.26 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| PM10 | $62,500 | 3.61 | |
| PM10 | $63,000 | 2.12 | |
| PM10 | $63,000 | 4.25 | |
| PM10 | $63,000 | 6.74 | |
| PM10 | $65,000 | 0.71 | |
| PM10 | $65,000 | 5.00 | |
| PM10 | $65,000 | 14.62 | |
| PM10 | $66,000 | 0.71 | |
| PM10 | $66,300 | 5.92 | |
| PM10 | $66,300 | 20.61 | |
| PM10 | $66,300 | 23.48 | |
| PM10 | $71,000 | 1.50 | |
| PM10 | $71,000 | 1.64 | |
| PM10 | $71,000 | 3.11 | |
| PM10 | $75,000 | 0.13 | |
| PM10 | $75,000 | 0.31 | |
| PM10 | $75,000 | 0.31 | |
| PM10 | $75,000 | 0.55 | |
| PM10 | $75,000 | 0.57 | |
| PM10 | $75,000 | 1.27 | |
| PM10 | $75,000 | 1.40 | |
| PM10 | $75,000 | 3.47 | |
| PM10 | $75,000 | 4.29 | |
| PM10 | $75,000 | 10.00 | |
| PM10 | $77,000 | 0.01 | |
| PM10 | $77,000 | 0.01 | |
| PM10 | $77,000 | 0.03 | |
| PM10 | $77,000 | 0.03 | |
| PM10 | $77,000 | 0.40 | |
| PM10 | $77,000 | 2.12 | |
| PM10 | $77,000 | 13.00 | |
| SOx | $7,000 | 0.01 | |
| SOx | $7,000 | 1.59 | |
| SOx | $7,000 | 7.35 | |
| SOx | $7,000 | 22.45 | |
| SOx | $7,000 | 32.40 | |
| SOx | $7,000 | 36.40 | |
| SOx | $13,000 | 0.02 | |
| SOx | $14,000 | 48.00 | |
| SOx | $15,600 | 6.61 | |
| SOx | $15,600 | 19.81 | |
| SOx | $21,560 | 0.01 | |
| SOx | $27,500 | 0.66 | |
| SOx | $30,000 | 45.00 | |
| SOx | $30,000 | 45.00 | |
| SOx | $33,000 | 1.88 | |
| SOx | $33,000 | 1.91 | |
| SOx | $33,000 | 3.80 | |
| SOx | $33,000 | 12.42 | |
| SOx | $34,500 | 3.00 | |
| SOx | $35,000 | 5.30 | |
| SOx | $36,000 | 8.00 | |
| SOx | $37,000 | 0.59 | |

San Joaquin Valley (Cont'd)

| | | | |
|---|---|---|---|
| SOx | $37,000 | 0.66 | |
| SOx | $37,000 | 1.85 | |
| SOx | $37,000 | 3.81 | |
| SOx | $37,000 | 6.09 | |
| SOx | $37,000 | 12.78 | |
| SOx | $37,000 | 45.00 | |
| SOx | $37,500 | 0.01 | |
| SOx | $37,500 | 0.04 | |
| SOx | $37,500 | 0.05 | |
| SOx | $37,500 | 0.08 | |
| SOx | $37,500 | 0.16 | |
| SOx | $37,500 | 0.63 | |
| SOx | $37,500 | 1.60 | |
| SOx | $37,500 | 1.90 | |
| SOx | $37,500 | 2.73 | |
| SOx | $37,500 | 3.80 | |
| SOx | $40,000 | 1.80 | |
| SOx | $40,000 | 1.86 | |
| SOx | $40,000 | 5.52 | |
| SOx | $40,000 | 6.33 | |
| SOx | $40,000 | 16.30 | |
| SOx | $40,000 | 18.19 | |
| SOx | $40,000 | 25.00 | |
| SOx | $42,000 | 1.60 | |
| SOx | $42,000 | 1.66 | |
| SOx | $42,000 | 1.66 | |

**South Coast**

Total of 170 Transactions

| | | | |
|---|---|---|---|
| CO | $0 | 1.83 | Not Included |
| HC | $0 | 0.18 | Not Included |
| HC | $0 | 0.18 | Not Included |
| HC | $0 | 0.37 | Not Included |
| HC | $0 | 0.37 | Not Included |
| HC | $0 | 0.55 | Not Included |
| HC | $0 | 0.73 | Not Included |
| HC | $0 | 0.73 | Not Included |
| HC | $0 | 0.73 | Not Included |
| HC | $0 | 1.83 | Not Included |
| HC | $0 | 1.83 | Not Included |
| HC | $0 | 1.83 | Not Included |
| HC | $0 | 1.83 | Not Included |
| HC | $0 | 1.83 | Not Included |
| HC | $0 | 2.56 | Not Included |
| HC | $0 | 2.56 | Not Included |
| HC | $0 | 2.92 | Not Included |
| HC | $0 | 4.02 | Not Included |
| HC | $0 | 4.02 | Not Included |
| HC | $0 | 4.56 | Not Included |
| HC | $0 | 4.75 | Not Included |
| HC | $0 | 4.75 | Not Included |
| HC | $0 | 6.94 | Not Included |
| HC | $0 | 8.76 | Not Included |
| HC | $0 | 8.94 | Not Included |
| HC | $0 | 11.68 | Not Included |

South Coast (Cont'd)

| | | | |
|---|---|---|---|
| HC | $0 | 12.78 | Not Included |
| HC | $0 | 14.24 | Not Included |
| HC | $4,110 | 0.91 | |
| HC | $4,110 | 4.93 | |
| HC | $4,110 | 5.66 | |
| HC | $8,219 | 0.91 | |
| HC | $8,219 | 4.93 | |
| HC | $8,219 | 5.66 | |
| HC | $15,068 | 8.76 | |
| HC | $15,562 | 4.56 | |
| HC | $20,548 | 0.37 | |
| HC | $20,548 | 0.91 | |
| HC | $20,548 | 4.93 | |
| HC | $20,548 | 5.66 | |
| HC | $20,822 | 8.76 | |
| HC | $22,000 | 2.19 | |
| HC | $60,274 | 0.91 | |
| HC | $63,014 | 0.18 | |
| HC | $63,014 | 0.18 | |
| HC | $63,014 | 0.18 | |
| HC | $63,014 | 0.55 | |
| HC | $63,014 | 10.77 | |
| HC | $71,233 | 5.48 | |
| HC | $74,795 | 23.18 | |
| HC | $75,342 | 3.65 | |
| HC | $78,082 | 4.75 | |
| HC | $80,822 | 1.10 | |
| HC | $80,822 | 2.01 | |
| HC | $80,822 | 2.37 | |
| HC | $80,822 | 4.56 | |
| HC | $80,822 | 15.15 | |
| HC | $82,192 | 0.37 | |
| HC | $82,192 | 0.55 | |
| HC | $82,192 | 0.55 | |
| HC | $82,192 | 0.91 | |
| HC | $82,192 | 3.10 | |
| HC | $82,192 | 5.48 | |
| HC | $82,192 | 10.95 | |
| HC | $84,932 | 0.37 | |
| HC | $84,932 | 0.55 | |
| HC | $86,849 | 1.46 | |
| HC | $86,849 | 7.67 | |
| HC | $86,849 | 9.13 | |
| HC | $87,671 | 0.18 | |
| HC | $87,671 | 1.64 | |
| HC | $87,671 | 2.19 | |
| HC | $87,671 | 2.92 | |
| HC | $87,671 | 7.30 | |
| HC | $89,863 | 6.57 | |
| HC | $89,863 | 6.75 | |
| HC | $91,781 | 1.64 | |
| HC | $93,151 | 2.01 | |
| HC | $93,151 | 4.75 | |

South Coast (Cont'd)

| | | | |
|---|---|---|---|
| HC | $94,521 | 11.68 | |
| HC | $94,521 | 63.51 | |
| HC | $95,890 | 0.37 | |
| HC | $95,890 | 0.37 | |
| HC | $95,890 | 0.55 | |
| HC | $95,890 | 1.64 | |
| HC | $95,890 | 2.19 | |
| HC | $95,890 | 2.19 | |
| HC | $97,260 | 8.40 | |
| HC | $98,630 | 0.18 | |
| HC | $98,630 | 0.91 | |
| HC | $98,630 | 0.91 | |
| HC | $98,630 | 0.91 | |
| HC | $98,630 | 0.91 | |
| HC | $98,630 | 1.83 | |
| HC | $98,630 | 3.83 | |
| HC | $98,630 | 4.56 | |
| HC | $100,000 | 6.39 | |
| HC | $100,000 | 12.78 | |
| HC | $102,740 | 2.19 | |
| HC | $105,479 | 1.28 | |
| HC | $108,219 | 12.78 | |
| HC | $109,589 | 0.37 | |
| NOx | $0 | 1.10 | Not Included |
| NOx | $216,216 | 0.37 | Not Included. See Tables 10 and 11 and Chart 4 for separate analysis |
| PM10 | $0 | 0.55 | |
| PM10 | $0 | 2.74 | |
| PM10 | $65,754 | 0.37 | |
| PM10 | $273,973 | 2.74 | |
| PM10 | $430,137 | 2.74 | |
| PM10 | $493,151 | 0.55 | |
| PM10 | $507,357 | 0.18 | |
| PM10 | $507,357 | 0.37 | |
| PM10 | $507,357 | 0.37 | |
| PM10 | $507,357 | 0.37 | |
| PM10 | $507,357 | 0.55 | |
| PM10 | $507,357 | 0.73 | |
| PM10 | $507,357 | 2.37 | |
| PM10 | $520,548 | 0.37 | |
| PM10 | $526,027 | 0.37 | |
| PM10 | $526,027 | 0.55 | |
| PM10 | $526,027 | 1.28 | |
| PM10 | $526,027 | 2.19 | |
| PM10 | $526,027 | 2.37 | |
| PM10 | $547,945 | 0.73 | |
| PM10 | $547,945 | 0.91 | |
| PM10 | $547,945 | 1.10 | |
| PM10 | $547,945 | 1.10 | |
| PM10 | $547,945 | 1.28 | |
| PM10 | $547,945 | 4.38 | |
| PM10 | $561,644 | 0.91 | |
| PM10 | $621,918 | 1.46 | |
| PM10 | $657,534 | 0.18 | |

South Coast (Cont'd)

| | | | |
|---|---|---|---|
| PM10 | $657,534 | 0.37 | Not Included. See Tables 10 and 11 and Chart 4 for separate analysis |
| PM10 | $657,534 | 0.55 | |
| PM10 | $657,534 | 0.73 | |
| PM10 | $657,534 | 0.91 | |
| PM10 | $794,521 | 1.28 | |
| PM10 | $794,521 | 3.65 | |
| PM10 | $915,068 | 0.18 | |
| PM10 | $915,068 | 0.37 | |
| PM10 | $915,068 | 0.73 | |
| PM10 | $915,068 | 2.19 | |
| PM10 | $916,068 | 0.55 | |
| PM10 | $1,079,452 | 0.91 | |
| PM10 | $1,095,890 | 0.18 | |
| PM10 | $1,095,890 | 0.37 | |
| PM10 | $1,150,685 | 0.18 | |
| PM10 | $1,150,685 | 0.37 | |
| PM10 | $1,150,685 | 1.28 | |
| PM10 | $1,173,058 | 1.10 | |
| PM10 | $1,260,274 | 0.18 | |
| PM10 | $1,293,151 | 0.18 | |
| PM10 | $1,298,630 | 0.18 | |
| PM10 | $1,353,425 | 0.37 | |
| PM10 | $1,353,425 | 0.37 | |
| PM10 | $7,945,121 | 1.28 | |
| SOx | $82,192 | 0.91 | |
| SOx | $263,014 | 0.18 | |
| SOx | $263,014 | 0.37 | |
| SOx | $263,014 | 0.37 | |
| SOx | $263,014 | 0.37 | |
| SOx | $263,014 | 0.73 | |
| SOx | $263,014 | 1.83 | |
| SOx | $263,014 | 3.65 | |
| SOx | $263,014 | 3.90 | |
| SOx | $263,014 | 7.30 | |
| SOx | $273,973 | 3.65 | |
| SOx | $273,973 | 4.75 | |
| SOx | $383,562 | 0.55 | |
| SOx | $421,918 | 0.18 | |

**Ventura County**

Total of 16 Transactions

| | | | |
|---|---|---|---|
| HC | $0 | 3.50 | Not Included |
| HC | $0 | 5.98 | Not Included |
| HC | $25,000 | 0.54 | |
| HC | $30,000 | 2.48 | |
| HC | $33,000 | 0.54 | |
| HC | $35,000 | 3.06 | |
| HC | $35,000 | 3.18 | |
| HC | $39,000 | 3.18 | |
| HC | $46,500 | 3.50 | |
| HC | $46,500 | 5.98 | |
| NOx | $25,000 | 0.51 | |
| NOx | $33,000 | 0.51 | |
| PM10 | $20,000 | 0.03 | |
| PM10 | $23,333 | 0.03 | |

Ventura County (Cont'd)

| | | | |
|---|---|---|---|
| SOx | $15,000 | 0.01 | |
| SOx | $15,000 | 0.01 | |

## Table 3

### Districts With No Offset Transactions to Report in 2008

Amador County Air Pollution Control District

Antelope Valley Air Pollution Control District

Calaveras County Air Pollution Control District

El Dorado County Air Quality Management District

Glenn County Air Pollution Control District

Great Basin Unified Air Pollution Control District

Kern County Air Pollution Control District

Lake County Air Quality Management District

Lassen County Air Pollution Control District

Mariposa County Air Pollution Control District

Mendocino County Air Pollution Control District

Modoc County Air Pollution Control District

Mojave Desert Air Quality Management District

Monterey Bay Unified Air Pollution Control District

North Coast Unified Air Quality Management District

Northern Sierra Air Quality Management District

Northern Sonoma County Air Pollution Control District

San Luis Obispo County Air Pollution Control District

Shasta County Air Quality Management District

Siskiyou County Air Pollution Control District

Tehama County Air Pollution Control District

Tuolumne County Air Pollution Control District

Yolo –Solano Air Quality Management District

**Table 4**
**2008 California**
**NOx Emission Reduction Credit Transaction Costs**
**Reported in Total Tons Traded**

| District | $/ton | Tons | Notes |
|---|---|---|---|
| **Butte County** | $20,000 | 70.00 | |
| **Colusa County** | $20,000 | 0.08 | |
| | $20,000 | 0.11 | |
| | $20,000 | 0.24 | |
| | $20,000 | 0.76 | |
| | $20,000 | 0.94 | |
| | $20,000 | 1.04 | |
| | $20,000 | 1.28 | |
| | $20,000 | 2.54 | |
| | $20,000 | 3.39 | |
| | $20,000 | 5.74 | |
| | $20,000 | 6.68 | |
| | $20,000 | 9.06 | |
| **Feather River** | $12,000 | 1.14 | |
| | $16,000 | 4.25 | |
| **Imperial County** | $5,593 | 22.49 | |
| | $70,000 | 6.41 | |
| **Sacramento Metro** | $12,500 | 9.10 | |
| **San Joaquin Valley** | $13,000 | 4.04 | |
| | $17,000 | 6.20 | |
| | $17,000 | 8.14 | |
| | $17,000 | 9.00 | |
| | $17,000 | 14.28 | |
| | $18,000 | 0.25 | |
| | $18,000 | 5.20 | |
| | $19,000 | 82.02 | |
| | $22,500 | 0.20 | |
| | $24,000 | 0.11 | |
| | $24,000 | 0.13 | |
| | $24,000 | 1.62 | |
| | $24,000 | 2.42 | |
| | $24,000 | 3.95 | |
| | $24,000 | 4.26 | |
| | $24,000 | 5.53 | |
| | $24,000 | 38.14 | |
| | $25,000 | 0.15 | |
| | $25,000 | 0.16 | |
| | $25,000 | 0.16 | |
| | $25,000 | 0.30 | |
| | $25,000 | 0.38 | |
| | $25,000 | 0.92 | |

San Joaquin Valley (Cont'd)

| | | |
|---|---|---|
| $27,500 | 3.65 | |
| $30,000 | 0.41 | |
| $32,500 | < 0.01 | |
| $32,500 | 0.01 | |
| $32,500 | 0.01 | |
| $32,500 | 0.01 | |
| $32,500 | 0.02 | |
| $32,500 | 0.03 | |
| $32,500 | 0.04 | |
| $32,500 | 0.04 | |
| $32,500 | 0.04 | |
| $32,500 | 0.05 | |
| $32,500 | 0.06 | |
| $32,500 | 0.07 | |
| $32,500 | 0.08 | |
| $32,500 | 0.08 | |
| $32,500 | 0.08 | |
| $32,500 | 0.09 | |
| $32,500 | 0.09 | |
| $32,500 | 0.09 | |
| $32,500 | 0.09 | |
| $32,500 | 0.10 | |
| $32,500 | 0.10 | |
| $32,500 | 0.10 | |
| $32,500 | 0.10 | |
| $32,500 | 0.10 | |
| $32,500 | 0.11 | |
| $32,500 | 0.12 | |
| $32,500 | 0.13 | |
| $32,500 | 0.13 | |
| $32,500 | 0.15 | |
| $32,500 | 0.15 | |
| $32,500 | 0.17 | |
| $32,500 | 0.17 | |
| $32,500 | 0.18 | |
| $32,500 | 0.18 | |
| $32,500 | 0.20 | |
| $32,500 | 0.20 | |
| $32,500 | 0.21 | |
| $32,500 | 0.22 | |
| $32,500 | 0.26 | |
| $32,500 | 0.27 | |
| $32,500 | 0.28 | |
| $32,500 | 0.32 | |
| $32,500 | 0.59 | |
| $35,000 | 1.05 | |
| $35,000 | 1.09 | |
| $35,000 | 1.72 | |
| $35,000 | 3.00 | |
| $36,500 | 36.93 | |
| $40,000 | 10.97 | |
| $41,500 | 4.65 | |

San Joaquin Valley (Cont'd)

| | | |
|---|---|---|
| $45,000 | 0.81 | |
| $45,000 | 4.50 | |
| $45,000 | 5.01 | |
| $45,000 | 8.14 | |
| $45,000 | 9.00 | |
| $45,000 | 14.28 | |
| $45,000 | 14.82 | |
| $45,000 | 18.48 | |
| $45,000 | 25.18 | |
| $45,000 | 102.00 | |
| $46,000 | 0.77 | |
| $46,000 | 13.81 | |
| $47,500 | 0.11 | |
| $47,500 | 0.13 | |
| $47,500 | 0.14 | |
| $47,500 | 1.70 | |
| $47,500 | 1.76 | |
| $47,500 | 1.93 | |
| $47,500 | 2.10 | |
| $47,500 | 2.73 | |
| $47,500 | 3.03 | |
| $47,500 | 3.08 | |
| $47,500 | 32.30 | |
| $48,000 | 2.02 | |
| $48,000 | 10.98 | |
| $48,250 | 0.33 | |
| $48,250 | 2.07 | |
| $48,250 | 2.90 | |
| $48,250 | 2.97 | |
| $48,500 | 0.91 | |
| $48,500 | 0.92 | |
| $48,500 | 1.19 | |
| $48,500 | 1.86 | |
| $48,500 | 2.34 | |
| $48,500 | 15.77 | |
| $50,000 | 0.25 | |
| $50,000 | 0.52 | |
| $50,000 | 0.72 | |
| $50,000 | 0.73 | |
| $50,000 | 2.05 | |
| $50,000 | 2.35 | |
| $50,000 | 3.77 | |
| $50,000 | 5.20 | |
| $50,000 | 8.40 | |
| $50,000 | 8.62 | |
| $50,000 | 9.80 | |
| $50,000 | 12.74 | |
| $50,000 | 47.60 | |
| $51,000 | 30.00 | |
| $55,000 | 0.26 | |
| $55,000 | 3.00 | |
| $55,000 | 5.79 | |

San Joaquin Valley (Cont'd)

| | | |
|---|---|---|
| $56,500 | 150.00 | |
| $59,830 | 2.20 | |
| $59,830 | 15.80 | |
| $60,000 | 4.07 | |
| $60,000 | 10.54 | |
| $62,063 | 7.68 | |
| $62,063 | 8.32 | |
| $70,000 | 6.00 | |
| $71,000 | 3.00 | |
| $72,000 | 3.00 | |
| $73,008 | < 0.01 | |
| $73,008 | 0.01 | |
| $73,008 | 0.02 | |
| $73,008 | 0.02 | |
| $73,008 | 0.02 | |
| $73,008 | 0.03 | |
| $73,008 | 0.04 | |
| $73,008 | 0.04 | |
| $73,008 | 0.04 | |
| $73,008 | 0.04 | |
| $73,008 | 0.05 | |
| $73,008 | 0.06 | |
| $73,008 | 0.07 | |
| $73,008 | 0.08 | |
| $73,008 | 0.08 | |
| $73,008 | 0.08 | |
| $73,008 | 0.08 | |
| $73,008 | 0.09 | |
| $73,008 | 0.09 | |
| $73,008 | 0.09 | |
| $73,008 | 0.10 | |
| $73,008 | 0.10 | |
| $73,008 | 0.10 | |
| $73,008 | 0.10 | |
| $73,008 | 0.10 | |
| $73,008 | 0.11 | |
| $73,008 | 0.12 | |
| $73,008 | 0.13 | |
| $73,008 | 0.13 | |
| $73,008 | 0.15 | |
| $73,008 | 0.17 | |
| $73,008 | 0.17 | |
| $73,008 | 0.18 | |
| $73,008 | 0.18 | |
| $73,008 | 0.20 | |
| $73,008 | 0.20 | |
| $73,008 | 0.21 | |
| $73,008 | 0.22 | |
| $73,008 | 0.26 | |
| $73,008 | 0.27 | |
| $73,008 | 0.28 | |
| $73,008 | 0.29 | |

| | | | |
|---|---|---|---|
| San Joaquin Valley (Cont'd) | $73,008 | 0.32 | |
| | $73,008 | 0.52 | |
| | $73,008 | 0.59 | |
| | $73,008 | 0.88 | |
| | $73,008 | 2.38 | |
| | $73,008 | 4.50 | |
| | $73,008 | 4.60 | |
| | $73,008 | 5.59 | |
| | $73,008 | 6.53 | |
| | $73,008 | 6.92 | |
| | $73,008 | 8.12 | |
| | $73,008 | 8.77 | |
| | $73,008 | 9.00 | |
| | $73,078 | 0.01 | |
| **Santa Barbara** | $41,783 | 1.86 | |
| **South Coast** | $216,216 | 0.37 | |
| **Ventura County** | $25,000 | 0.51 | |
| | $33,000 | 0.51 | |

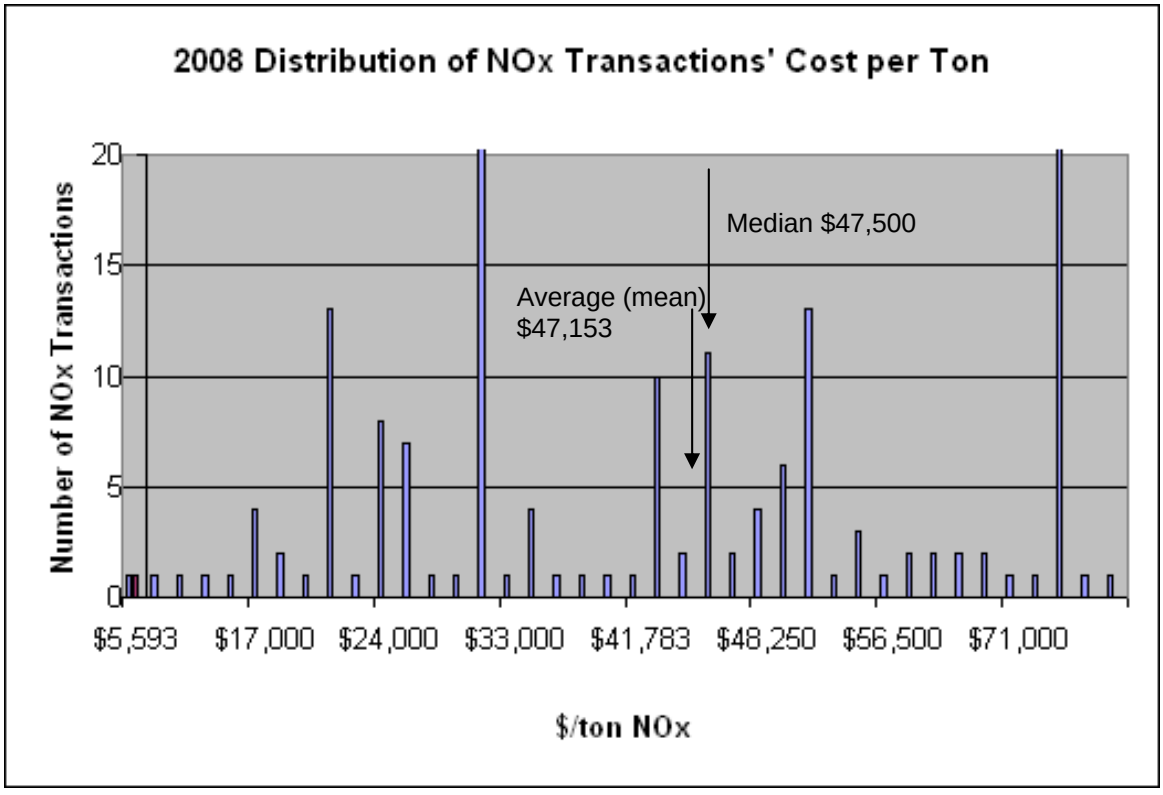
**Table 5**

**2008 Summary Statistics For a Total of 215 NOx Transactions***

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 1,130.96 |
| **Average (mean)** | $47,153 | |
| **Median** | $47,500 | |
| **High** | $216,216 | |
| **Low** | $5,593 | |

*Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 1**



# Table 6
# 2008 California
# HC Emission Reduction Credit Transaction Cost
# Reported in Total Tons Traded

| District | $/ton | Tons | Notes |
|---|---|---|---|
| **Bay Area** | $10,000 | 1.50 | |
| | $10,500 | 9.50 | |
| | $11,500 | 0.40 | |
| | $11,500 | 0.90 | |
| | $11,500 | 1.00 | |
| | $11,500 | 5.80 | |
| | $11,500 | 16.26 | |
| | $12,500 | 4.00 | |
| | $12,600 | 10.51 | |
| | $12,600 | 15.52 | |
| | $12,600 | 15.86 | |
| | $12,600 | 19.72 | |
| | $12,600 | 23.40 | |
| | $13,000 | 8.50 | |
| | $13,026 | 38.00 | |
| | $17,411 | 8.50 | |
| **Butte County** | $12,500 | 175.00 | |
| **Colusa County** | $15,000 | 0.86 | |
| | $15,000 | 2.29 | |
| | $15,000 | 6.59 | |
| | $15,000 | 0.21 | |
| | $15,000 | 0.54 | |
| | $15,000 | 0.14 | |
| | $15,000 | 1.78 | |
| | $15,000 | 1.03 | |
| | $15,000 | 5.58 | |
| | $15,000 | 0.71 | |
| | $15,000 | 6.03 | |
| **Feather River** | $9,000 | 0.54 | |
| | $12,000 | 6.83 | |
| **Imperial County** | $3,000 | 0.31 | |
| | $3,000 | 0.42 | |
| | $3,000 | 1.16 | |
| | $3,000 | 1.18 | |
| | $3,000 | 1.20 | |
| | $3,000 | 1.20 | |
| | $3,000 | 1.22 | |
| | $3,000 | 1.30 | |
| | $3,000 | 2.20 | |
| | $3,000 | 2.33 | |
| | $3,000 | 2.54 | |
| | $3,000 | 2.74 | |

| | | | |
|---|---|---|---|
| Imperial County (Cont'd) | $3,000 | 2.84 | |
| | $3,000 | 3.32 | |
| | $3,000 | 3.33 | |
| | $3,000 | 3.33 | |
| | $3,000 | 4.42 | |
| | $3,000 | 4.61 | |
| | $3,000 | 4.69 | |
| | $3,000 | 8.87 | |
| | $5,593 | 2.50 | |
| | $15,000 | 0.51 | |
| **Placer County** | $12,179 | 31.20 | |
| **San Diego** | $2,500 | 0.20 | |
| | $3,484 | 1.86 | |
| | $4,633 | 0.18 | |
| | $4,762 | 0.42 | |
| | $20,280 | 21.18 | |
| | $35,323 | 2.00 | |
| | $36,500 | 2.00 | |
| | $50,000 | 18.70 | |
| | $50,000 | 18.70 | |
| **Santa Barbara** | $5,000 | 0.20 | |
| | $7,500 | 0.30 | |
| | $7,500 | 1.12 | |
| | $55,000 | 0.28 | |
| **San Joaquin Valley** | $9,000 | 25.00 | |
| | $10,000 | 22.76 | |
| | $10,000 | 46.62 | |
| | $11,307 | 62.84 | |
| | $11,307 | 62.85 | |
| | $11,307 | 175.00 | |
| | $13,000 | 18.26 | |
| | $27,009 | 0.09 | |
| | $27,009 | 0.14 | |
| | $28,000 | 5.00 | |
| | $33,000 | 0.34 | |
| | $33,000 | 7.70 | |
| | $33,000 | 150.00 | |
| | $34,000 | 1.68 | |
| | $34,000 | 13.00 | |
| | $34,000 | 21.81 | |
| | $34,000 | 22.84 | |
| | $34,000 | 41.00 | |
| | $35,000 | 12.00 | |
| | $35,000 | 25.20 | |
| | $39,000 | 9.60 | |
| | $39,000 | 10.40 | |
| | $42,000 | 0.01 | |
| | $42,000 | 1.75 | |
| | $42,000 | 4.42 | |

| | | | |
|---|---|---|---|
| San Joaquin Valley (Cont'd) | $42,000 | 4.57 | |
| | $42,000 | 15.00 | |
| | $42,000 | 21.00 | |
| | $43,000 | 0.02 | |
| | $43,000 | 0.14 | |
| | $43,000 | 0.34 | |
| | $43,000 | 0.80 | |
| | $43,000 | 3.31 | |
| | $43,000 | 4.00 | |
| | $43,000 | 7.70 | |
| | $43,000 | 13.00 | |
| | $45,000 | 8.00 | |
| | $45,000 | 40.00 | |
| | $49,116 | 0.51 | |
| | $344,828 | 0.01 | |
| **South Coast** | $4,110 | 0.91 | |
| | $4,110 | 4.93 | |
| | $4,110 | 5.66 | |
| | $8,219 | 0.91 | |
| | $8,219 | 4.93 | |
| | $8,219 | 5.66 | |
| | $15,068 | 8.76 | |
| | $15,562 | 4.56 | |
| | $20,548 | 0.37 | |
| | $20,548 | 0.91 | |
| | $20,548 | 4.93 | |
| | $20,548 | 5.66 | |
| | $20,822 | 8.76 | |
| | $22,000 | 2.19 | |
| | $60,274 | 0.91 | |
| | $63,014 | 0.18 | |
| | $63,014 | 0.18 | |
| | $63,014 | 0.18 | |
| | $63,014 | 0.55 | |
| | $63,014 | 10.77 | |
| | $71,233 | 5.48 | |
| | $74,795 | 23.18 | |
| | $75,342 | 3.65 | |
| | $78,082 | 4.75 | |
| | $80,822 | 1.10 | |
| | $80,822 | 2.01 | |
| | $80,822 | 2.37 | |
| | $80,822 | 4.56 | |
| | $80,822 | 15.15 | |
| | $82,192 | 0.37 | |
| | $82,192 | 0.55 | |
| | $82,192 | 0.55 | |
| | $82,192 | 0.91 | |
| | $82,192 | 3.10 | |
| | $82,192 | 5.48 | |
| | $82,192 | 10.95 | |
| | $84,932 | 0.37 | |

South Coast (Cont'd)

| | | |
|---|---|---|
| $84,932 | 0.55 | |
| $86,849 | 1.46 | |
| $86,849 | 7.67 | |
| $86,849 | 9.13 | |
| $87,671 | 0.18 | |
| $87,671 | 1.64 | |
| $87,671 | 2.19 | |
| $87,671 | 2.92 | |
| $87,671 | 7.30 | |
| $89,863 | 6.57 | |
| $89,863 | 6.75 | |
| $91,781 | 1.64 | |
| $93,151 | 2.01 | |
| $93,151 | 4.75 | |
| $94,521 | 11.68 | |
| $94,521 | 63.51 | |
| $95,890 | 0.37 | |
| $95,890 | 0.37 | |
| $95,890 | 0.55 | |
| $95,890 | 1.64 | |
| $95,890 | 2.19 | |
| $95,890 | 2.19 | |
| $97,260 | 8.40 | |
| $98,630 | 0.18 | |
| $98,630 | 0.91 | |
| $98,630 | 0.91 | |
| $98,630 | 0.91 | |
| $98,630 | 0.91 | |
| $98,630 | 1.83 | |
| $98,630 | 3.83 | |
| $98,630 | 4.56 | |
| $100,000 | 6.39 | |
| $100,000 | 12.78 | |
| $102,740 | 2.19 | |
| $105,479 | 1.28 | |
| $108,219 | 12.78 | |
| $109,589 | 0.37 | |

**Ventura County**

| | | |
|---|---|---|
| $25,000 | 0.54 | |
| $30,000 | 2.48 | |
| $33,000 | 0.54 | |
| $35,000 | 3.06 | |
| $35,000 | 3.18 | |
| $39,000 | 3.18 | |
| $46,500 | 3.50 | |
| $46,500 | 5.98 | |

**Table 7**

**2008 Summary Statistics For a Total of 188 HC Transactions***

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 1,775.15 |
| **Average (mean)** | $43,435 | |
| **Median** | $34,000 | |
| **High** | $344,828 | |
| **Low** | $2,500 | |

*Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 2**

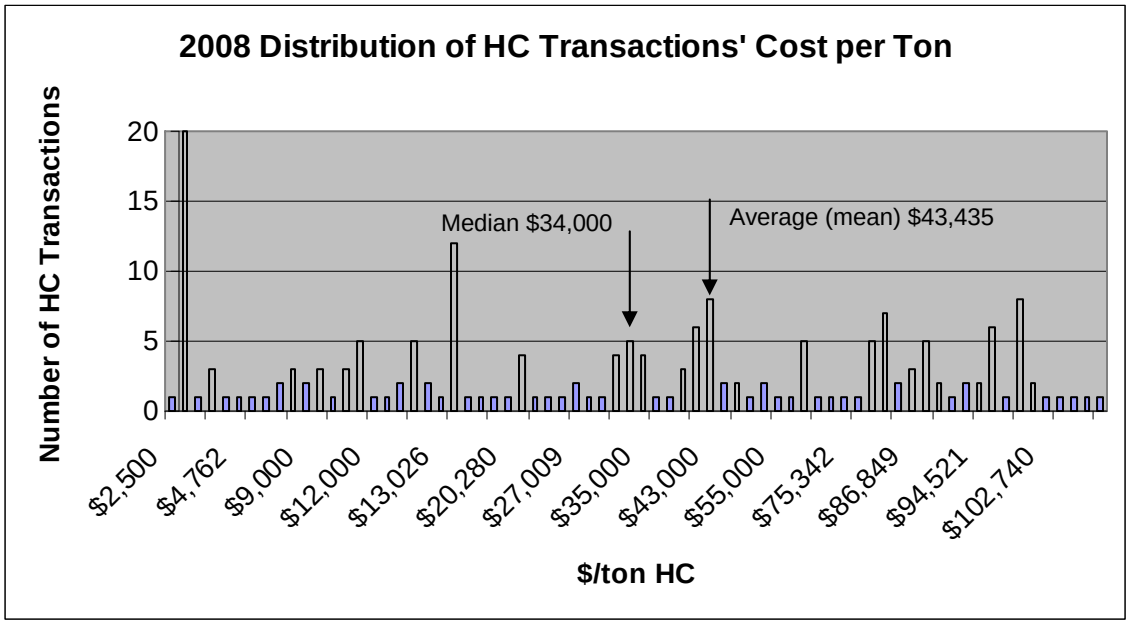



**Table 8**

## 2008 California
## $PM_{10}$ Emission Reduction Credit Transaction Costs
## Reported in Total Tons Traded
## (Does not include South Coast AQMD)

| District | $/ton | Tons | Notes |
|---|---|---|---|
| **Butte County** | $25,000 | 67.00 | |
| **Colusa County** | $12,000 | 25.48 | |
| | $15,000 | 1.58 | |
| | $15,000 | 1.39 | |
| | $15,000 | 7.53 | |
| | $15,000 | 0.91 | |
| | $15,000 | 8.09 | |
| **Feather River** | $3,000 | 0.45 | |
| | $4,000 | 0.82 | |
| **Imperial County** | $400 | 0.33 | |
| | $400 | 0.34 | |
| | $400 | 0.72 | |
| | $400 | 1.28 | |
| | $400 | 1.28 | |
| | $400 | 1.52 | |
| | $400 | 1.97 | |
| | $400 | 3.55 | |
| | $400 | 3.94 | |
| | $400 | 4.33 | |
| | $400 | 4.42 | |
| | $400 | 4.42 | |
| | $400 | 7.15 | |
| | $400 | 7.74 | |
| | $400 | 7.74 | |
| | $446 | 0.56 | |
| | $450 | 0.66 | |
| | $450 | 1.21 | |
| | $450 | 1.30 | |
| | $450 | 1.46 | |
| | $450 | 2.00 | |
| | $450 | 2.92 | |
| | $450 | 3.77 | |
| | $450 | 4.14 | |
| | $5,593 | 2.21 | |
| | $45,000 | 0.45 | |
| **San Joaquin Valley** | $6,600 | 0.15 | |
| | $13,000 | 0.31 | |
| | $40,000 | 0.16 | |
| | $40,000 | 0.66 | |
| | $46,500 | 0.13 | |
| | $46,500 | 0.55 | |
| | $47,000 | 5.00 | |

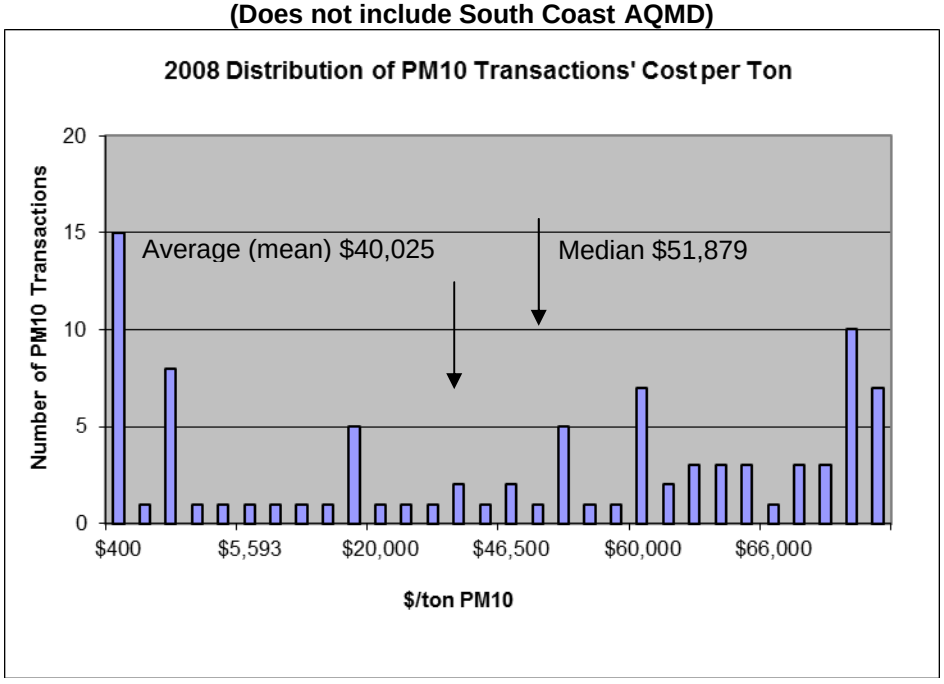
| | | | |
|---|---|---|---|
| San Joaquin Valley (Cont'd) | $51,879 | 0.05 | |
| | $51,879 | 1.13 | |
| | $51,879 | 2.77 | |
| | $51,879 | 3.09 | |
| | $51,879 | 4.41 | |
| | $58,500 | 1.50 | |
| | $59,830 | 3.31 | |
| | $60,000 | 0.71 | |
| | $60,000 | 0.98 | |
| | $60,000 | 1.45 | |
| | $60,000 | 2.19 | |
| | $60,000 | 2.79 | |
| | $60,000 | 2.92 | |
| | $60,000 | 14.99 | |
| | $61,800 | 0.51 | |
| | $61,800 | 6.96 | |
| | $62,500 | 1.24 | |
| | $62,500 | 3.26 | |
| | $62,500 | 3.61 | |
| | $63,000 | 2.12 | |
| | $63,000 | 4.25 | |
| | $63,000 | 6.74 | |
| | $65,000 | 0.71 | |
| | $65,000 | 5.00 | |
| | $65,000 | 14.62 | |
| | $66,000 | 0.71 | |
| | $66,300 | 5.92 | |
| | $66,300 | 20.61 | |
| | $66,300 | 23.48 | |
| | $71,000 | 1.50 | |
| | $71,000 | 1.64 | |
| | $71,000 | 3.11 | |
| | $75,000 | 0.13 | |
| | $75,000 | 0.31 | |
| | $75,000 | 0.31 | |
| | $75,000 | 0.55 | |
| | $75,000 | 0.57 | |
| | $75,000 | 1.27 | |
| | $75,000 | 1.40 | |
| | $75,000 | 3.47 | |
| | $75,000 | 4.29 | |
| | $75,000 | 10.00 | |
| | $77,000 | 0.01 | |
| | $77,000 | 0.01 | |
| | $77,000 | 0.03 | |
| | $77,000 | 0.03 | |
| | $77,000 | 0.40 | |
| | $77,000 | 2.12 | |
| | $77,000 | 13.00 | |
| **Ventura County** | $20,000 | 0.03 | |
| | $23,333 | 0.03 | |

**Table 9**
**2008 Summary Statistics For a Total of 93 PM10 Transactions***
**(Does not include South Coast AQMD)**

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 377.81 |
| **Average (mean)** | $40,025 | |
| **Median** | $51,879 | |
| **High** | $77,000 | |
| **Low** | $400 | |

* Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 3**
**(Does not include South Coast AQMD)**



## Table 10
## 2008 California
## $PM_{10}$ Emission Reduction Credit Transaction Costs
## Reported in Total Tons Traded
## South Coast AQMD Only

| District | $/ton | Tons | Notes |
|---|---|---|---|
| **South Coast** | $65,754 | 0.37 | |
| | $273,973 | 2.74 | |
| | $430,137 | 2.74 | |
| | $493,151 | 0.55 | |
| | $507,357 | 0.18 | |
| | $507,357 | 0.37 | |
| | $507,357 | 0.37 | |
| | $507,357 | 0.37 | |
| | $507,357 | 0.55 | |
| | $507,357 | 0.73 | |
| | $507,357 | 2.37 | |
| | $520,548 | 0.37 | |
| | $526,027 | 0.37 | |
| | $526,027 | 0.55 | |
| | $526,027 | 1.28 | |
| | $526,027 | 2.19 | |
| | $526,027 | 2.37 | |
| | $547,945 | 0.73 | |
| | $547,945 | 0.91 | |
| | $547,945 | 1.1 | |
| | $547,945 | 1.1 | |
| | $547,945 | 1.28 | |
| | $547,945 | 4.38 | |
| | $561,644 | 0.91 | |
| | $621,918 | 1.46 | |
| | $657,534 | 0.18 | |
| | $657,534 | 0.37 | |
| | $657,534 | 0.55 | |
| | $657,534 | 0.73 | |
| | $657,534 | 0.91 | |
| | $794,521 | 1.28 | |
| | $794,521 | 3.65 | |
| | $915,068 | 0.18 | |
| | $915,068 | 0.37 | |
| | $915,068 | 0.73 | |
| | $915,068 | 2.19 | |
| | $916,068 | 0.55 | |
| | $1,079,452 | 0.91 | |
| | $1,095,890 | 0.18 | |
| | $1,095,890 | 0.37 | |
| | $1,150,685 | 0.18 | |
| | $1,150,685 | 0.37 | |

South Coast (Cont'd)

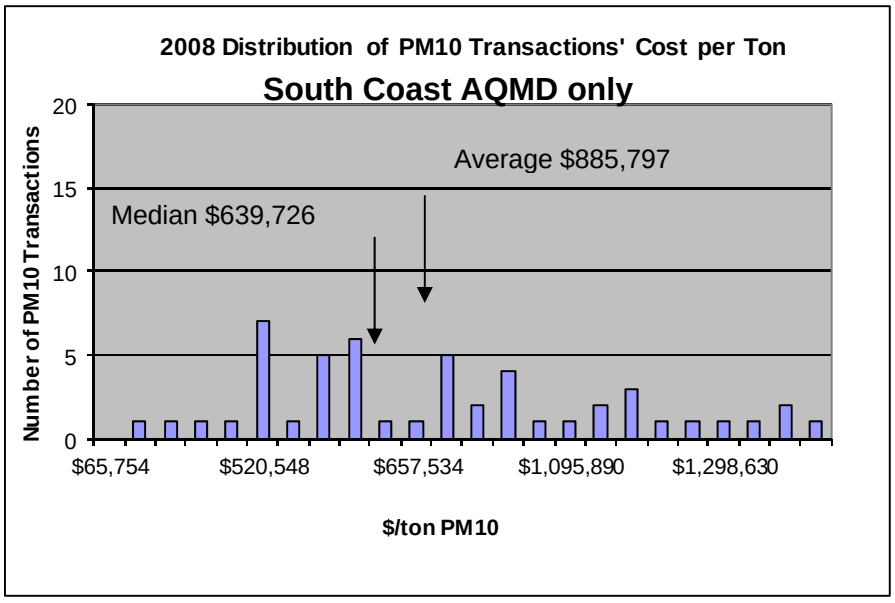
| | | |
|---|---|---|
| $1,150,685 | 1.28 | |
| $1,173,058 | 1.1 | |
| $1,260,274 | 0.18 | |
| $1,293,151 | 0.18 | |
| $1,298,630 | 0.18 | |
| $1,353,425 | 0.37 | |
| $1,353,425 | 0.37 | |
| $7,945,121 | 1.28 | |

**Table 11**
**2008 Summary Statistics For a Total of 50 PM10 Transactions**
**South Coast AQMD only**

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 48.98 |
| **Average (mean)** | $885,797 | |
| **Median** | $639,726 | |
| **High** | $7,945,121 | |
| **Low** | $65,754 | |

* Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 4**



## Table 12
## 2008 California
## CO Emission Reduction Credit Transaction Costs
## Reported in Total Tons Traded

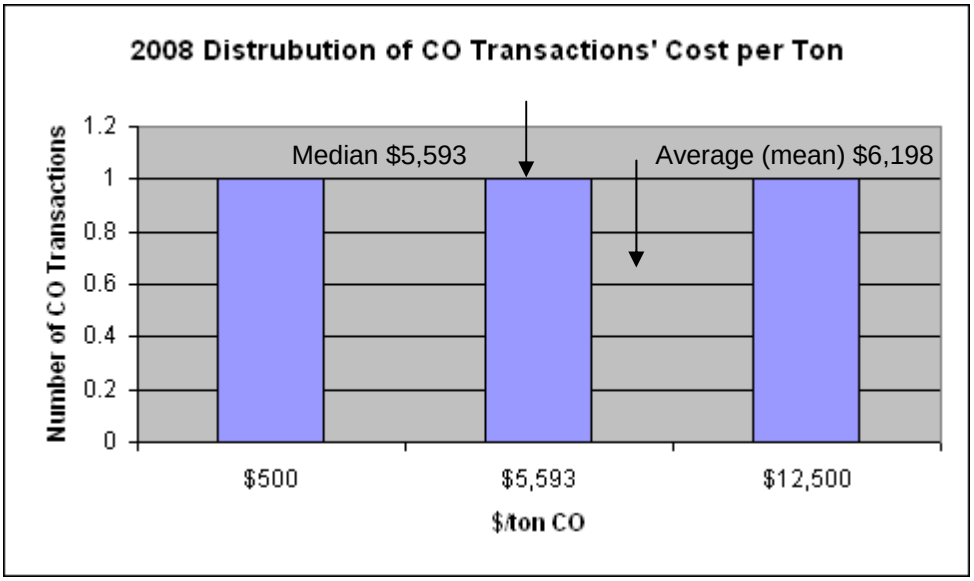
| District | $/ton | Tons | Notes |
|---|---|---|---|
| **Butte County** | $12,500 | 69.00 | |
| **Imperial County** | $500 | 1.38 | |
| | $5,593 | 6.78 | |

## Table 13
## 2008 Summary Statistics For a Total of 3 CO Transactions*

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 77.16 |
| **Average (mean)** | $6,198 | |
| **Median** | $5,593 | |
| **High** | $12,500 | |
| **Low** | $500 | |

* Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 5**



## Table 14
## 2008 California
## SOx Emission Reduction Credit Transaction Costs
## Reported in total Tons Traded

| District | $/ton | Tons | Notes |
|---|---|---|---|
| **Colusa County** | $4,000 | 4.44 | |
| | $5,000 | 0.71 | |
| | $5,000 | 1.91 | |
| | $5,000 | 0.35 | |
| | $5,000 | 0.81 | |
| | $5,000 | 0.29 | |
| | $5,000 | 0.28 | |
| | $5,000 | 1.54 | |
| | $5,000 | 0.59 | |
| | $5,000 | 0.04 | |
| | $5,000 | 0.02 | |
| | $5,000 | 0.39 | |
| | $5,000 | 0.22 | |
| | $5,000 | 1.21 | |
| | $5,000 | 0.16 | |
| | $5,000 | 1.41 | |
| **Imperial County** | $3,000 | 0.45 | |
| | $4,000 | 0.82 | |
| **San Joaquin Valley** | $7,000 | 0.01 | |
| | $7,000 | 1.59 | |
| | $7,000 | 7.35 | |
| | $7,000 | 22.45 | |
| | $7,000 | 32.40 | |
| | $7,000 | 36.40 | |
| | $13,000 | 0.02 | |
| | $14,000 | 48.00 | |
| | $15,600 | 6.61 | |
| | $15,600 | 19.81 | |
| | $21,560 | 0.01 | |
| | $27,500 | 0.66 | |
| | $30,000 | 45.00 | |
| | $30,000 | 45.00 | |
| | $33,000 | 1.88 | |
| | $33,000 | 1.91 | |
| | $33,000 | 3.80 | |
| | $33,000 | 12.42 | |
| | $34,500 | 3.00 | |
| | $35,000 | 5.30 | |
| | $36,000 | 8.00 | |
| | $37,000 | 0.59 | |
| | $37,000 | 0.66 | |
| | $37,000 | 1.85 | |

| | | | |
|---|---|---|---|
| San Joaquin Valley (Cont'd) | $37,000 | 3.81 | |
| | $37,000 | 6.09 | |
| | $37,000 | 12.78 | |
| | $37,000 | 45.00 | |
| | $37,500 | 0.01 | |
| | $37,500 | 0.04 | |
| | $37,500 | 0.05 | |
| | $37,500 | 0.08 | |
| | $37,500 | 0.16 | |
| | $37,500 | 0.63 | |
| | $37,500 | 1.60 | |
| | $37,500 | 1.90 | |
| | $37,500 | 2.73 | |
| | $37,500 | 3.80 | |
| | $40,000 | 1.80 | |
| | $40,000 | 1.86 | |
| | $40,000 | 5.52 | |
| | $40,000 | 6.33 | |
| | $40,000 | 16.30 | |
| | $40,000 | 18.19 | |
| | $40,000 | 25.00 | |
| | $42,000 | 1.60 | |
| | $42,000 | 1.66 | |
| | $42,000 | 1.66 | |
| **South Coast** | $82,192 | 0.91 | |
| | $263,014 | 0.18 | |
| | $263,014 | 0.37 | |
| | $263,014 | 0.37 | |
| | $263,014 | 0.37 | |
| | $263,014 | 0.73 | |
| | $263,014 | 1.83 | |
| | $263,014 | 3.65 | |
| | $263,014 | 3.90 | |
| | $263,014 | 7.30 | |
| | $273,973 | 3.65 | |
| | $273,973 | 4.75 | |
| | $383,562 | 0.55 | |
| | $421,918 | 0.18 | |
| **Ventura County** | $15,000 | 0.01 | |
| | $15,000 | 0.01 | |

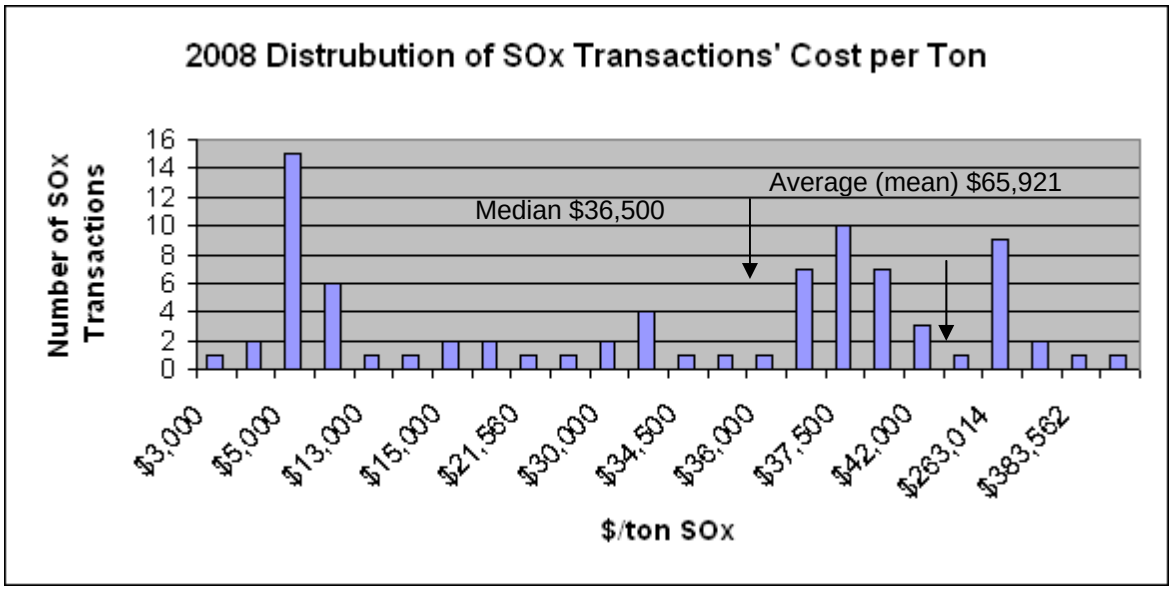
**Table 15**

**2008 Summary Statistics For a Total of 82 SOx Transactions***

| | $/ton | Tons |
|---|---|---|
| **Total Tons Traded** | | 507.72 |
| **Average (mean)** | $65,921 | |
| **Median** | $36,500 | |
| **High** | $421,918 | |
| **Low** | $3,000 | |

* Excludes asset transfer, subsidiary, barter, and other non-monetary transactions with no cost data.

**Chart 6**



# APPENDIX A

## HEALTH & SAFETY CODE SECTIONS 40709 & 40709.5, AND GOVERNMENT CODE SECTION 6254.7

**H&SC; 40709 DISTRICT BANKING AND OFFSET SYSTEM**

(a) Every district board shall establish by regulation a system by which all reductions in the emission of air contaminants that are to be used to offset certain future increases in the emission of air contaminants shall be banked prior to use to offset future increases in emissions. The system shall provide that only those reductions in the emission of air contaminants that are not otherwise required by any federal, state, or district law, rule, order, permit, or regulation shall be registered, certified, or otherwise approved by the district air pollution control officer before they may be banked and used to offset future increases in the emission of air contaminants. The system shall be subject to disapproval by the state board pursuant to Chapter 1 (commencing with Section 41500) of Part 4 within 60 days after adoption by the district.

(b) The system is not intended to recognize any preexisting right to emit air contaminants, but to provide a mechanism for districts to recognize the existence of reductions of air contaminants that can be used as offsets, and to provide greater certainty that the offsets shall be available for emitting industries.

(c) Notwithstanding subdivision (a), emissions reductions proposed to offset simultaneous emissions increases within the same stationary source need not be banked prior to use as offsets, if those reductions satisfy all criteria established by regulation pursuant to subdivision (a).

(d) This section does not apply to any district that is not required to prepare and submit a plan for attainment of state ambient air quality standards pursuant to Section 40911 if both of the following apply to the district:

(1) The district is not in a federal nonattainment area for any national ambient air quality standard unless the sole reason for the nonattainment is due to air pollutant transport.

(2) An owner or operator of a source or proposed source has not petitioned the district to establish a banking system.

(Amended by Stats. 2000, Ch. 729, Sec. 5.)

**H&SC; 40709.5 REVIEW OF EMISSION CREDIT SYSTEMS**

40709.5. Any district which has established a system pursuant to Section 40709 by which reductions in emissions may be banked or otherwise credited to offset future increases in the emissions of air contaminants, or which utilize a calculation method which enables internal emission reductions to be credited against increases in emissions, and as of January 1, 1988, is within a federally designated nonattainment area for one or more air pollutants, shall develop and implement a program which, at a minimum, provides for all of the following:

(a) Identification and tracking of sources possessing emission credit balances accruing from the elimination or replacement of older, higher emitting equipment.

(b) Periodic analysis of the increases or decreases in emissions which occur when credits are used to bring new or modified emission sources into operation.

(c) Procedures for verifying the emission reductions credited to the bank or accruing to internal accounts and for adjusting of credited emissions based on current district requirements.

(d) Periodic evaluation of the extent to which the system has contributed or detracted from the goal of allowing economic growth and modification of existing facilities, and has contributed to or detracted from the district's progress toward attainment of ambient air quality standards.

(e) Annual publication of the costs, in dollars per ton, of emission offsets purchased for new or modified emission sources, excluding information on the identity of any party involved in the offset transactions. This publication shall specify, for each offset purchase transaction, the year the offset transaction occurred, the amount of offsets purchased, by pollutant, and the total cost, by pollutant, of the offsets purchased. Each application to use emissions reductions banked in a system established pursuant to Section 40709 shall provide sufficient information, as determined by the district, to perform the cost analysis. The information shall be a public record.

(Amended by Stats. 1992, Ch. 612, Sec. 3. Effective January 1, 1993.)

**GOVERNMENT CODE SECTION 6254.7**

(a) All information, analyses, plans, or specifications that disclose the nature, extent, quantity, or degree of air contaminants or other pollution which any article, machine, equipment, or other contrivance will produce, which any air pollution control district or air quality management district, or any other state or local agency or district, requires any applicant to provide before the applicant builds, erects, alters, replaces, operates, sells, rents, or uses the article, machine, equipment, or other contrivance, are public records.

(b) All air or other pollution monitoring data, including data compiled from stationary sources, are public records.

(c) All records of notices and orders directed to the owner of any building of violations of housing or building codes, ordinances, statutes, or regulations which constitute violations of standards provided in Section 1941.1 of the Civil Code, and records of subsequent action with respect to those notices and orders, are public records.

(d) Except as otherwise provided in subdivision (e) and Chapter 3 (commencing with Section 99150) of Part 65 of the Education Code, trade secrets are not public records under this section. "Trade secrets," as used in this section, may include, but are not limited to, any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented, which is known only to certain individuals within a commercial concern who are using it to fabricate, produce, or compound an article of trade or a service having commercial value and which gives its user an opportunity to obtain a business advantage over competitors who do not know or use it.

(e) Notwithstanding any other provision of law, all air pollution emission data, including those emission data which constitute trade secrets as defined in subdivision (d), are public records. Data used to calculate emission data are not emission data for the purposes of this subdivision and data which constitute trade secrets and which are used to calculate emission data are not public records.

(f) Data used to calculate the costs of obtaining emissions offsets are not public records. At the time that an air pollution control district or air quality management district issues a permit to construct to an applicant who is required to obtain offsets pursuant to district rules and regulations, data obtained from the applicant consisting of the year the offset transaction occurred, the amount of offsets purchased, by pollutant, and the total cost, by pollutant, of the offsets purchased is a public record. If an application is denied, the data shall not be a public record.

# APPENDIX B

# REPORTING FORM AND INSTRUCTIONS

**ANNUAL EMISSION REDUCTION CREDIT TRANSACTION REPORT INSTRUCTIONS**

**General:**

**One transaction record per pollutant should be filled out for each transaction that takes place in the district between two or more parties.**

**Transactions should be reported in the year in which the final transaction occurs and money, or barter agreements, are exchanged.**

**The annual report should be submitted to ARB no later than January 15 of each year. The ARB will compile all data from the districts and publish a statewide report on the cost of offsets.**

**For cases of offset transactions that occur across district boundaries, transactions should be reported in the district in which the offsets are credited. This is the district that will most likely have access to the transaction cost information necessary for reporting.**

**ANNUAL EMISSION REDUCTION CREDIT TRANSACTION REPORT FOR 2008 TRANSACTIONS**

DISTRICT ID# _ _ _ _ _ _ _

POLLUTANT

_____ NOx
_____ SOx
_____ CO
_____ HC
_____ PM10
_____ Other

CREDIT SOURCE

_____ STATIONARY
_____ MOBILE
_____ AGRICULTURAL
_____ OTHER

QUANTITY of POLLUTANT (TONS/YEAR) _____

PRICE PAID ($/TON) _____

ANNUAL or QUARTER?

Q1 _____ Q2 _____ Q3 _____ Q4 _____

BARTER TRANSACTION? _____

SUBSIDIARY TRANSACTION? _____

LENGTH OF LIFE/LEASE _____

DISTRICT ID# _ _ _ _ _ _ _

| POLLUTANT | | CREDIT SOURCE | | QUANTITY of POLLUTANT (TONS/YEAR) |
|---|---|---|---|---|
| _____ | NOx | _____ | STATIONARY | _____ |
| _____ | SOx | _____ | MOBILE | |
| _____ | CO | _____ | AGRICULTURAL | |
| _____ | HC | _____ | OTHER | |
| _____ | PM10 | | | PRICE PAID ($/TON) |
| _____ | Other | | | _____ |

ANNUAL or QUARTER?

| Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|
| _____ | _____ | _____ | _____ |

BARTER TRANSACTION? _____

SUBSIDIARY TRANSACTION? _____

LENGTH OF LIFE/LEASE _____

DISTRICT ID# _ _ _ _ _ _ _

| POLLUTANT | | CREDIT SOURCE | | QUANTITY of POLLUTANT (TONS/YEAR) |
|---|---|---|---|---|
| _____ | NOx | _____ | STATIONARY | _____ |
| _____ | SOx | _____ | MOBILE | |
| _____ | CO | _____ | AGRICULTURAL | |
| _____ | HC | _____ | OTHER | |
| _____ | PM10 | | | PRICE PAID ($/TON) |
| _____ | Other | | | _____ |

ANNUAL or QUARTER?

| Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|
| _____ | _____ | _____ | _____ |

BARTER TRANSACTION? _____

SUBSIDIARY TRANSACTION? _____

LENGTH OF LIFE/LEASE _____

1. **<u>District ID #</u>: The district ID # should be in the format:**

**AAYYXXX**

**Where AA is a two letter district code (a list of district codes is attached), YY is a two digit year (in which the transaction occurs) identifier (e.g. 07 for 2008), and XXX is a three-digit transaction number from 001 to 999. This ID number will only be used to track the origin of data and for data validation. The assignment of a transaction number will ensure quality control of data transfer between the district and the Air Resources Board. Individual transactions will not be identified in Air Resources Board summary reports.**

2. **<u>Pollutant:</u> Please check one pollutant per transaction. If trade involved more than one pollutant, use separate transaction records for each pollutant traded. HC is equivalent to other acronyms used for hydrocarbons such as POC, ROC, ROG and VOC.**

3. **<u>Credit Source:</u> Please indicate the source of emission reduction credits (ERC). This information will aid in the analysis of ERC prices paid. Stationary source credits typically do not have a finite useful life, whereas mobile and agricultural source ERCs have specific limiting conditions that limit useful life. It is important that a distinction be made between these kinds of offsets when analyzing the cost of offsets.**

4. **<u>Annual/Quarter</u>: Please indicate if credits are valid on an annual basis or quarterly. Additionally, if credits are valid quarterly, indicate in which quarter they can be used. This applies to seasonal credits or credits that are only valid in a specific quarter.**

5. **<u>Quantity of Pollutant:</u> Regardless of district recording practices or the transaction agreement, please provide the quantity of pollutant in tons/year.**

***Example 1: For Data Given as a Single Quarter Transactions***

$$1\frac{lb}{quarter} = 1\frac{lb}{quarter} X4\frac{quarters}{year} X \frac{1}{2000}\frac{ton}{lbs} = 0.0020\frac{tons}{year}$$

***Example 2: For Data Provided as an Annual Transactions***

$$1\frac{lb}{day} = 1\frac{lb}{day} X365\frac{days}{year} X \frac{1}{2000}\frac{ton}{lbs} = 0.1825\frac{tons}{year}$$

***Example 3: For Quarterly Credits Used to Offset Annual Sources***

$$(Q_1 + Q_2 + Q_3 + Q_4) = \frac{lbs}{year}$$ **Convert to tons per year**

6. **<u>Price Paid</u>: This is the bottom line price paid by the purchaser to the owner of the credit. Government Code Section 6254.7 authorizes the district to obtain this information from applicants. Net present value should not be calculated for lease transactions. If price is given in dollars per pound, please convert to dollars per ton by multiplying by 2000 lb/ton.**

7. **<u>Barter and Subsidiary Transactions</u>: If barter was involved and/or no money was exchanged for the offsets, the district should request the applicant to calculate a dollars/ton value for the credit transaction. Barters can include one company (A) placing controls on another (B) to generate credits. The price paid should then reflect what company A paid to install equipment at company B and any additional fees paid to company B as part of the agreement. The price paid for offsets should be the value of the offset at the time of the transaction.**

   **If a transaction occurred between two subsidiaries of the same parent company, check the subsidiary transaction box. This also applies to transactions that occur between agencies of the same governmental system for example between two agencies of the county. Since the price charged in barter and subsidiary transactions may not reflect the market value of credits, this information will be helpful in analyzing prices paid for credits.**

8. **<u>Length of Use/Lease</u>: Please indicate the valid length of credit life for this transaction. This applies to stationary source credits that are sold as a limited life lease agreement, or to other types of credit that have a finite useful life. If no limit is placed on the useful life, leave this box blank.**

## DISTRICT TWO-LETTER CODES

AM Amador County APCD

AV Antelope Valley APCD

BA Bay Area AQMD

BT Butte County APCD

CA Calaveras County APCD

CO Colusa County APCD

ED El Dorado County APCD

FR Feather River AQMD

GL Glenn County APCD

GB Great Basin Unified APCD

IM Imperial County APCD

KE Kern County APCD

LA Lake County AQMD

LS Lassen County APCD

MA Mariposa County APCD

ME Mendocino County AQMD

MO Modoc County APCD

MD Mojave Desert AQMD

NC North Coast Unified AQMD

NO Northern Sierra AQMD

NS Northern Sonoma County APCD

PL Placer County APCD

SM Sacramento Metropolitan AQMD

SD San Diego County APCD

SJ San Joaquin Valley Unified APCD

SL San Luis Obispo County APCD

SB Santa Barbara County APCD

SH Shasta County AQMD

SI Siskiyou County APCD

SC South Coast AQMD

TE Tehama County APCD

TU Tuolumne County APCD

VE Ventura County APCD

YS Yolo-Solano AQMD

# APPENDIX C

# GLOSSARY OF TERMS

**Agricultural Source:** Source of air pollution used in the production of crops, or the raising of fowl or animals located on contiguous property under common ownership.

**Barter:** To trade without using money.

**Mobile sources:** Sources of air pollution such as automobiles, motorcycles, trucks, off-road vehicles, boats and airplanes.

**Stationary sources:** Non-mobile sources such as power plants, refineries and manufacturing facilities which emit air pollutants.

**Subsidiary:** Serving to assist or supplement.