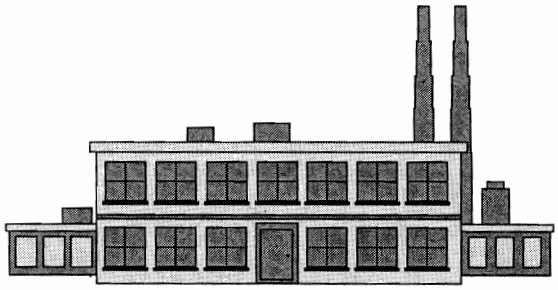
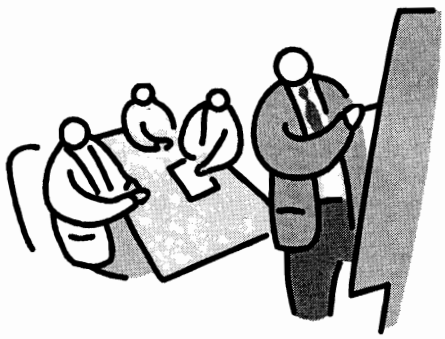
Emission Reduction Offsets Transaction Cost Summary Report for 2006

July 2007



Stationary Source Offsets

ERC Bank



ERC Trading

California Environmental Protection Agency

Air Resources Board

State of California
California Environmental Protection Agency

AIR RESOURCES BOARD

Emission Reduction Offsets Transaction Cost Summary Report for 2006

July 2007

Prepared by

Project Support Section
Project Assessment Branch
Stationary Source Division

This report has been reviewed by the staff of the California Air Resources Board. Publication does not signify that the contents necessarily reflect the views and policies of the Air Resources Board.

[This Page Intentionally Left Blank]

ACKNOWLEDGMENTS

Air Resources Board Staff:

Theresa Anderson, Air Pollution Specialist
Bob Rogen, Air Resources Engineer
Michael Miguel, Manager
Project Support Section
Stationary Source Division

The data for this report was compiled from information provided by all Air Pollution Control/Air Quality Management Districts in California

[This Page Intentionally Left Blank]

Table of Contents

EXECUTIVE SUMMARY 1
Background: 1
Summary of 2006 Data: 1
Table 1: Prices Paid in Dollars per Ton for Offsets 2
Data Trends 2
Summary Chart A: Average Cost of NOx Offsets in $/Ton 4
Summary Chart B: Average Cost of HC Offsets in $/Ton 4
Summary Chart C: Average Cost of PM_{10} Offsets in $/Ton 4
Summary Chart D: Number of Offset Transactions by Pollutant (NOx, HC, PM_{10}) ..5
Summary Chart E: Number of Tons Traded by Pollutant (NOx, HC, PM_{10}) 5

INTRODUCTION 6

NEW SOURCE REVIEW AND CALIFORNIA'S AIR QUALITY MANAGEMENT PROGRAM 6
Emission Reduction Credit Banking and Trading 7

REQUIREMENTS TO REPORT COST OF OFFSETS 7

DATA COLLECTION PROCESS 8

DESCRIPTION OF 2006 DATA 9
Table 2: Emission Reduction Credit Transaction Costs by District 10
Table 3: Districts with No Offset Transactions to Report in 2006 22
Table 4: NOx Emission Reduction Credit Transaction Costs/Ton 23
Table 5: Summary Statistics for NOx Transactions 25
Chart 1: NOx Transaction Costs/Ton 25
Table 6: HC Emission Reduction Credit Transaction Costs/Ton 26
Table 7: Summary Statistics for HC Transactions 31
Chart 2: HC Transaction Costs/Ton 31
Table 8: PM_{10} Emission Reduction Credit Transaction Costs/Ton 32
Table 9: Summary Statistics for PM_{10} Transactions 36
Chart 3: PM_{10} Transaction Costs/Ton 36
Table 10: CO Emission Reduction Credit Transaction Costs/Ton 37
Table 11: Summary Statistics for CO Transactions 38
Chart 4: CO Transaction Costs/Ton 38
Table 12: SOx Emission Reduction Credit Transaction Cost/Ton 39
Table 13: Summary Statistics for SOx Transactions 40
Chart 5: SOx Transaction Costs/Ton 40

APPENDIX A: Health & Safety Code Sections 40709 & 40709.5, and Gov. Code Sec. 6254.7 41
H&SC 40709: District Banking and Offset System 42
H&SC 40709.5: Review of Emission Credit Systems 43
Government Code Section 6254.7 44

APPENDIX B: Reporting Form and Instructions 45
APPENDIX C: Glossary of Terms 50

[This Page Intentionally Left Blank]

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 about 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 revealing 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 that also meet federal air quality standards are exempt from these requirements.

SUMMARY OF 2006 DATA

The Air Resources Board (ARB) has compiled information regarding NSR offset transactions collected from all 35 districts and assembled it into this report summarizing statewide emission reduction offset transactions in California for the year 2006. All the districts reported to ARB regardless of whether they had any offset transactions or whether the reporting requirements apply. A total of 515 transactions were reported to have taken place in California in 2006. In this report, we are not including information about 58 subsidiary transactions where there were no associated costs. Of the remaining 457 transactions, 51 were for oxides of nitrogen (NOx), 209 were for hydrocarbons (HC), 148 were for particulate matter with aerodynamic diameter less than 10 microns (PM_{10}), 20 were for carbon monoxide (CO), and 29 were for sulfur oxides (SOx). These transactions generally represent trades of offsets that are valid for the lifetime of the permitted source using the offsets. This is in contrast to other types of credits that are valid for much shorter time frames (e.g. 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 in 2006. 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. For a specific breakdown of all transactions by district, see Table 2, page 10.

Table 1 2006 Prices Paid in Dollars Per Transaction per Ton of Offsets					
	NOx	HC	PM_{10}	CO	SOx
Average	$81,650	$8,619	$29,050	$14,825	$55,024
Median	$25,000	$8,110	$14,150	$13,699	$9,250
High	$410,959	$64,000	$493,151	$41,096	$273,973
Low	$100	$100	$21	$18	$1,250

The following districts reported offset transactions: Bay Area AQMD, Butte County AQMD, El Dorado County AQMD, Feather River AQMD, Imperial County APCD, Mojave Desert AQMD, Monterey Bay Unified APCD, Placer County APCD, Sacramento Metro AQMD, San Diego County APCD, San Joaquin Valley Unified APCD, Santa Barbara County APCD, South Coast AQMD, Tehama County APCD Ventura County APCD, and Yolo-Solano AQMD.

DATA TRENDS

For the past fourteen years (1993-2006), ARB has collected and reported statewide data on the number and cost of offset transactions. The number of transactions increased from 30 in 1993 to 495 in 2001, followed by a consistent decrease (321 in 2002, 307 in 2003, and 247 in 2004) that changed with an increase to 340 in 2005, and 515 in 2006. The number of districts recently reporting offset transactions has remained about the same, with thirteen in 2002, fourteen in 2003, twelve in 2004, eleven in 2005, and sixteen in 2006.

Summary Charts A, B, and C illustrate the trends that have occurred during the past fourteen 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 emission credits generally decreased until 1996, then increased starting in 1997. This cost increased over the next seven years to levels higher than those of the previous years, from approximately $10,000 per transaction per ton in 1996 to $66,798 per transaction per ton in 2004, and then a dramatic decrease to $43,892 in 2005. This trend changed again dramatically in 2006 as the average cost of NOx emission credits increased to $81,650 per transaction per ton.

Summary Chart B shows that the average transaction cost of HC emission credits has fluctuated over time. Costs generally decreased between 1993 and 2000, and returned to 1993 levels in 2001. Transaction costs for 2002-2005 are less than 2001 costs, but are similar to those of the four previous years. In 2006, the average cost increased to 1995 levels, reflecting the volatility of the average transaction cost of HC emission credits. For example, this cost decreased from $9,734 per transaction per ton in 1996 to $6,000 per transaction per ton in 1997; increased to $7,680 per transaction per ton in 1998; decreased in 1999 and 2000; rose sharply to $12,684 per transaction per ton in 2001; decreased to $9,738 per transaction per ton in 2003; increased to $10,792 in 2004; decreased to $6,328 in 2005 and again increased to $8,619 in 2006.

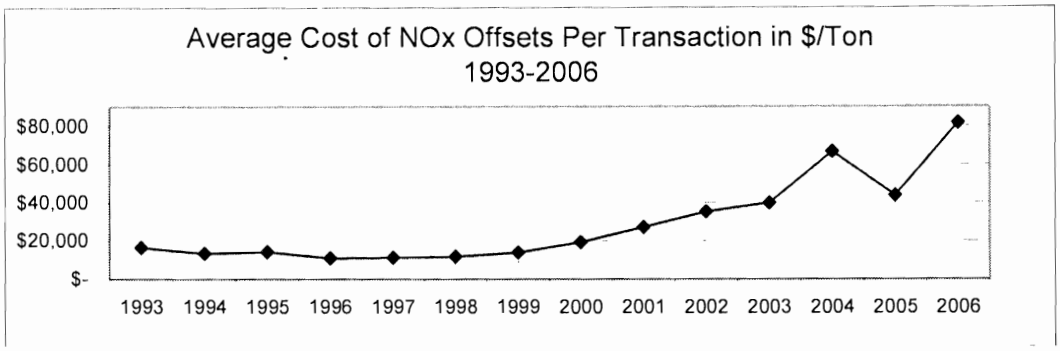
Summary Chart C shows a decrease in the average transaction cost of PM_{10} emission credits compared to the last two years. An increase in the cost occurred in 1998, followed by a decrease in 1999. A sharp increase occurred in 2001, followed by a decrease in 2003, and an increase in 2004 and 2005. For example, this cost in 1995 was $8,856 and increased over the next three years to $20,000 per transaction per ton in 1998. This cost then decreased to $10,000 in 1999; increased to $49,327 in 2002; dropped to $35,797 in 2003; more than doubled to $73,584 in 2004; reached a new high of $92,539 in 2005 and then had a dramatic drop to $29,050 in 2006.

Summary Charts D and E illustrate the trends for the number of transactions and the number of tons traded during the past fourteen years for the three most traded pollutants (NOx, HC, and PM_{10}). Summary Chart D illustrates that the number of transactions has generally increased between 1993 and 2001 for all three pollutants followed by a decreasing trend beginning in 2002. For the next three years starting in 2003 the number of offset transactions for NOx and PM_{10} stay relatively unchanged but, HC offset transactions seems to continue to fluctuate. In 2006, the number of NOx offset transactions has relatively stayed unchanged, while the number of HC and PM_{10} offset transactions rose sharply. Over the years, HC transactions have consistently outnumbered those of other pollutants.

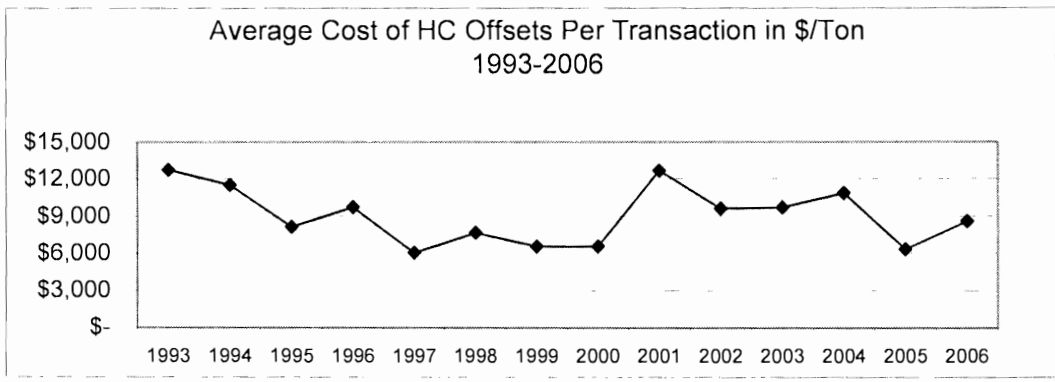
Summary Chart E shows a dramatic increase in 2000 followed by a sharp decrease in 2002 for the number of tons of NOx, HC, and PM_{10} emission credits traded. The number of NOx and HC tons traded increased slightly in 2003, while the number of PM_{10} tons traded decreased that year. A decrease in the number of tons traded occurred for all three pollutants in 2004 while in 2005, there was only a slight increase for all three pollutants. In 2006, the number of NOx and PM_{10} tons traded increased significantly while the number of HC increased only slightly.

Visit our website "Emission Reduction Credit Offsets" at www.arb.ca.gov/nsr/erco/erco.htm for further information on California offset transactions that occurred from 1999 through 2006.

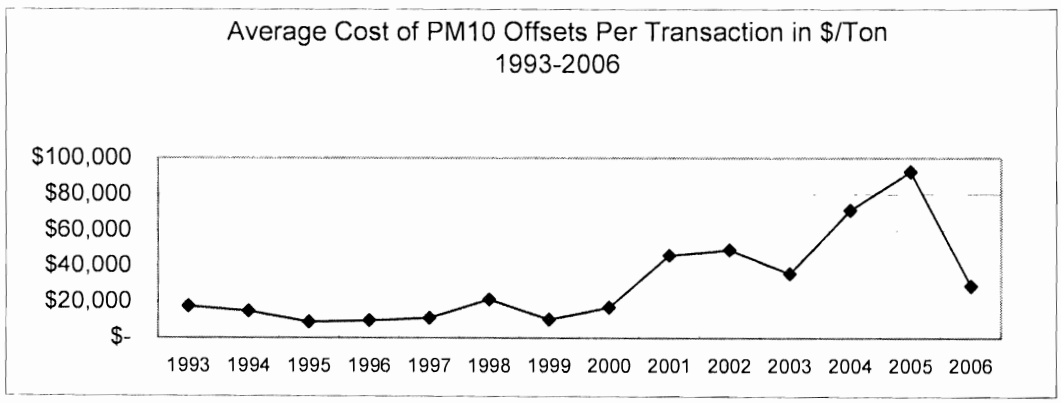
Summary Chart A



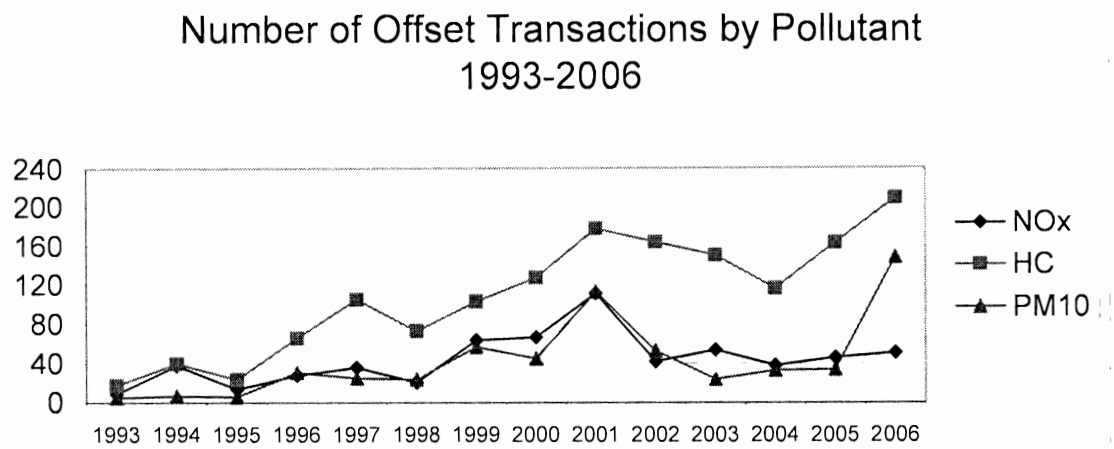
Summary Chart B



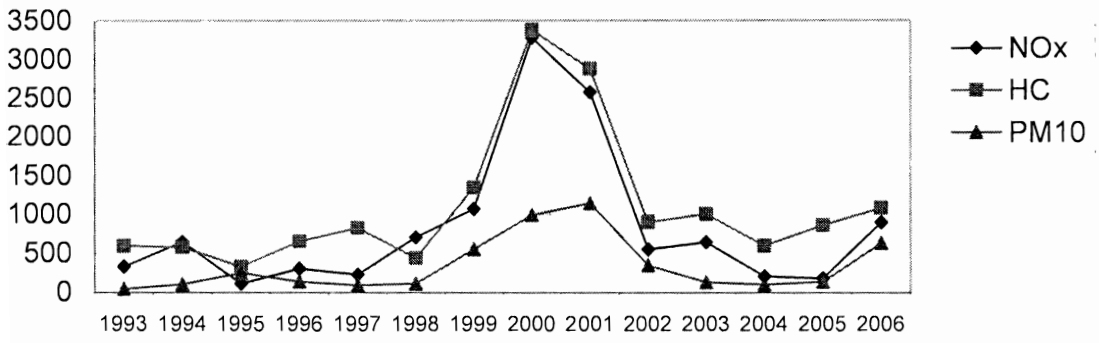
Summary Chart C



Summary Chart D



Summary Chart E



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, 2006, 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 gives a sense 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.

We have not included trading credits from the South Coast Air Quality Management District's Regional Clean Air Incentives Market (RECLAIM) program because they are not directly comparable to emission reduction credits used to satisfy NSR requirements. Also, our 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 California 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 California 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.

DESCRIPTION OF 2006 DATA

Table 1 presents the statewide average, median, high and low costs for NOx, HC, PM_{10}, CO, and SOx offsets reported in 2006.

Table 2 presents all of the 515 reported pollutant transactions that took place in California in 2006 listed by individual districts. There are 58 transactions listed in Table 2 that are not used in calculating the results of tables 4 through 13, and charts 1 through 5. This is because these 58 trades were subsidiary transactions for which there are no associated costs.

We also identify in the "Notes" section of Table 2 whether transactions are leased or valid in specific quarters. 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 pages 47 and 48.

The majority of transactions that are reported are emission reductions from stationary sources. Of the total reported 457 transactions with costs, 51 were NOx transactions, 209 were HC transactions, 148 were PM_{10} transactions, 20 were CO transactions, and 29 were SOx transactions. All the districts reported to ARB regardless of whether they had any offset transactions. Table 3 lists the districts that reported no transactions in 2006.

Tables 4, 6, 8, 10 and 12 present information by district for NOx, HC, PM_{10}, CO and SOx, respectively. Each of these tables presents the cost per ton of pollutant, the total tons of pollutant traded, and additional explanatory notes. The price paid per ton for each transaction was calculated by dividing the cost of the transaction by the number of tons traded in that transaction. All of these tables group transactions by district since offset markets, and therefore cost 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. (The median is the number in the middle of a set of numbers, i.e., half of the numbers have values greater than the median and half of the numbers have values less than the median.) These tables exclude asset transfer, subsidiary, barter, and other non-monetary transactions where there were no associated costs.

Table 2
2006 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
Bay Area	CO	$370	45.18	Stationary
Total of 24 Transactions	CO	$409	17.78	Stationary
	CO	$500	0.08	Stationary
	HC	$8,900	1.13	Stationary
	HC	$9,000	16.00	Stationary
	HC	$10,000	12.09	Stationary
	HC	$10,000	42.86	Stationary
	HC	$11,000	12.37	Stationary
	HC	$11,173	1.07	Stationary
	HC	$11,500	16.40	Stationary
	NOX	$10,000	17.77	Stationary
	NOX	$10,900	17.79	Stationary
	NOX	$13,000	135.53	Stationary
	PM10	$16,000	2.60	Stationary
	PM10	$30,000	3.19	Stationary
	PM10	$31,900	5.10	Stationary
	PM10	$33,775	7.27	Stationary
	PM10	$33,775	20.50	Stationary
	PM10	$37,096	18.60	Stationary
	SOX	$6,645	0.31	Stationary
	SOX	$6,900	22.64	Stationary
	SOX	$8,000	6.51	Stationary
	SOX	$8,375	136.29	Stationary
	SOX	$10,000	51.75	Stationary
Butte County	HC	$1,000	13.58	
Total of 4 Transactions	HC	$1,000	42.03	
	PM10	$1,000	90.03	
	PM10	$1,000	21.68	
El Dorado County	NOX	$42,079	2.38	
Total of 1 Transactions				
Feather River	HC	$5,983	0.54	Agricultural
Total of 8 Transactions	HC	$5,983	0.59	Agricultural
	HC	$5,983	2.22	Agricultural
	HC	$10,000	2.40	Agricultural
	HC	$10,000	2.62	Agricultural
	HC	$10,000	7.00	Agricultural
	PM10	$7,500	3.17	Stationary
	PM10	$7,500	10.32	Stationary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
Imperial County Total of 125 Transactions	HC	$300	0.13	Agricultural
	HC	$300	0.42	Agricultural
	HC	$300	0.49	Agricultural
	HC	$300	0.62	Agricultural
	HC	$300	0.96	Agricultural
	HC	$300	1.77	Agricultural
	HC	$400	0.12	Agricultural
	HC	$400	0.15	Agricultural
	HC	$400	0.20	Agricultural
	HC	$400	0.24	Agricultural
	HC	$400	0.29	Agricultural
	HC	$400	0.39	Agricultural
	HC	$400	0.48	Agricultural
	HC	$400	0.89	Agricultural
	HC	$400	1.57	Agricultural
	HC	$475	0.06	Agricultural
	HC	$475	0.72	Agricultural
	HC	$500	0.20	Agricultural
	HC	$500	0.21	Agricultural
	HC	$500	0.26	Agricultural
	HC	$500	0.36	Agricultural
	HC	$500	0.40	
	HC	$500	0.70	Agricultural
	HC	$500	0.91	Agricultural
	HC	$500	0.97	Agricultural
	HC	$500	1.22	Agricultural
	HC	$500	1.32	Agricultural
	HC	$500	1.33	Agricultural
	HC	$500	1.33	Agricultural
	HC	$500	1.71	Agricultural
	HC	$600	0.03	Agricultural
	HC	$600	0.35	Agricultural
	HC	$600	0.58	Agricultural
	HC	$600	0.58	Agricultural
	HC	$600	0.75	Agricultural
	HC	$600	0.81	Agricultural
	HC	$600	1.80	Agricultural
	HC	$600	2.83	Agricultural
	HC	$600	4.92	Agricultural
	HC	$600	5.22	Agricultural
	HC	$650	0.06	Agricultural
	HC	$650	0.37	Agricultural
	HC	$650	0.39	Agricultural
	HC	$650	0.40	Agricultural
	HC	$650	0.49	Agricultural
	HC	$650	0.53	Agricultural
	HC	$650	0.56	Agricultural
	HC	$650	0.58	Agricultural
	HC	$650	0.68	Agricultural

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
Imperial County (contd.)	HC	$650	0.82	Agricultural
	HC	$650	0.83	Agricultural
	HC	$650	0.87	Agricultural
	HC	$650	0.96	Agricultural
	HC	$650	0.99	Agricultural
	HC	$650	1.10	Agricultural
	HC	$650	1.15	Agricultural
	HC	$650	1.34	Agricultural
	HC	$650	1.49	Agricultural
	HC	$650	1.94	Agricultural
	HC	$650	2.00	Agricultural
	HC	$650	2.20	Agricultural
	HC	$650	6.92	Agricultural
	HC	$650	7.27	Agricultural
	HC	$700	0.48	Agricultural
	HC	$700	1.20	Agricultural
	HC	$700	1.52	Agricultural
	HC	$750	0.07	Agricultural
	HC	$750	0.32	Agricultural
	HC	$750	0.51	Agricultural
	HC	$800	0.72	Agricultural
	HC	$800	3.60	Agricultural
	HC	$850	0.77	Agricultural
	HC	$3,000	6.67	Agricultural
	PM10	$450	0.06	Agricultural
	PM10	$450	0.17	Agricultural
	PM10	$450	0.18	Agricultural
	PM10	$450	0.28	Agricultural
	PM10	$450	0.32	Agricultural
	PM10	$450	0.36	Agricultural
	PM10	$450	0.37	Agricultural
	PM10	$450	0.41	Agricultural
	PM10	$450	0.43	Agricultural
	PM10	$450	0.62	Agricultural
	PM10	$450	0.63	Agricultural
	PM10	$450	0.66	Agricultural
	PM10	$450	0.70	Agricultural
	PM10	$450	0.74	Agricultural
	PM10	$450	0.75	Agricultural
	PM10	$450	0.82	Agricultural
	PM10	$450	0.88	Agricultural
	PM10	$450	0.89	Agricultural
	PM10	$450	0.93	Agricultural
	PM10	$450	0.95	Agricultural
	PM10	$450	0.99	Agricultural
	PM10	$450	1.07	Agricultural
	PM10	$450	1.08	Agricultural
	PM10	$450	1.08	Agricultural
	PM10	$450	1.11	Agricultural

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
Imperial County (contd.)	PM10	$450	1.16	Agricultural
	PM10	$450	1.24	Agricultural
	PM10	$450	1.24	Agricultural
	PM10	$450	1.29	Agricultural
	PM10	$450	1.45	Agricultural
	PM10	$450	1.59	Agricultural
	PM10	$450	1.62	Agricultural
	PM10	$450	1.63	Agricultural
	PM10	$450	1.68	Agricultural
	PM10	$450	1.71	Agricultural
	PM10	$450	1.71	Agricultural
	PM10	$450	1.74	Agricultural
	PM10	$450	1.85	Agricultural
	PM10	$450	2.08	Agricultural
	PM10	$450	2.16	Agricultural
	PM10	$450	2.21	Agricultural
	PM10	$450	2.69	Agricultural
	PM10	$450	2.72	Agricultural
	PM10	$450	3.19	Agricultural
	PM10	$450	4.23	Agricultural
	PM10	$450	4.37	Agricultural
	PM10	$450	5.10	Agricultural
	PM10	$450	5.83	Agricultural
	PM10	$450	7.19	Agricultural
	PM10	$450	7.40	Agricultural
	PM10	$450	7.75	Agricultural
	PM10	$450	11.13	Agricultural
Mojave Desert Total of 2 Transactions	HC	$6,300	5.00	
	NOX	$0	150.00	Barter
Monterey County Total of 1 Transactions	HC	$25,000	57.38	Stationary
Placer County Total of 3 Transactions	HC	$25,000	28.62	
	NOX	$25,000	1.46	
	PM10	$20,000	1.99	
Sacramento Metro Total of 11 Transactions	CO	$3,975	0.46	Stationary
	HC	$19,873	0.04	Stationary
	HC	$19,980	1.40	Stationary
	HC	$22,500	8.49	Stationary
	HC	$25,533	34.57	Barter
	HC	$27,906	0.14	Stationary
	NOX	$19,873	0.51	Stationary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
Sacramento Metro (contd.)	NOX	$25,533	8.51	Barter
	NOX	$33,894	8.85	Stationary
	PM10	$11,924	0.18	Stationary
	SOX	$11,924	0.01	Stationary
San Diego	CO	$21	0.70	Stationary
Total of 19 Transactions	CO	$21	2.00	Stationary
	HC	$0	0.40	Subsidiary
	HC	$2,381	0.02	Stationary
	HC	$2,381	0.40	Stationary
	HC	$3,000	0.72	Stationary
	HC	$3,093	2.30	Stationary
	HC	$3,094	1.86	Stationary
	HC	$8,300	0.10	Stationary
	HC	$8,300	0.30	Stationary
	HC	$8,300	0.54	Stationary
	HC	$8,300	2.90	Stationary
	HC	$26,750	38.70	Stationary
	HC	$64,000	1.00	Stationary
	NOX	$0	19.90	Subsidiary
	NOX	$16,600	1.90	Stationary
	NOX	$16,600	2.20	Stationary
	PM10	$21	0.20	Stationary
	PM10	$21	0.40	Stationary
San Joaquin Valley	CO	$18	0.50	Stationary
Total of 127 Transactions	CO	$100	0.20	Stationary
	CO	$354	<.01	Stationary
	CO	$935	0.10	Stationary
	HC	$100	0.10	Stationary
	HC	$5,031	1.80	Stationary
	HC	$8,000	49.00	Stationary
	HC	$10,000	4.00	Stationary
	HC	$10,000	12.00	Stationary
	HC	$10,000	13.40	Stationary
	HC	$10,000	15.00	Stationary
	HC	$10,000	26.00	Stationary
	HC	$11,000	4.00	Stationary
	HC	$13,000	5.00	Stationary
	HC	$13,028	30.00	Stationary
	HC	$13,200	0.60	Stationary
	HC	$13,500	10.00	Stationary
	HC	$15,000	<.01	Stationary
	NOX	$100	281.20	Stationary
	NOX	$4,000	2.20	Stationary
	NOX	$12,000	5.10	Stationary
	NOX	$14,000	100.20	Stationary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
San Joaquin Valley (contd.)	NOX	$17,000	1.60	Stationary
	NOX	$17,000	3.40	Stationary
	NOX	$17,000	50.80	Stationary
	NOX	$19,000	34.20	Stationary
	NOX	$20,000	1.00	Stationary
	NOX	$20,000	2.30	Stationary
	NOX	$20,000	23.20	Stationary
	NOX	$20,748	14.80	Stationary
	NOX	$20,748	26.60	Stationary
	NOX	$20,748	78.60	Stationary
	NOX	$22,000	1.00	Stationary
	NOX	$22,000	1.10	Stationary
	NOX	$24,000	1.50	Stationary
	NOX	$25,000	0.10	Stationary
	NOX	$25,000	0.90	Stationary
	NOX	$25,000	1.50	Stationary
	NOX	$25,000	2.60	Stationary
	NOX	$26,000	0.10	Stationary
	NOX	$28,000	31.20	Stationary
	NOX	$30,000	0.10	Stationary
	NOX	$30,000	0.20	Stationary
	NOX	$30,000	0.20	Stationary
	NOX	$42,500	10.00	Stationary
	PM10	$4,606	7.60	Stationary
	PM10	$12,000	18.00	Stationary
	PM10	$13,000	0.20	Stationary
	PM10	$13,000	0.50	Stationary
	PM10	$13,000	4.40	Stationary
	PM10	$14,000	2.00	Stationary
	PM10	$14,300	8.70	Stationary
	PM10	$14,500	19.00	Stationary
	PM10	$14,958	<.01	Stationary
	PM10	$14,958	0.70	Stationary
	PM10	$14,958	1.40	Stationary
	PM10	$14,958	1.50	Stationary
	PM10	$14,958	3.20	Stationary
	PM10	$14,958	4.00	Stationary
	PM10	$14,958	4.10	Stationary
	PM10	$14,958	5.40	Stationary
	PM10	$15,000	2.00	Stationary
	PM10	$15,000	2.50	Stationary
	PM10	$15,000	10.00	Stationary
	PM10	$16,529	1.20	Stationary
	PM10	$17,000	<.01	Stationary
	PM10	$17,000	0.10	Stationary
	PM10	$17,000	3.70	Stationary
	PM10	$17,000	10.10	Stationary
	PM10	$17,500	0.50	Stationary
	PM10	$17,500	0.80	Stationary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
San Joaquin Valley (contd.)	PM10	$17,500	1.30	Stationary
	PM10	$17,500	1.40	Stationary
	PM10	$17,500	1.70	Stationary
	PM10	$17,500	1 70	Stationary
	PM10	$17,500	2.50	Stationary
	PM10	$17,500	2.60	Stationary
	PM10	$17,500	2.70	Stationary
	PM10	$17,500	2.70	Stationary
	PM10	$17,500	2.70	Stationary
	PM10	$17,500	2.90	Stationary
	PM10	$17,500	3.30	Stationary
	PM10	$17,500	3.40	Stationary
	PM10	$17,500	5.30	Stationary
	PM10	$17,500	6.00	Stationary
	PM10	$17,500	7.00	Stationary
	PM10	$17,500	9.50	Stationary
	PM10	$17,500	11.60	Stationary
	PM10	$17,500	11.80	Stationary
	PM10	$17,500	13.10	Stationary
	PM10	$18,264	2.20	Stationary
	PM10	$19,000	2.30	Stationary
	PM10	$19,802	4.00	Stationary
	PM10	$20,700	7.90	Stationary
	PM10	$21,020	2.10	Stationary
	PM10	$21,020	3.70	Stationary
	PM10	$22,000	2.10	Stationary
	PM10	$22,000	2.90	Stationary
	PM10	$22,000	7.40	Stationary
	PM10	$22,422	<.01	Stationary
	PM10	$22,422	4.40	Stationary
	PM10	$33,000	1.00	Stationary
	PM10	$33,000	2.70	Stationary
	PM10	$33,000	3.30	Stationary
	PM10	$36,000	1.20	Stationary
	PM10	$36,000	6.90	Stationary
	PM10	$36,167	0.30	Stationary
	PM10	$36,167	29.70	Stationary
	PM10	$40,000	1.10	Stationary
	PM10	$40,000	3.10	Stationary
	PM10	$41,500	2.80	Stationary
	PM10	$45,000	0.20	Stationary
	SOX	$1,250	3.20	Stationary
	SOX	$6,000	25.00	Stationary
	SOX	$6,126	<.01	Stationary
	SOX	$6,126	36.40	Stationary
	SOX	$6,289	1.60	Stationary
	SOX	$7,000	3.10	Stationary
	SOX	$7,000	35.00	Stationary
	SOX	$7,000	51.40	Stationary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
San Joaquin Valley (contd.)	SOX	$7,000	72.80	Stationary
	SOX	$8,000	<.01	Stationary
	SOX	$8,000	16.50	Stationary
	SOX	$8,500	5.70	Stationary
	SOX	$10,000	6.00	Stationary
	SOX	$10,000	9.00	Stationary
	SOX	$25,000	<.01	Stationary
Santa Barbara Total of 7 Transaction	CO	$0	1.07	
	HC	$55,000	2.78	
	NOX	$41,783	0.87	
	NOX	$55,000	0.72	
	PM10	$41,783	0.03	
	PM10	$55,000	0.05	
	SOX	$55,000	0.05	
South Coast Total of 167 Transactions	CO	$0	0.37	Barter
	CO	$0	0.55	Barter
	CO	$0	1.28	Barter
	CO	$0	1.28	Barter
	CO	$0	1.46	Barter
	CO	$0	13.32	Barter
	CO	$13,699	0.18	
	CO	$13,699	0.37	
	CO	$20,548	7.48	
	CO	$27,397	0.55	
	CO	$27,397	1.28	
	CO	$27,397	1.46	
	CO	$27,397	13.14	
	CO	$38,356	0.18	
	CO	$38,356	4.38	
	CO	$41,096	13.32	
	HC	$0	0.18	Barter
	HC	$0	0.18	Subsidiary
	HC	$0	0.18	Subsidiary
	HC	$0	0.18	Subsidiary
	HC	$0	0.18	Subsidiary
	HC	$0	0.18	Subsidiary
	HC	$0	0.18	Subsidiary
	HC	$0	0.37	Subsidiary
	HC	$0	0.37	Subsidiary
	HC	$0	0.37	Subsidiary
	HC	$0	0.37	Subsidiary
	HC	$0	0.55	Subsidiary
	HC	$0	0.55	Subsidiary
	HC	$0	0.73	Barter
	HC	$0	0.73	Subsidiary

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
South Coast (contd.)	HC	$9,249	10.77	
	HC	$9,863	5.84	
	HC	$10,411	0.18	
	HC	$10,411	0.18	
	HC	$10,411	0.55	
	HC	$10,411	2.56	
	HC	$10,411	4.20	
	HC	$10,822	0.37	
	HC	$10,959	2.01	
	HC	$10,959	2.74	
	HC	$12,055	0.91	
	HC	$12,055	3.47	
	HC	$12,055	7.12	
	HC	$12,785	2.74	
	HC	$12,877	0.18	
	HC	$13,151	7.30	
	HC	$13,699	15.70	
	HC	$13,699	15.70	
	HC	$14,247	10.59	
	HC	$14,247	11.32	
	HC	$14,534	1.46	
	HC	$14,534	7.67	
	HC	$15,342	0.37	
	HC	$15,342	9.13	
	HC	$15,890	1.83	
	HC	$15,890	3.65	
	HC	$16,164	3.29	
	HC	$16,164	38.87	
	HC	$16,438	0.37	
	HC	$16,438	0.55	
	HC	$16,438	0.73	
	HC	$16,438	0.91	
	HC	$16,438	0.91	
	HC	$16,438	1.83	
	HC	$16,438	1.83	
	HC	$16,438	1.83	
	HC	$16,438	2.01	
	HC	$16,575	2.92	
	HC	$16,712	2.56	
	HC	$16,986	3.10	
	HC	$16,986	24.82	
	HC	$17,671	4.93	
	HC	$17,808	2.74	
	HC	$18,082	0.18	
	HC	$18,082	0.18	
	HC	$18,082	21.35	
	HC	$18,219	1.83	
	HC	$18,356	0.55	
	HC	$18,630	0.18	

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
South Coast (contd.)	HC	$18,630	1.83	
	HC	$18,630	4.20	
	HC	$18,630	24.64	
	HC	$19,041	4.56	
	HC	$19,178	6.02	
	HC	$19,726	0.73	
	HC	$20,000	0.73	
	HC	$20,000	22.81	
	HC	$20,274	0.73	
	HC	$20,274	4.56	
	HC	$21,370	1.46	
	NOX	$0	0.18	Barter
	NOX	$0	0.55	Barter
	NOX	$82,192	0.18	
	NOX	$136,986	0.18	
	NOX	$252,055	0.18	
	NOX	$276,712	0.18	
	NOX	$276,712	0.91	
	NOX	$276,712	12.78	
	NOX	$279,452	2.37	
	NOX	$306,849	7.30	
	NOX	$317,808	0.18	
	NOX	$333,333	0.55	
	NOX	$410,959	0.55	
	PM10	$0	0.18	Barter
	PM10	$260,274	0.18	
	PM10	$383,562	2.19	
	PM10	$465,753	0.18	
	PM10	$465,753	0.18	
	PM10	$465,753	0.37	
	PM10	$493,151	1.83	
	SOX	$0	8.40	Barter
	SOX	$164,384	1.83	
	SOX	$167,123	0.37	
	SOX	$167,123	4.75	
	SOX	$169,863	3.65	
	SOX	$169,863	4.75	
	SOX	$273,973	3.65	
Tehama County Total of 4 transactions	NOX	$0	16.34	
	PM10	$0	37.97	
	SOX	$0	3.28	
	VOC	$0	10.45	

Table 2 (contd.)

District	Pollutant	$/ton	Tons	Notes
Ventura County	HC	$4,196	5.50	
Total of 5 transactions	HC	$25,000	1.00	
	HC	$25,000	4.40	
	NOX	$20,000	2.00	
	PM10	$18,023	3.44	
Yolo-Solano	PM10	$1,000	3.90	
Total of 7 Transactions	PM10	$1,000	8.60	
	PM10	$1,000	8.75	
	PM10	$1,000	9.40	
	PM10	$1,000	12.26	
	PM10	$2,500	0.03	
	PM10	$2,500	0.04	

Table 3
Districts With No Offset Transactions to Report in 2006

- Amador County Air Pollution Control District
- Antelope Valley Air Pollution Control District
- Calaveras County Air Pollution Control District
- Colusa County Air Pollution Control 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
- North Coast Unified Air Quality Management District
- Northern Sierra Air Quality Management District
- Northern Sonoma County Air Pollution Control District
- San Luis Obispo County APCD
- Siskiyou County Air Pollution Control District
- Tuolumne County Air Pollution Control District

Table 4
2006 California
NOx Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$10,000	17.77	Stationary
	$10,900	17 79	Stationary
	$13,000	135.53	Stationary
El Dorado County	$42,079	2.38	
Placer County	$25,000	1.46	
Sacramento Metro	$19,873	0.51	Stationary
	$25,533	8.51	Barter
	$33,894	8.85	Stationary
San Diego	$16,600	1.90	Stationary
	$16,600	2.20	Stationary
San Joaquin Valley	$100	281.20	Stationary
	$4,000	2.20	Stationary
	$12,000	5.10	Stationary
	$14,000	100.20	Stationary
	$17,000	1.60	Stationary
	$17,000	3.40	Stationary
	$17,000	50.80	Stationary
	$19,000	34.20	Stationary
	$20,000	1.00	Stationary
	$20,000	2.30	Stationary
	$20,000	23.20	Stationary
	$20,748	14.80	Stationary
	$20,748	26.60	Stationary
	$20,748	78.60	Stationary
	$22,000	1.00	Stationary
	$22,000	1.10	Stationary
	$24,000	1.50	Stationary
	$25,000	0.10	Stationary
	$25,000	0.90	Stationary
	$25,000	1.50	Stationary
	$25,000	2.60	Stationary
	$26,000	0.10	Stationary
	$28,000	31.20	Stationary
	$30,000	0.10	Stationary
	$30,000	0.20	Stationary
	$30,000	0.20	Stationary
	$42,500	10.00	Stationary

Table 4 (contd.)

District	$/ton	Tons	Notes
Santa Barbara	$41,783	0.87	Mobile
	$55,000	0.72	Stationary
South Coast	$82,192	0.18	
	$136,986	0.18	
	$252,055	0.18	
	$276,712	0.18	
	$276,712	0.91	
	$276,712	12.78	
	$279,452	2.37	
	$306,849	7.30	
	$317,808	0.18	
	$333,333	0.55	
	$410,959	0.55	
Ventura County	$20,000	2.00	

TABLE 5

2006 Summary Statistics For a Total of 51 NOx Transactions*

	$/ton	Tons
Total Tons Traded		901.54
Average (mean)	$81,650	
Median	$25,000	
High	$410,959	
Low	$100	

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

CHART 1

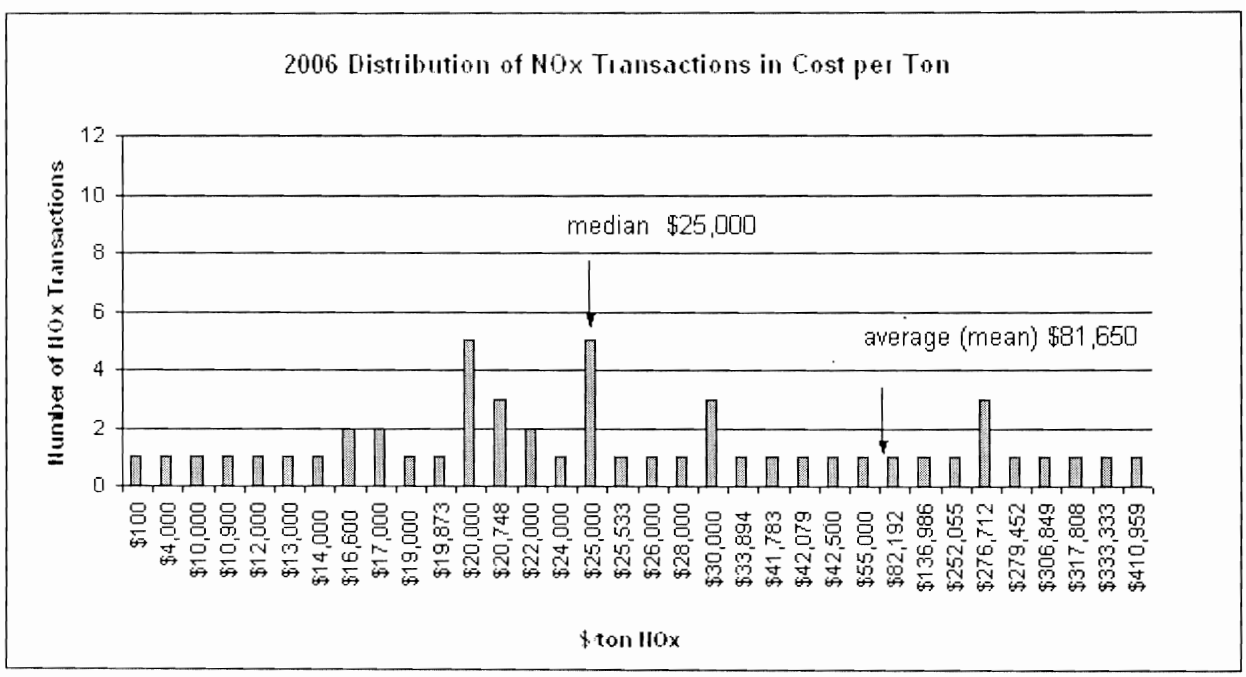


Table 6
2006 California
HC Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$8,900	1.13	Stationary
	$9,000	16.00	Stationary
	$10,000	12.09	Stationary
	$10,000	42.86	Stationary
	$11,000	12.37	Stationary
	$11,173	1.07	Stationary
	$11,500	16.40	Stationary
Butte County	$1,000	13.58	
	$1,000	42.03	
Feather River	$5,983	0.54	Agricultural
	$5,983	0.59	Agricultural
	$5,983	2.22	Agricultural
	$10,000	2.40	Agricultural
	$10,000	2.62	Agricultural
	$10,000	7.00	Agricultural
Imperial County	$300	0.13	Agricultural
	$300	0.42	Agricultural
	$300	0.49	Agricultural
	$300	0.62	Agricultural
	$300	0.96	Agricultural
	$300	1.77	Agricultural
	$400	0.12	Agricultural
	$400	0.15	Agricultural
	$400	0.20	Agricultural
	$400	0.24	Agricultural
	$400	0.29	Agricultural
	$400	0.39	Agricultural
	$400	0.48	Agricultural
	$400	0.89	Agricultural
	$400	1.57	Agricultural
	$475	0.06	Agricultural
	$475	0.72	Agricultural
	$500	0.20	Agricultural
	$500	0.21	Agricultural
	$500	0.26	Agricultural
	$500	0.36	Agricultural
	$500	0.40	
	$500	0.70	Agricultural
	$500	0.91	Agricultural
	$500	0.97	Agricultural

Table 6 (contd.)

District	$/ton	Tons	Notes
Imperial County (contd.)	$500	1.22	Agricultural
	$500	1.32	Agricultural
	$500	1.33	Agricultural
	$500	1.33	Agricultural
	$500	1.71	Agricultural
	$600	0.03	Agricultural
	$600	0.35	Agricultural
	$600	0.58	Agricultural
	$600	0.58	Agricultural
	$600	0.75	Agricultural
	$600	0.81	Agricultural
	$600	1.80	Agricultural
	$600	2.83	Agricultural
	$600	4.92	Agricultural
	$600	5.22	Agricultural
	$650	0.06	Agricultural
	$650	0.37	Agricultural
	$650	0.39	Agricultural
	$650	0.40	Agricultural
	$650	0.49	Agricultural
	$650	0.53	Agricultural
	$650	0.56	Agricultural
	$650	0.58	Agricultural
	$650	0.68	Agricultural
	$650	0.82	Agricultural
	$650	0.83	Agricultural
	$650	0.87	Agricultural
	$650	0.96	Agricultural
	$650	0.99	Agricultural
	$650	1.10	Agricultural
	$650	1.15	Agricultural
	$650	1.34	Agricultural
	$650	1.49	Agricultural
	$650	1.94	Agricultural
	$650	2.00	Agricultural
	$650	2.20	Agricultural
	$650	6.92	Agricultural
	$650	7.27	Agricultural
	$700	0.48	Agricultural
	$700	1.20	Agricultural
	$700	1.52	Agricultural
	$750	0.07	Agricultural
	$750	0.32	Agricultural
	$750	0.51	Agricultural
	$800	0.72	Agricultural
	$800	3.60	Agricultural
	$850	0.77	Agricultural
	$3,000	6.67	Agricultural

Table 6 (contd.)

District	$/ton	Tons	Notes
Mojave Desert	$6,300	5.00	
Monterey County	$25,000	57.38	Stationary
Placer County	$25,000	28.62	
Sacramento Metro	$19,873	0.04	Stationary
	$19,980	1.40	Stationary
	$22,500	8.49	Stationary
	$25,533	34.57	Barter
	$27,906	0.14	Stationary
San Diego	$2,381	0.02	Stationary
	$2,381	0.40	Stationary
	$3,000	0.72	Stationary
	$3,093	2.30	Stationary
	$3,094	1.86	Stationary
	$8,300	0.10	Stationary
	$8,300	0.30	Stationary
	$8,300	0.54	Stationary
	$8,300	2.90	Stationary
	$26,750	38.70	Stationary
	$64,000	1.00	Stationary
San Joaquin Valley	$100	0.10	Stationary
	$5,031	1.80	Stationary
	$8,000	49.00	Stationary
	$10,000	4.00	Stationary
	$10,000	12.00	Stationary
	$10,000	13.40	Stationary
	$10,000	15.00	Stationary
	$10,000	26.00	Stationary
	$11,000	4.00	Stationary
	$13,000	5.00	Stationary
	$13,028	30.00	Stationary
	$13,200	0.60	Stationary
	$13,500	10.00	Stationary
	$15,000	<.01	Stationary
Santa Barbara	$55,000	2.78	Stationary
South Coast	$5,342	13.69	
	$5,342	20.99	
	$5,479	0.73	
	$5,479	1.83	
	$5,479	2.56	
	$5,479	2.74	

Table 6 (contd.)

District	$/ton	Tons	Notes
South Coast (contd.)	$5,479	10.95	
	$5,479	18.25	
	$6,575	8.76	
	$7,068	2.92	
	$7,123	1.46	
	$7,123	2.19	
	$7,123	3.29	
	$7,534	1.10	
	$7,945	2.74	
	$7,973	7.67	
	$8,219	0.73	
	$8,219	0.91	
	$8,219	2.01	
	$8,219	2.37	
	$8,219	22.08	
	$8,356	2.74	
	$8,767	1.64	
	$8,822	3.29	
	$9,249	10.77	
	$9,863	5.84	
	$10,411	0.18	
	$10,411	0.18	
	$10,411	0.55	
	$10,411	2.56	
	$10,411	4.20	
	$10,822	0.37	
	$10,959	2.01	
	$10,959	2.74	
	$12,055	0.91	
	$12,055	3.47	
	$12,055	7.12	
	$12,785	2.74	
	$12,877	0.18	
	$13,151	7.30	
	$13,699	15.70	
	$13,699	15.70	
	$14,247	10.59	
	$14,247	11.32	
	$14,534	1.46	
	$14,534	7.67	
	$15,342	0.37	
	$15,342	9.13	
	$15,890	1.83	
	$15,890	3.65	
	$16,164	3.29	
	$16,164	38.87	
	$16,438	0.37	
	$16,438	0.55	
	$16,438	0.73	

Table 6 (contd.)

District	$/ton	Tons	Notes
South Coast (contd.)	$16,438	0.91	
	$16,438	0.91	
	$16,438	1.83	
	$16,438	1.83	
	$16,438	1.83	
	$16,438	2.01	
	$16,575	2.92	
	$16,712	2.56	
	$16,986	3.10	
	$16,986	24.82	
	$17,671	4.93	
	$17,808	2.74	
	$18,082	0.18	
	$18,082	0.18	
	$18,082	21.35	
	$18,219	1.83	
	$18,356	0.55	
	$18,630	0.18	
	$18,630	1.83	
	$18,630	4.20	
	$18,630	24.64	
	$19,041	4.56	
	$19,178	6.02	
	$19,726	0.73	
	$20,000	0.73	
	$20,000	22.81	
	$20,274	0.73	
	$20,274	4.56	
	$21,370	1.46	
Ventura County	$4,196	5.50	
	$25,000	1.00	
	$25,000	4.40	

TABLE 7

2006 Summary Statistics For a Total of 209 HC Transactions*

	$/ton	Tons
Total Tons Traded		1,086.96
Average (mean)	$8,619	
Median	$8,110	
High	$64,000	
Low	$100	

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

Chart 2

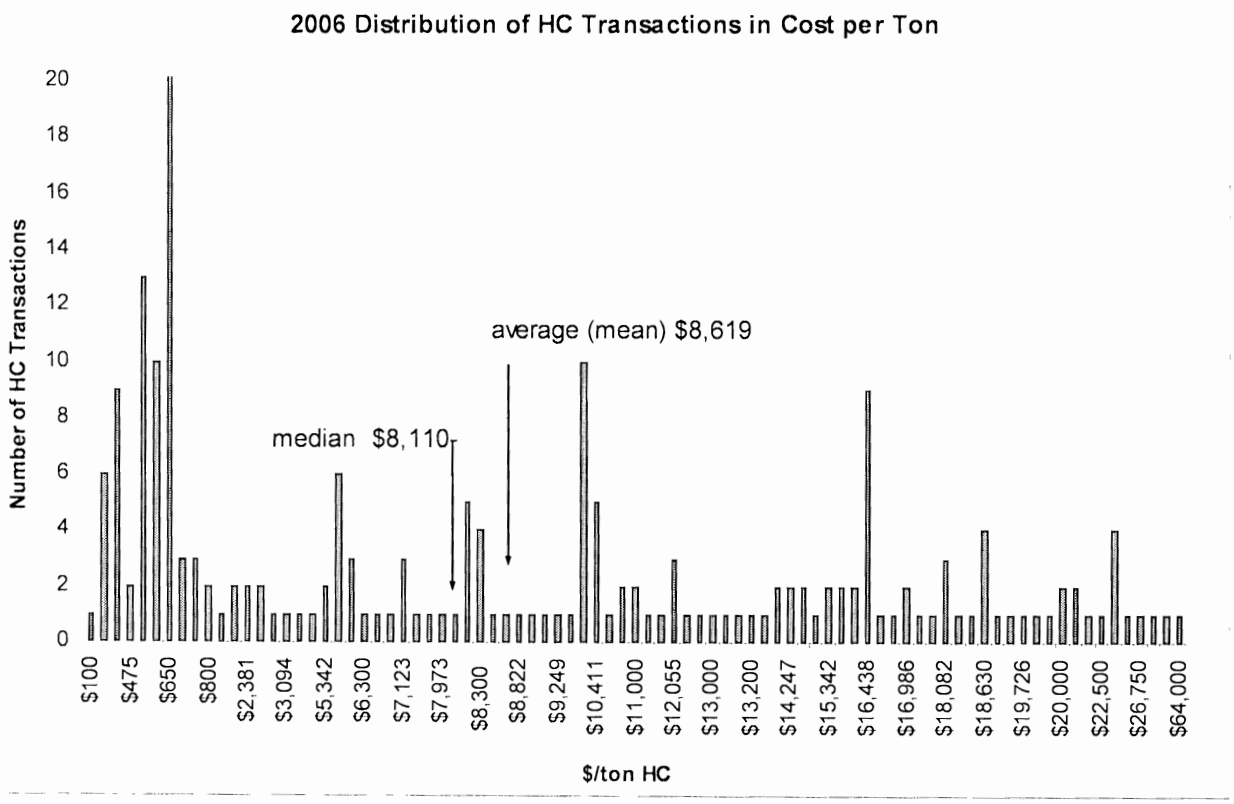


Table 8
2006 California
PM10 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$16,000	2.60	Stationary
	$30,000	3 19	Stationary
	$31,900	5.10	Stationary
	$33,775	7.27	Stationary
	$33,775	20.50	Stationary
	$37,096	18.60	Stationary
Butte County	$1,000	90.03	
	$1,000	21.68	
Feather River	$7,500	3.17	Stationary
	$7,500	10.32	Stationary
Imperial County	$450	0.06	Agricultural
	$450	0.17	Agricultural
	$450	0.18	Agricultural
	$450	0.28	Agricultural
	$450	0.32	Agricultural
	$450	0.36	Agricultural
	$450	0.37	Agricultural
	$450	0.41	Agricultural
	$450	0.43	Agricultural
	$450	0.62	Agricultural
	$450	0.63	Agricultural
	$450	0.66	Agricultural
	$450	0.70	Agricultural
	$450	0.74	Agricultural
	$450	0.75	Agricultural
	$450	0.82	Agricultural
	$450	0.88	Agricultural
	$450	0.89	Agricultural
	$450	0.93	Agricultural
	$450	0.95	Agricultural
	$450	0.99	Agricultural
	$450	1.07	Agricultural
	$450	1.08	Agricultural
	$450	1.08	Agricultural
	$450	1.11	Agricultural
	$450	1.16	Agricultural
	$450	1.24	Agricultural
	$450	1.24	Agricultural
	$450	1.29	Agricultural

Table 8 (contd.)

District	$/ton	Tons	Notes
Imperial County (contd.)	$450	1.45	Agricultural
	$450	1.59	Agricultural
	$450	1.62	Agricultural
	$450	1.63	Agricultural
	$450	1.68	Agricultural
	$450	1.71	Agricultural
	$450	1.71	Agricultural
	$450	1 74	Agricultural
	$450	1.85	Agricultural
	$450	2.08	Agricultural
	$450	2.16	Agricultural
	$450	2.21	Agricultural
	$450	2.69	Agricultural
	$450	2.72	Agricultural
	$450	3 19	Agricultural
	$450	4.23	Agricultural
	$450	4.37	Agricultural
	$450	5.10	Agricultural
	$450	5.83	Agricultural
	$450	7.19	Agricultural
	$450	7.40	Agricultural
	$450	7.75	Agricultural
	$450	11.13	Agricultural
Placer County	$20,000	1.99	
Sacramento Metro	$11,924	0.18	Stationary
San Diego	$21	0.20	Stationary
	$21	0.40	Stationary
San Joaquin Valley	$4,606	7.60	Stationary
	$12,000	18.00	Stationary
	$13,000	0.20	Stationary
	$13,000	0.50	Stationary
	$13,000	4.40	Stationary
	$14,000	2.00	Stationary
	$14,300	8.70	Stationary
	$14,500	19.00	Stationary
	$14,958	<.01	Stationary
	$14,958	0.70	Stationary
	$14,958	1.40	Stationary
	$14,958	1.50	Stationary
	$14,958	3.20	Stationary
	$14,958	4.00	Stationary
	$14,958	4.10	Stationary
	$14,958	5.40	Stationary

Table 8 (contd.)

District	$/ton	Tons	Notes
San Joaquin Valley (contd.)	$15,000	2.00	Stationary
	$15,000	2.50	Stationary
	$15,000	10.00	Stationary
	$16,529	1.20	Stationary
	$17,000	<.01	Stationary
	$17,000	0.10	Stationary
	$17,000	3.70	Stationary
	$17,000	10.10	Stationary
	$17,500	0.50	Stationary
	$17,500	0.80	Stationary
	$17,500	1.30	Stationary
	$17,500	1.40	Stationary
	$17,500	1.70	Stationary
	$17,500	1.70	Stationary
	$17,500	2.50	Stationary
	$17,500	2.60	Stationary
	$17,500	2.70	Stationary
	$17,500	2.70	Stationary
	$17,500	2.70	Stationary
	$17,500	2.90	Stationary
	$17,500	3.30	Stationary
	$17,500	3.40	Stationary
	$17,500	5.30	Stationary
	$17,500	6.00	Stationary
	$17,500	7.00	Stationary
	$17,500	9.50	Stationary
	$17,500	11.60	Stationary
	$17,500	11.80	Stationary
	$17,500	13.10	Stationary
	$18,264	2.20	Stationary
	$19,000	2.30	Stationary
	$19,802	4.00	Stationary
	$20,700	7.90	Stationary
	$21,020	2.10	Stationary
	$21,020	3.70	Stationary
	$22,000	2.10	Stationary
	$22,000	2.90	Stationary
	$22,000	7.40	Stationary
	$22,422	<.01	Stationary
	$22,422	4.40	Stationary
	$33,000	1.00	Stationary
	$33,000	2.70	Stationary
	$33,000	3.30	Stationary
	$36,000	1.20	Stationary
	$36,000	6.90	Stationary
	$36,167	0.30	Stationary
	$36,167	29.70	Stationary
	$40,000	1.10	Stationary
	$40,000	3.10	Stationary

Table 8 (contd.)

District	$/ton	Tons	Notes
San Joaquin Valley (contd.)	$41,500	2.80	Stationary
	$45,000	0.20	Stationary
Santa Barbara	$41,783	0.03	Mobile
	$55,000	0.05	Stationary
South Coast	$260,274	0.18	
	$383,562	2.19	
	$465,753	0.18	
	$465,753	0.18	
	$465,753	0.37	
	$493,151	1.83	
Yolo-Solano	$1,000	3.90	
	$1,000	8.60	
	$1,000	8.75	
	$1,000	9.40	
	$1,000	12.26	
	$2,500	0.03	
	$2,500	0.04	

Table 12
2006 California
SOx Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$6,645	0.31	Stationary
	$6,900	22.64	Stationary
	$8,000	6.51	Stationary
	$8,375	136.29	Stationary
	$10,000	51.75	Stationary
Sacramento Metro	$11,924	0.01	Stationary
San Joaquin Valley	$1,250	3.20	Stationary
	$6,000	25.00	Stationary
	$6,126	<.01	Stationary
	$6,126	36.40	Stationary
	$6,289	1.60	Stationary
	$7,000	3.10	Stationary
	$7,000	35.00	Stationary
	$7,000	51.40	Stationary
	$7,000	72.80	Stationary
	$8,000	<.01	Stationary
	$8,000	16.50	Stationary
	$8,500	5.70	Stationary
	$10,000	6.00	Stationary
	$10,000	9.00	Stationary
	$25,000	<.01	Stationary
Santa Barbara	$55,000	0.05	Stationary
South Coast	$164,384	1.83	
	$167,123	0.37	
	$167,123	4.75	
	$169,863	3.65	
	$169,863	4.75	
	$273,973	3.65	
Ventura County	$18,023	3.44	

Table 10
2006 California
CO Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$370	45.18	Stationary
	$409	17.78	Stationary
	$500	0.08	Stationary
Sacramento Metro	$3,975	0.46	Stationary
San Diego	$21	0.70	Stationary
	$21	2.00	Stationary
San Joaquin Valley	$18	0.50	Stationary
	$100	0.20	Stationary
	$354	<.01	Stationary
	$935	0.10	Stationary
South Coast	$13,699	0.18	
	$13,699	0.37	
	$20,548	7.48	
	$27,397	0.55	
	$27,397	1.28	
	$27,397	1.46	
	$27,397	13.14	
	$38,356	0.18	
	$38,356	4.38	
	$41,096	13.32	

TABLE 9

2006 Summary Statistics For a Total of 148 PM10 Transactions*

	$/ton	Tons
Total Tons Traded		633.75
Average (mean)	$29,050	
Median	$14,150	
High	$493,151	
Low	$21	

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

Chart 3

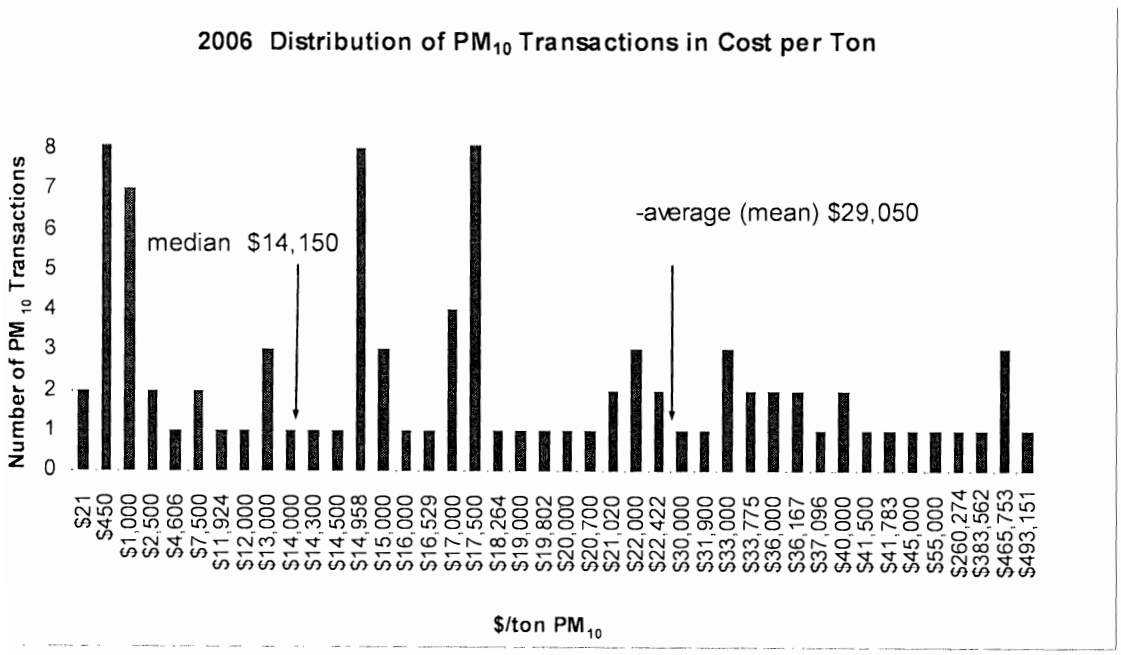


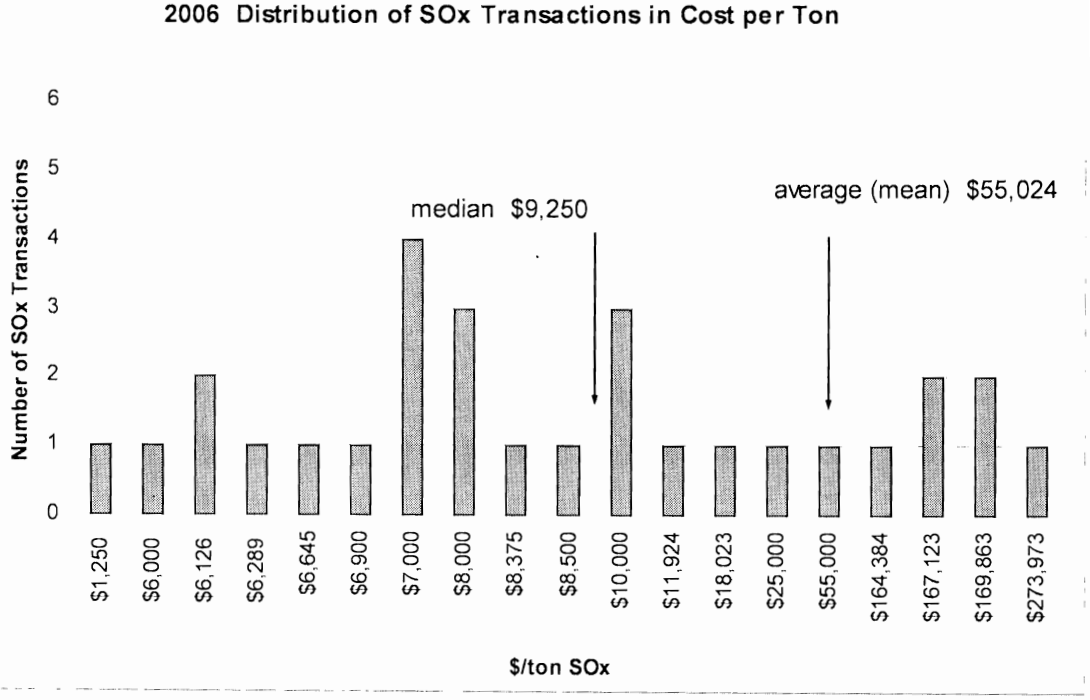
TABLE 13

2006 Summary Statistics For a Total of 29 SOx Transactions*

	$/ton	Tons
Total Tons Traded		288.20
Average (mean)	$55,024	
Median	$9,250	
High	$273,973	
Low	$1,250	

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

CHART 5



APPENDIX A

Health & Safety Code Sections 40709 & 40709.5, and Government Code Section 6254.7

H&SC: 40709 District Banking and Offset System

H&SC: 40709.5 Review of Emission Credit Systems

Gov. 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 by the following April.

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 2006 TRANSACTIONS

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 _____

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. District ID #: 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 2007), 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. Pollutant: 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. Credit Source: 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. Annual/Quarter: 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. Quantity of Pollutant: 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. Price Paid: 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. Barter and Subsidiary Transactions: 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. Length of Use/Lease: 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.

Appendix I

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.

[This Page Intentionally Left 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
MB	Monterey Bay Unified APCD
NC	North Coast Unified AQMD
NO	Northern Sierra AQMD
NS	Northern Sonoma County APCD

DISTRICT TWO-LETTER CODES (contd.)

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