

State of California
California Environmental Protection Agency

AIR RESOURCES BOARD

**Emission Reduction Offsets Transaction Cost
Summary Report for 2002**

March 2003

Prepared by

Regulatory Assistance 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.

ACKNOWLEDGMENTS

Air Resources Board Staff:

Norman P. Marquis, Air Pollution Specialist
Beverly Werner, Manager
Regulatory Assistance 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

Table of Contents

EXECUTIVE SUMMARY	1
Background:	1
Summary of 2002 Data:	1
Table 1: Prices Paid in Dollars Per Ton for Offsets	1
Data Trends:	2
Summary Chart A: Average Cost of NOx Offsets in \$/Ton	3
Summary Chart B: Average Cost of HC Offsets in \$/Ton	3
Summary Chart C: Average Cost of PM10 Offsets in \$/Ton	3
Summary Chart D: Number of Offset Transactions by Pollutant (NOx, HC, PM10) ...	4
Summary Chart E: Number of Tons Traded by Pollutant (NOx, HC, PM10)	4
INTRODUCTION	5
NEW SOURCE REVIEW AND CALIFORNIA'S AIR QUALITY MANAGEMENT PROGRAM	5
Emission Reduction Credit Banking and Trading	6
Example: Siting A New Stationary Source in California	6
REQUIREMENTS TO REPORT COST OF OFFSETS	6
DATA COLLECTION PROCESS	7
DESCRIPTION OF 2002 DATA	7
Table 2: Emission Reduction Credit Transaction Costs by District	9
Table 3: Districts With No Offset Transactions to Report in 2001	17
Table 4: NOx Emission Reduction Credit Transaction Costs/Ton	18
Table 5: Summary Statistics for NOx Transactions	20
Chart 1: Distribution of NOx Transaction Costs/Ton	20
Table 6: HC Emission Reduction Credit Transaction Costs/Ton	21
Table 7: Summary Statistics for HC Transactions	25
Chart 2: Distribution of HC Transaction Costs/Ton	25
Table 8: PM10 Emission Reduction Credit Transaction Costs/Ton	26
Table 9: Summary Statistics for PM10 Transactions	28
Chart 3: Distribution of PM10 Transaction Costs/Ton	28
Table 10: CO Emission Reduction Credit Transaction Costs/Ton	29
Table 11: Summary Statistics for CO Transactions	30
Chart 4: Distribution of CO Transaction Costs/Ton	30
Table 12: SOx Emission Reduction Credit Transaction Cost/Ton	31
Table 13: Summary Statistics for SOx Transactions	32
Chart 5: Distribution of SOx Transaction Costs/Ton	32

H&SC 40709: District Banking and Offset System	34
H&SC 40709.5: Review of Emission Credit Systems	35
Government Code Section 6254.7	36
APPENDIX B: Reporting Form and Instructions	37

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 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. Some districts are exempt from these requirements, including 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.

SUMMARY OF 2002 DATA

The Air Resources Board (ARB) has compiled information regarding offset transactions collected from all 35 districts and has assembled it into this report summarizing statewide emission reduction offset transactions in California for the year 2002. All the districts reported to ARB regardless of whether they had any offset transactions or whether the reporting requirements apply. A total of 321 transactions were reported to have taken place in California in 2002. In this report we are not including information on 17 reported transactions involving 9 subsidiary and 7 barter transactions where there were no associated costs and one particulate matter (PM) transaction. Of the remaining 304 transactions, 42 were for NO_x, 164 were for HC, 53 were for PM₁₀, 27 were for CO, and 18 were for SO_x.

Table 1 presents the average, median, high and low costs for NO_x, HC, PM₁₀, CO, and SO_x offsets reported in 2002. For a specific breakdown of all transactions by district, see Table 2, page 9.

Table 1					
2002 Prices Paid in Dollars Per Ton for Offsets					
	NO_x	HC	PM₁₀	CO	SO_x
Average (mean)	\$35,261	\$9,633	\$49,327	\$27,802	\$14,156
Median	\$30,000	\$8,630	\$20,000	\$38,356	\$7,450
High	\$140,000	\$70,000	\$136,986	\$47,397	\$65,753
Low	\$990	\$485	\$3,289	\$300	\$3,289

The districts that reported offset transactions included: Bay Area AQMD, Butte County AQMD, Imperial County APCD, Monterey Bay Unified APCD, Placer County APCD, Sacramento Metropolitan AQMD, San Diego County APCD, San Joaquin Valley APCD, San Luis Obispo County APCD, Santa Barbara County APCD, South Coast AQMD, Ventura County APCD, and Yolo-Solano AQMD.

DATA TRENDS

For the past ten years (1993-2002) the Air Resources Board has collected and reported Statewide data on the number and cost of offset transactions. The number of transactions has increased from 30 in 1993 to 495 in 2001, however, there was a decrease to 321 in 2002. The number of districts reporting offset transactions also decreased to thirteen in 2002, but historically had increased from five to seventeen during the period 1993 to 2001. The reality is that the availability of emission reduction credits are becoming more scarce as evidenced in the increasing costs shown in the following summary charts.

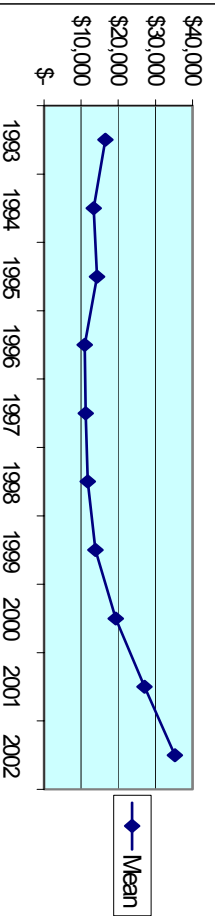
Summary Charts A, B, and C illustrate the trends that have occurred during the past ten years for the average (mean) cost per ton of the three most actively traded criteria pollutants (NO_x, HC and PM₁₀). Summary Chart A illustrates that the average cost of NO_x emission credits generally decreased until 1996, but starting in 1997 the price of NO_x has increased. The average cost of NO_x emission credits has increased over the past three years to levels higher than those of the previous seven years. For example, the average cost of NO_x offsets increased from about \$10,000 per ton in 1996 to \$35,000 per ton in 2002. Summary Chart B shows that the average cost of HC emission credits has fluctuated over time, although costs generally decreased between 1993 and 2000. The average cost of HC emission credits in 2001 was similar to the average cost in 1993, but the average cost dropped in 2002. For example, the average cost of HC decreased from \$9,734 per ton in 1996 to \$6,000 per ton in 1997, went back up to \$7,680 per ton in 1998, went down in 1999 and 2000, but rose sharply to \$12,684 per ton in 2001, and came back down to \$9,633 per ton in 2002. Summary Chart C shows that the average cost of PM₁₀ emission credits has shown large fluctuations over the past ten years, with a large cost increase occurring in 1998 and 2001, and a continued gradual increase in 2002. For example, the average cost of PM₁₀ per ton in 1995 was \$8,856 and consistently increased for the next three years to \$20,000 per ton in 1998. However, the average cost per ton of PM₁₀ decreased to \$10,000 in 1999, but the average cost per ton of PM₁₀ has risen sharply in the past three years to \$49,327 per ton in 2002.

Summary Charts D and E illustrate the trends for the number of transactions and the number of tons traded during the past ten years for the three most traded pollutants (i.e. NO_x, HC and PM₁₀). Summary Chart D illustrates that the number of transactions since 1993 have generally increased with time for all three pollutants till 2001 and then decreased in 2002. The numbers of NO_x and PM₁₀ transactions have been similar to each other. Trades of HC emission credits have been the most numerous over the years. Summary Chart E shows that dramatic increases have occurred over the past several years in the number of tons traded, however, there was a significant decrease in 2002. The largest decreases have been for NO_x and HC emission credits in 2002.

For information on past years' transactions, annual compilations of the offset transactions in California that occurred from 1993 through 2001 can be found on our website "Emission Reduction Credit Offsets," at <http://www.arb.ca.gov/erco/erco.htm>.

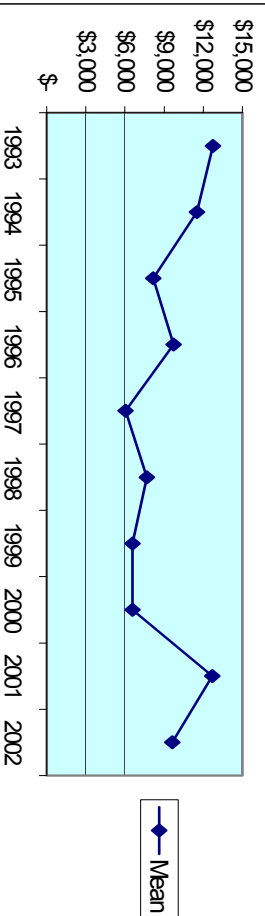
Summary Chart A

Average Cost of NOx Offsets in \$/Ton
1993-2002



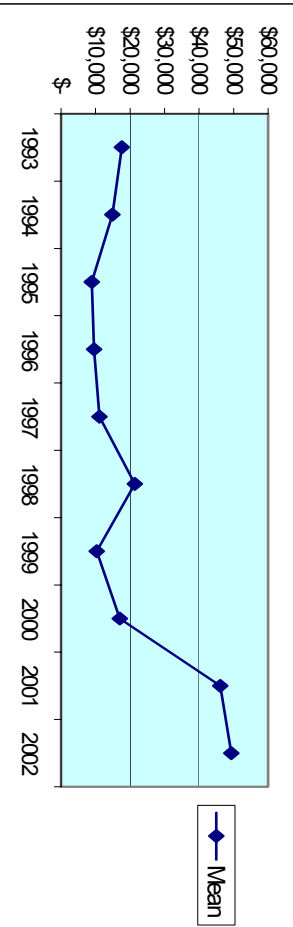
Summary Chart B

Average Cost of HC Offsets in \$/Ton
1993-2002

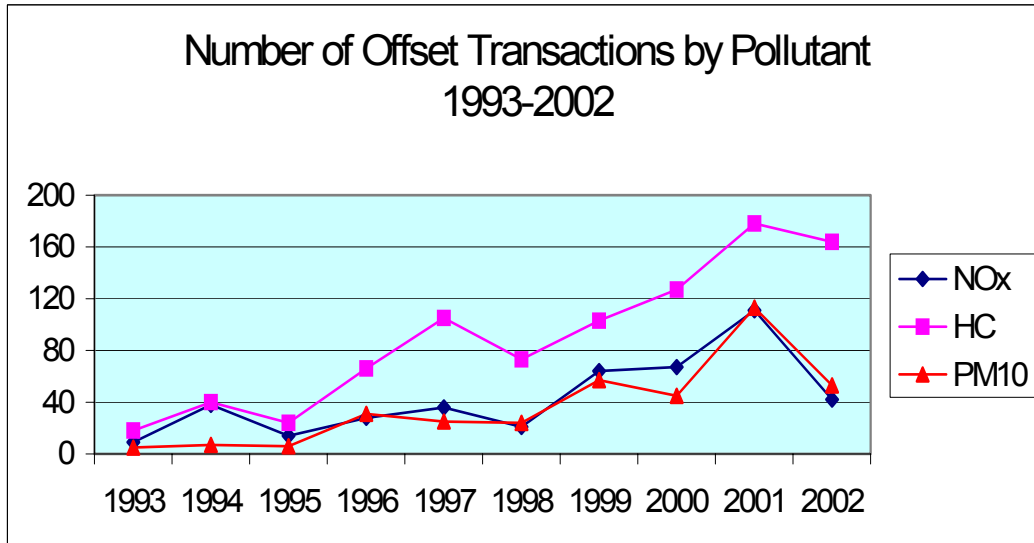


Summary Chart C

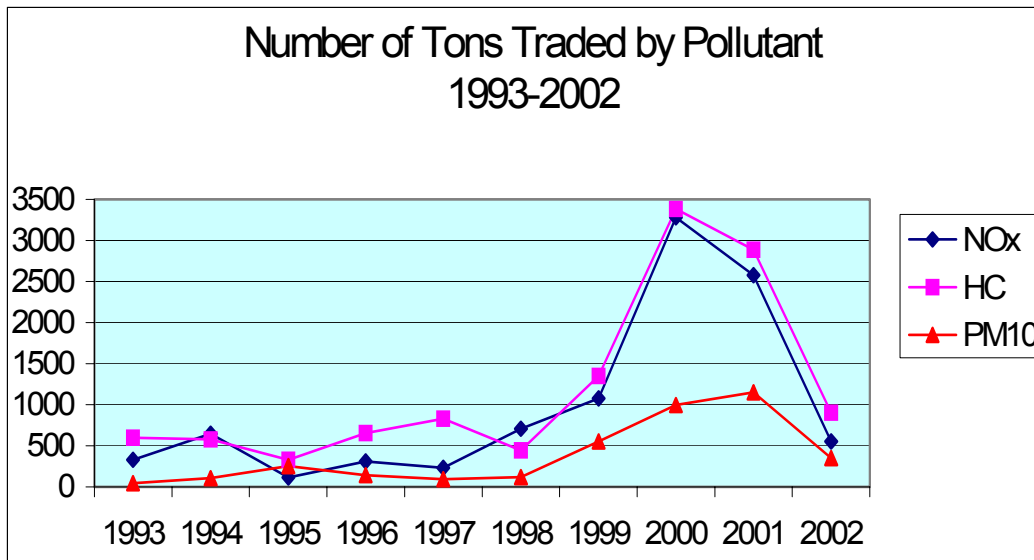
Average Cost of PM10 Offsets in \$/Ton
1993-2002



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 New Source Review programs. This report presents a compilation of the transactions in California from January 1 through December 31, 2002, as supplied by the districts.

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.

Emission reduction credit transactions play an important role in California's New Source Review program, which 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 flexibility to mitigate emissions in the most cost-effective manner available.

This report may be used as a tool by interested parties to evaluate 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. By informing interested parties about emission reduction credit costs, future credit transactions may be facilitated.

We have not included Regional Clean Air Incentives Market (RECLAIM) Trading Credits from the South Coast Air Quality Management District's RECLAIM program because they are not directly comparable to emission reduction credits used to satisfy New Source Review 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 New Source Review program that results in no net increase in emissions from new and modified stationary sources which have the potential to emit over a specified amount of nonattainment pollutants or their precursors. As part of New Source Review, stationary sources are required to apply the Best Available Control Technology (BACT) to reduce emissions and, in some cases, to provide emission reduction offsets to mitigate the impact of emissions from the source remaining 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.

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 not 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 cleaner agricultural water pumps. In all cases, credits must be generated pursuant to district rules and regulations, and must be reviewed and certified by the district to be used as mitigation. 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.

Example: Siting a New Stationary Source in California:

A new stationary source that locates in California is required to apply for an authority to construct permit and a permit to operate from the local air quality district. As part of the district's New Source Review (NSR) process for granting permits, the source is required to demonstrate that it meets the district's NSR rules regarding Best Available Control Technology and emission offsets. Unlike the Federal NSR program which is based on net emission increases at a source, in California, if the potential to emit nonattainment pollutants or their precursors of a new or modified facility is equal to or above a level specified in State law, the facility will be required to provide offsets (e.g. no net increase in emissions are required for new or modified sources with the potential to emit 10 tons per year for a severe nonattainment district up to 25 tons per year in a moderate nonattainment 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 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

- o 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
- o 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 which provides the following information as public record:
 - o 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.
 - o 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
 - o 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 in such a way as to make the information about the transaction available 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 other major distinction on the reporting form involves the type of payment agreement. Possible situations include 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 2001 DATA

Table 1 presents the statewide average, median, high and low costs for Nox, HC, PM10, CO and Sox offsets reported in 2002.

Table 2 presents all of the 321 reported pollutant transactions that took place in the State in 2002, listed by individual districts, with one exception. Table 2 does not include one particulate matter (PM) transaction reported from Santa Barbara County Air Pollution Control District for 1.5 tons at \$10,000 per ton. Since we only report on PM10 particle size we omitted this transaction.

The PM transaction and sixteen other transactions listed in Table 2 are not used in calculating the results of tables 4 through 13, and charts 1 through 5. This is because 9 of the trades were subsidiary transactions and 7 were barter transactions for which there are no associated costs. Again, we omitted the PM transaction since it was reported as total particulate matter instead of PM10.

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 101 and 102.

The majority of transactions reported involved emission reductions from stationary sources. Eight of these were agricultural offset transactions, and there was only one mobile source emission reduction transaction during 2001. Of the total reported 478 transactions, 111 were NOx transactions, 176 were HC transactions, 113 were PM10 transactions, 30 were CO transactions, and 48 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 2001.

Tables 4, 6, 8, 10 and 12 present information by district for NOx, HC, PM10, 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 was calculated by dividing the total cost of the transaction by the total tons traded. There is no assumption made about the number of years of operation of the facility or how the payment schedule is arranged. All of these tables group transactions by district since credit 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 summarize the data in each preceding table. The summary tables include the average (mean), the median, and the high and low of the price paid 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 to include in the calculations.

TABLE 2
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
Bay Area Total of 7 Transactions	HC	\$12,000	2.353	
	HC	\$20,000	5	
	HC	\$34,000	27.502	
	PM10	\$12,000	0.094	
	PM10	\$35,000	1.197	
	PM10	\$50,000	5	
	SOx	\$8,000	10	
Butte County Total of 1 Transaction	HC	\$10,000	40	
Imperial County Total of 28 Transactions	NOx	\$3,289	2.44	Barter Transaction
	NOx	\$10,000	24	
	HC	\$485	0.27	1 Year Agricultural Offset
	HC	\$485	0.85	1 Year Agricultural Offset
	HC	\$485	0.94	1 Year Agricultural Offset
	HC	\$535	0.32	1 Year Agricultural Offset
	HC	\$535	0.64	1 Year Agricultural Offset
	HC	\$535	1.22	1 Year Agricultural Offset
	HC	\$535	1.72	1 Year Agricultural Offset
	HC	\$700	0.87	1 Year Agricultural Offset
	HC	\$700	0.923	1 Year Agricultural Offset
	HC	\$700	1	1 Year Agricultural Offset
	HC	\$700	2.48	1 Year Agricultural Offset
	HC	\$700	2.59	1 Year Agricultural Offset
	HC	\$705	0.85	1 Year Agricultural Offset
	HC	\$799	1.69	1 Year Agricultural Offset
	HC	\$799	1.81	1 Year Agricultural Offset
	HC	\$799	2.07	1 Year Agricultural Offset
	HC	\$799	3.9	1 Year Agricultural Offset
	HC	\$799	7.53	1 Year Agricultural Offset
	HC	\$800	0.67	1 Year Agricultural Offset
	HC	\$3,289	0.25	Barter Transaction
	PM10	\$3,289	0.23	Barter Transaction
	CO	\$300	17.75	1 Year Agricultural Offset
	CO	\$300	25.11	1 Year Agricultural Offset
	CO	\$300	54.8	1 Year Agricultural Offset
	CO	\$3,289	3.05	Barter Transaction
	SOx	\$3,289	0.11	Barter Transaction
Monterey Bay Unified Total of 1 Transaction	PM10	\$19,690	42.1532	
Placer County Total of 2 Transactions	NOx	\$30,000	0.97	
	HC	\$30,000	6.66	

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
Sacramento Metropolitan Total of 19 Transactions	NOx	\$18,400	11.63	
	NOx	\$33,000	1.98	
	NOx	\$33,129	4.69	Barter Transaction
	NOx	\$33,129	4.69	Bart. Trans. Credits Val. in 3rd Qtr
	NOx	\$37,500	11.63	
	NOx	\$37,500	12	
	HC	\$7,000	1.88	
	HC	\$12,000	3.15	
	HC	\$12,096	7.96	Barter Transaction
	HC	\$12,135	3.88	
	HC	\$12,721	1.54	
	HC	\$16,500	2	
	PM10	\$15,000	6.72	
	PM10	\$33,000	2.79	
	PM10	\$35,000	4.55	
	PM10	\$37,500	6.72	
	PM10	\$37,500	25.12	
	SOx	\$5,000	1.45	
	SOx	\$5,000	1.6	
San Diego County Total of 14 Transactions	NOx	\$104,000	3.4	
	NOx	\$140,000	2.67	
	NOx	\$140,000	3.4	
	HC	\$1,613	0.62	1 Year Lease
	HC	\$2,000	1	1 Year Lease
	HC	\$2,138	1.86	1 Year Lease
	HC	\$2,415	1	1 Year Lease
	HC	\$2,427	3	1 Year Lease
	HC	\$30,000	0.5	1 Year Lease
	HC	\$52,000	0.4	
	HC	\$61,000	20.7	
	HC	\$70,000	0.3	
	HC	\$70,000	0.4	
	HC	\$70,000	21	
San Joaquin Valley Total of 79 Transactions	NOx	\$18,000	5	
	NOx	\$20,567	3.1	
	NOx	\$25,000	0.2	
	NOx	\$25,155	45.2	
	NOx	\$28,463	3.6	Credits Valid in Third Quarter
	NOx	\$30,000	0.3	
	NOx	\$30,000	11.3	Credits Valid in Third Quarter
	NOx	\$30,000	12	Credits Valid in Third Quarter

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
San Joaquin Valley (continued)	NOx	\$30,000	13.8	
	NOx	\$30,000	39.3	
	NOx	\$30,000	65.7	
	NOx	\$31,000	4.8	
	NOx	\$31,000	23.2	
	NOx	\$32,000	39.3	
	NOx	\$32,000	65.7	
	HC	\$6,260	62.8	
	HC	\$6,260	62.8	
	HC	\$7,500	2.8	
	HC	\$8,000	0.2	Credits Valid in Third Quarter
	HC	\$8,000	0.2	Credits Valid in First Quarter
	HC	\$8,000	0.2	Credits Valid in Fourth Quarter
	HC	\$8,000	0.3	Credits Valid in Fourth Quarter
	HC	\$8,000	0.3	Credits Valid in First Quarter
	HC	\$8,000	0.3	Credits Valid in Fourth Quarter
	HC	\$8,000	0.4	Credits Valid in 3rd & 4th Quarter
	HC	\$8,000	0.5	Credits Valid in 2nd & 3rd Quarter
	HC	\$8,000	0.5	Credits Valid in First Quarter
	HC	\$8,000	0.8	Credits Valid in First Quarter
	HC	\$8,000	0.9	Credits Valid in 2nd, 3rd, & 4th Qtr
	HC	\$8,000	1.1	Credits Valid in 3rd & 4th Quarter
	HC	\$8,000	1.6	Credits Valid in 3rd & 4th Quarter
	HC	\$8,000	2.2	
	HC	\$8,000	2.9	
	HC	\$9,000	7.9	
	HC	\$9,000	26.7	
	HC	\$9,600	0.3	
	HC	\$9,600	1.6	
	HC	\$9,600	8.2	
	HC	\$10,000	16	
	HC	\$10,500	1.1	
	HC	\$10,500	1.9	
	HC	\$10,500	4.9	
	HC	\$10,500	48.5	
	HC	\$10,500	54.4	
	PM10	\$15,500	0.9	
	PM10	\$19,000	0.1	Credits Valid in First Quarter
	PM10	\$19,000	0.3	Credits Valid in Fourth Quarter
	PM10	\$19,000	0.7	Credits Valid in Fourth Quarter
	PM10	\$19,000	1.4	Credits Valid in Fourth Quarter
	PM10	\$19,000	1.6	Credits Valid in Fourth Quarter
	PM10	\$19,000	2.5	Credits Valid in 3rd & 4th Quarter
	PM10	\$19,000	3	Credits Valid in 3rd & 4th Quarter
	PM10	\$19,000	4.5	Credits Valid in Fourth Quarter

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
San Joaquin Valley (continued)	PM10	\$19,000	7	Credits Valid in Fourth Quarter
	PM10	\$19,000	20	Credits Valid in 1st & 2nd Quarter
	PM10	\$19,161	21.1	
	PM10	\$20,000	0.1	Credits Valid in Third Quarter
	PM10	\$20,000	0.3	Credits Valid in First Quarter
	PM10	\$20,000	0.8	Credits Valid in First Quarter
	PM10	\$20,000	0.9	Credits Valid in Fourth Quarter
	PM10	\$20,000	3	
	PM10	\$20,000	3.4	Credits Valid in 3rd & 4th Quarter
	PM10	\$20,000	10.4	Credits Valid in Fourth Quarter
	PM10	\$20,000	12.3	Credits Valid in Fourth Quarter
	PM10	\$20,000	35.3	
	PM10	\$21,054	0.1	Credits Valid in Third Quarter
	PM10	\$21,054	33.2	Credits Valid in Fourth Quarter
	PM10	\$22,000	0.1	
	CO	\$538	0.1	
	CO	\$700	2.5	
	CO	\$828	2.5	
	SOx	\$7,450	0.1	
	SOx	\$7,450	0.1	
	SOx	\$7,450	4.2	Credits Valid in Fourth Quarter
	SOx	\$7,450	6.7	Credits Valid in 1st & 2nd Quarter
	SOx	\$7,450	140.6	
	SOx	\$7,500	0.1	
	SOx	\$7,500	58	Credits Valid in 1st & 2nd Quarter
	SOx	\$9,000	50	
San Luis Obispo County Total of 5 Transactions	NOx	\$16,239	22.92	
	HC	\$16,239	32.89	
	PM10	\$16,239	1.92	
	CO	\$16,239	2.62	
	SOx	\$16,239	1.23	
Santa Barbara County Total of 10 Transactions	NOx	\$12,000	7.2	
	NOx	\$15,000	4.08	
	NOx	\$20,521	0.389	
	HC	\$7,500	2.269	
	HC	\$7,500	20	
	HC	\$10,000	1	
	HC	\$10,000	4	
	HC	\$13,500	6.56	
	PM10	\$10,000	1.5	
	SOx	\$4,901	0.051	

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
South Coast Total of 139 Transactions	NOx	\$0	0.2	Subsidiary Transaction
	NOx	\$0	0.5	Barter Transaction
	NOx	\$0	1.1	Subsidiary Transaction
	NOx	\$0	5.5	Subsidiary Transaction
	NOx	\$0	12	Subsidiary Transaction
	NOx	\$38,356	1.1	
	NOx	\$43,836	2.7	
	NOx	\$49,151	0.7	
	NOx	\$49,151	1.1	
	NOx	\$49,315	1.1	
	NOx	\$60,274	1.1	
	HC	\$0	0.4	Subsidiary Transaction
	HC	\$0	0.9	Barter Transaction
	HC	\$0	1.1	Subsidiary Transaction
	HC	\$0	1.6	Barter Transaction
	HC	\$0	1.8	Subsidiary Transaction
	HC	\$0	71.4	Subsidiary Transaction
	HC	\$2,740	0.2	
	HC	\$2,740	0.2	
	HC	\$2,740	0.2	
	HC	\$2,740	0.2	
	HC	\$2,740	0.4	
	HC	\$2,740	0.4	
	HC	\$2,740	0.7	
	HC	\$2,740	0.7	
	HC	\$2,740	0.9	
	HC	\$2,740	1.1	
	HC	\$2,740	1.3	
	HC	\$2,740	1.5	
	HC	\$2,740	2.2	
	HC	\$2,740	2.6	
	HC	\$2,740	2.6	
	HC	\$2,740	5.3	
	HC	\$2,740	5.3	
	HC	\$2,740	5.5	
	HC	\$2,740	6.9	
	HC	\$2,740	7.7	
	HC	\$5,479	0.5	
	HC	\$5,479	0.7	
	HC	\$7,945	0.9	
	HC	\$7,945	1.8	
	HC	\$7,945	4.7	
	HC	\$7,945	9.1	
	HC	\$8,082	3.8	
	HC	\$8,082	4.4	

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
South Coast (continued)	HC	\$8,082	6.6	
	HC	\$8,219	1.1	
	HC	\$8,219	1.1	
	HC	\$8,493	4	
	HC	\$8,493	6.6	
	HC	\$8,767	0.5	
	HC	\$8,767	0.5	
	HC	\$8,767	1.3	
	HC	\$8,767	4	
	HC	\$9,151	1.3	
	HC	\$9,151	1.5	
	HC	\$9,151	11.1	
	HC	\$9,151	18.3	
	HC	\$9,151	24.8	
	HC	\$9,178	2.4	
	HC	\$9,233	2.9	
	HC	\$9,315	0.4	
	HC	\$9,315	0.5	
	HC	\$9,315	0.7	
	HC	\$9,315	0.7	
	HC	\$9,315	0.9	
	HC	\$9,315	1.5	
	HC	\$9,315	1.5	
	HC	\$9,315	8.2	
	HC	\$9,452	9.1	
	HC	\$9,500	6	
	HC	\$9,699	1.3	
	HC	\$9,699	1.5	
	HC	\$9,699	2.7	
	HC	\$9,726	1.3	
	HC	\$9,726	2.2	
	HC	\$9,863	0.9	
	HC	\$9,863	1.6	
	HC	\$10,137	0.5	
	HC	\$10,137	0.7	
	HC	\$10,137	2.4	
	HC	\$10,411	0.7	
	HC	\$10,411	1.6	
	HC	\$10,411	2.4	
	HC	\$10,411	2.7	
	HC	\$10,411	2.9	
	HC	\$10,411	3.8	
	HC	\$10,411	4	
	HC	\$10,411	4.6	
	HC	\$10,411	6.9	
	HC	\$10,411	19.7	

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
South Coast (continued)	HC	\$10,822	1.1	
	HC	\$10,959	2.6	
	HC	\$11,233	6.2	
	HC	\$11,310	17	
	HC	\$11,425	1.5	
	HC	\$11,507	0.4	
	HC	\$12,329	0.2	
	PM10	\$0	0.2	Barter Transaction
	PM10	\$0	0.5	Barter Transaction
	PM10	\$98,630	0.2	
	PM10	\$98,630	0.2	
	PM10	\$109,589	0.5	
	PM10	\$109,589	1.3	
	PM10	\$111,545	2.6	
	PM10	\$120,548	0.2	
	PM10	\$120,548	0.2	
	PM10	\$120,548	0.2	
	PM10	\$120,548	0.4	
	PM10	\$120,548	1.8	
	PM10	\$120,548	1.8	
	PM10	\$120,548	2	
	PM10	\$120,548	4.2	
	PM10	\$136,986	0.2	
	PM10	\$136,986	1.3	
	CO	\$0	9.1	Subsidiary Transaction
	CO	\$0	9.9	Barter Transaction
	CO	\$27,397	2.6	
	CO	\$32,877	0.2	
	CO	\$38,356	0.4	
	CO	\$38,356	0.4	
	CO	\$38,356	2.4	
	CO	\$38,356	8.2	
	CO	\$39,726	0.4	
	CO	\$40,548	0.7	
	CO	\$41,096	1.5	
	CO	\$41,096	2.4	
	CO	\$42,466	2.7	
	CO	\$42,466	4.6	
	CO	\$42,466	4.6	
	CO	\$42,740	2.2	
	CO	\$43,836	0.7	
	CO	\$43,836	1.5	
	CO	\$46,027	0.2	
	CO	\$47,397	1.8	

TABLE 2 (cont.)
2002 California
Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	Pollutant	\$/ton	Tons	Notes
South Coast (continued)	SOx	\$0	0.7	Barter Transaction
	SOx	\$25,573	0.5	
	SOx	\$54,795	9.1	
	SOx	\$65,753	0.7	
Ventura County Total of 6 Transactions	NOx	\$10,000	0.94	
	NOx	\$18,000	10	2 Year Lease
	HC	\$3,500	7.7	6 Month Lease
	HC	\$16,000	0.25	
	HC	\$25,000	1	
	HC	\$25,000	2.8	
Yolo-Solano Total of 9 Transactions	NOx	\$990	27.47	Agricultural Offset
	NOx	\$20,000	4.86	
	NOx	\$34,980	52.08	
	HC	\$990	42.52	Agricultural Offset
	HC	\$7,000	1.88	
	PM10	\$34,980	70.16	
	PM10	\$40,000	1.05	
	CO	\$750	11	
	SOx	\$5,000	0.58	

TABLE 3

Districts With No Offset Transactions to Report in 2002

Amador County Air Pollution Control District
Antelope Valley Air Pollution Control District
Calaveras County Air Pollution Control District
Colusa County Air Pollution Control District
El Dorado County Air Pollution Control District
Feather River 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
North Coast Unified Air Quality Management District
Northern Sierra Air Quality Management District
Northern Sonoma County Air Pollution Control District
Shasta County Air Pollution Control District
Siskiyou County Air Pollution Control District
Tehama County Air Pollution Control District
Tuolumne County Air Pollution Control District

TABLE 4
2002 California
NOx Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Imperial County	\$3,289	2.44	Barter Transaction
	\$10,000	24	
Placer County	\$30,000	0.97	
Sacramento Metropolitan	\$18,400	11.63	
	\$33,000	1.98	
	\$33,129	4.69	Barter Transaction
	\$33,129	4.69	Bart. Trans. Credits Val. In 3rd Qtr
	\$37,500	11.63	
	\$37,500	12	
San Diego County	\$104,000	3.4	
	\$140,000	2.67	
	\$140,000	3.4	
San Joaquin Valley	\$18,000	5	
	\$20,567	3.1	
	\$25,000	0.2	
	\$25,155	45.2	
	\$28,463	3.6	Credits Valid in Third Quarter
	\$30,000	0.3	
	\$30,000	11.3	Credits Valid in Third Quarter
	\$30,000	12	Credits Valid in Third Quarter
	\$30,000	13.8	
	\$30,000	39.3	
	\$30,000	65.7	
	\$31,000	4.8	
	\$31,000	23.20	
	\$32,000	39.3	
	\$32,000	65.7	
San Luis Obispo County	\$16,239	22.92	
Santa Barbara County	\$12,000	7.2	
	\$15,000	4.08	
	\$20,521	0.389	
South Coast	\$38,356	1.1	
	\$43,836	2.7	
	\$49,151	0.7	
	\$49,151	1.1	
	\$49,315	1.1	
	\$60,274	1.1	

TABLE 4 (cont.)
2002 California
NOx Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Ventura County	\$10,000	0.94	
	\$18,000	10	2 Year Lease
Yolo-Solano	\$990	27.47	Agricultural Offset
	\$20,000	4.86	
	\$34,980	52.08	

TABLE 5

2002 Summary Statistics For a Total of 42 NOx Transactions*

	\$/ton	Tons
Total Tons Traded		553.739
Average (mean)	\$35,261	
Median	\$30,000	
High	\$140,000	
Low	\$990	

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

CHART 1

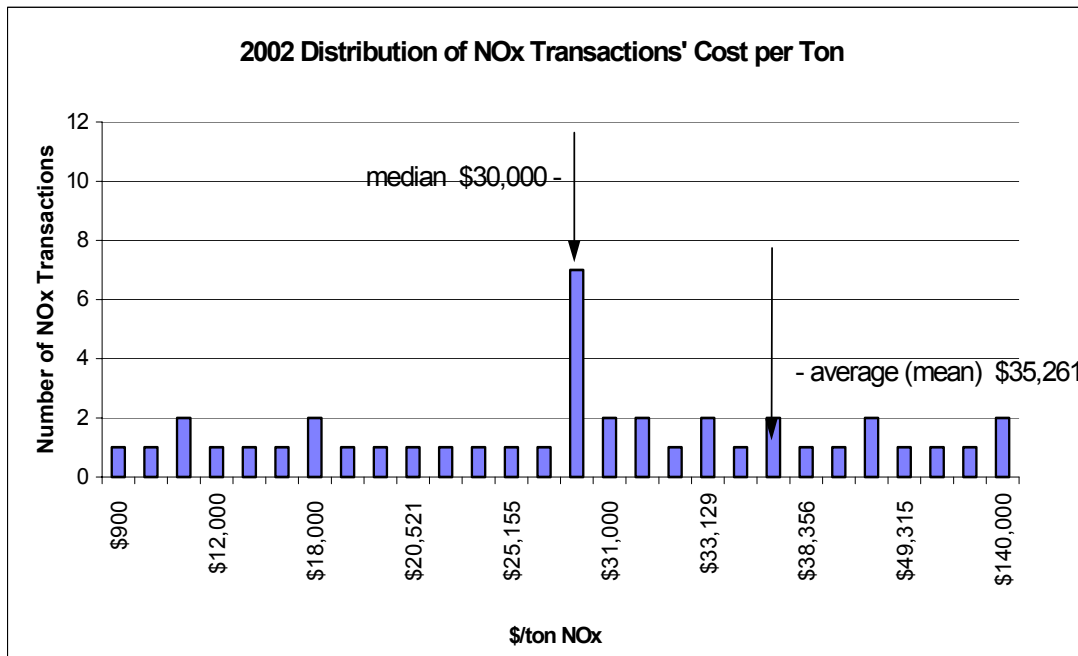


TABLE 6
2002 California
HC Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Bay Area	\$12,000	2.353	
	\$20,000	5	
	\$34,000	27.502	
Butte County	\$10,000	40	
Imperial County	\$485	0.27	1 Year Agricultural Offset
	\$485	0.85	1 Year Agricultural Offset
	\$485	0.94	1 Year Agricultural Offset
	\$535	0.32	1 Year Agricultural Offset
	\$535	0.64	1 Year Agricultural Offset
	\$535	1.22	1 Year Agricultural Offset
	\$535	1.72	1 Year Agricultural Offset
	\$700	0.87	1 Year Agricultural Offset
	\$700	0.923	1 Year Agricultural Offset
	\$700	1	1 Year Agricultural Offset
	\$700	2.48	1 Year Agricultural Offset
	\$700	2.59	1 Year Agricultural Offset
	\$705	0.85	1 Year Agricultural Offset
	\$799	1.69	1 Year Agricultural Offset
	\$799	1.81	1 Year Agricultural Offset
	\$799	2.07	1 Year Agricultural Offset
	\$799	3.9	1 Year Agricultural Offset
	\$799	7.53	1 Year Agricultural Offset
	\$800	0.67	1 Year Agricultural Offset
	\$3,289	0.25	Barter Transaction
Placer County	\$30,000	6.66	
Sacramento Metropolitan	\$7,000	1.88	
	\$12,000	3.15	
	\$12,096	7.96	Barter Transaction
	\$12,135	3.88	
	\$12,721	1.54	
	\$16,500	2	
San Diego County	\$1,613	0.62	1 Year Lease
	\$2,000	1	1 Year Lease
	\$2,138	1.86	1 Year Lease
	\$2,415	1	1 Year Lease
	\$2,427	3	1 Year Lease
	\$30,000	0.5	1 Year Lease
	\$52,000	0.4	
	\$61,000	20.7	
	\$70,000	0.3	

TABLE 6 (cont.)
2002 California
HC Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
San Diego County	\$70,000	0.4	
(continued)	\$70,000	21	
San Joaquin Valley	\$6,260	62.8	
	\$6,260	62.8	
	\$7,500	2.8	
	\$8,000	0.2	Credits Valid in Third Quarter
	\$8,000	0.2	Credits Valid in First Quarter
	\$8,000	0.2	Credits Valid in Fourth Quarter
	\$8,000	0.3	Credits Valid in Fourth Quarter
	\$8,000	0.3	Credits Valid in First Quarter
	\$8,000	0.3	Credits Valid in Fourth Quarter
	\$8,000	0.4	Credits Valid in 3rd & 4th Quarter
	\$8,000	0.5	Credits Valid in 2nd & 3rd Quarter
	\$8,000	0.5	Credits Valid in First Quarter
	\$8,000	0.8	Credits Valid in First Quarter
	\$8,000	0.9	Credits Valid in 2nd, 3rd, & 4th Qtr.
	\$8,000	1.1	Credits Valid in 3rd & 4th Quarter
	\$8,000	1.6	Credits Valid in 3rd & 4th Quarter
	\$8,000	2.2	
	\$8,000	2.9	
	\$9,000	7.9	
	\$9,000	26.7	Credits Valid in Third Quarter
	\$9,600	0.3	Credits Valid in Third Quarter
	\$9,600	1.6	
	\$9,600	8.2	
	\$10,000	16	
	\$10,500	1.1	
	\$10,500	1.9	
	\$10,500	4.9	
	\$10,500	48.5	
	\$10,500	54.4	
San Luis Obispo County	\$16,239	32.89	
Santa Barbara County	\$7,500	2.269	
	\$7,500	20	
	\$10,000	1	
	\$10,000	4	
	\$13,500	6.56	
South Coast	\$2,740	0.2	
	\$2,740	0.2	
	\$2,740	0.2	

TABLE 6 (cont.)
2002 California
HC Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
South Coast (continued)	\$2,740	0.2	
	\$2,740	0.4	
	\$2,740	0.4	
	\$2,740	0.7	
	\$2,740	0.7	
	\$2,740	0.9	
	\$2,740	1.1	
	\$2,740	1.3	
	\$2,740	1.5	
	\$2,740	2.2	
	\$2,740	2.6	
	\$2,740	2.6	
	\$2,740	5.3	
	\$2,740	5.3	
	\$2,740	5.5	
	\$2,740	6.9	
	\$2,740	7.7	
	\$5,479	0.5	
	\$5,479	0.7	
	\$7,945	0.9	
	\$7,945	1.8	
	\$7,945	4.7	
	\$7,945	9.1	
	\$8,082	3.8	
	\$8,082	4.4	
	\$8,082	6.6	
	\$8,219	1.1	
	\$8,219	1.1	
	\$8,493	4	
	\$8,493	6.6	
	\$8,767	0.5	
	\$8,767	0.5	
	\$8,767	1.3	
	\$8,767	4	
	\$9,151	1.3	
	\$9,151	1.5	
	\$9,151	11.1	
	\$9,151	18.3	
	\$9,151	24.8	
	\$9,178	2.4	
	\$9,233	2.9	
	\$9,315	0.4	
	\$9,315	0.5	
	\$9,315	0.7	
	\$9,315	0.7	

TABLE 6 (cont.)
2002 California
HC Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
South Coast (continued)	\$9,315	0.9	
	\$9,315	1.5	
	\$9,315	1.5	
	\$9,315	8.2	
	\$9,452	9.1	
	\$9,500	6	
	\$9,699	1.3	
	\$9,699	1.5	
	\$9,699	2.7	
	\$9,726	1.3	
	\$9,726	2.2	
	\$9,863	0.9	
	\$9,863	1.6	
	\$10,137	0.5	
	\$10,137	0.7	
	\$10,137	2.4	
	\$10,411	0.7	
	\$10,411	1.6	
	\$10,411	2.4	
	\$10,411	2.7	
	\$10,411	2.9	
	\$10,411	3.8	
	\$10,411	4	
	\$10,411	4.6	
	\$10,411	6.9	
	\$10,411	19.7	
	\$10,822	1.1	
	\$10,959	2.6	
	\$11,233	6.2	
	\$11,310	17	
	\$11,425	1.5	
	\$11,507	0.4	
	\$12,329	0.2	
Ventura County	\$3,500	7.7	6 Month Lease
	\$16,000	0.25	
	\$25,000	1	
	\$25,000	2.8	
Yolo-Solano	\$990	42.52	Agricultural Offset
	\$7,000	1.88	

TABLE 7

2002 Summary Statistics For a Total of 164 HC Transactions*

\$/ton Tons		Total Tons Traded	Average (mean)	Median	High	Low
		903.167	\$9,633	\$8,630	\$70,000	\$485

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

CHART 2

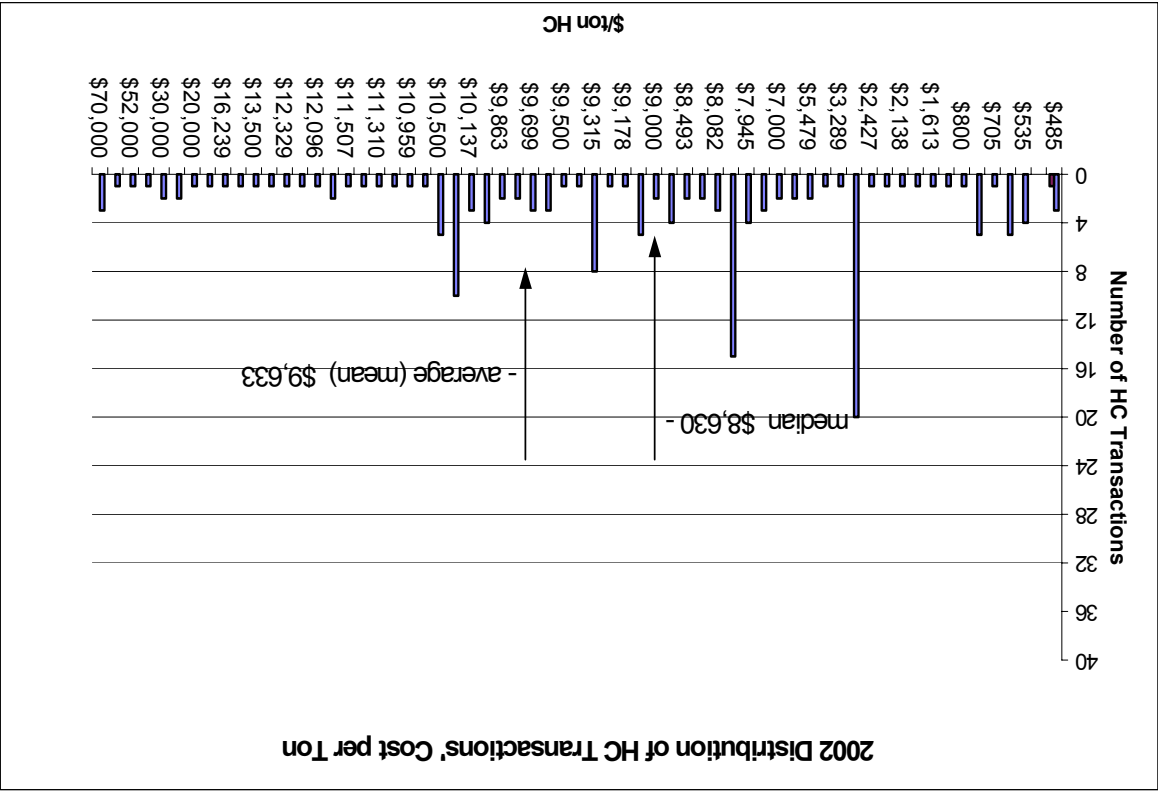


TABLE 8
2002 California
PM10 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Bay Area	\$12,000	0.094	
	\$35,000	1.197	
	\$50,000	5	
Imperial County	\$3,289	0.23	Barter Transaction
Monterey Bay Unified	\$19,690	42.1532	
Sacramento Metropolitan	\$15,000	6.72	
	\$33,000	2.79	
	\$35,000	4.55	
	\$37,500	6.72	
	\$37,500	25.12	
San Joaquin Valley	\$15,500	0.9	
	\$19,000	0.1	Credits Valid in First Quarter
	\$19,000	0.3	Credits Valid in Fourth Quarter
	\$19,000	0.7	Credits Valid in Fourth Quarter
	\$19,000	1.4	Credits Valid in Fourth Quarter
	\$19,000	1.6	Credits Valid in Fourth Quarter
	\$19,000	2.5	Credits Valid in 3rd & 4th Quarter
	\$19,000	3	Credits Valid in 3rd & 4th Quarter
	\$19,000	4.5	Credits Valid in Fourth Quarter
	\$19,000	7	Credits Valid in Fourth Quarter
	\$19,000	20	Credits Valid in 1st & 2nd Quarter
	\$19,161	21.1	
	\$20,000	0.1	Credits Valid in Third Quarter
	\$20,000	0.3	Credits Valid in First Quarter
	\$20,000	0.8	Credits Valid in First Quarter
	\$20,000	0.9	Credits Valid in Fourth Quarter
	\$20,000	3	
	\$20,000	3.4	Credits Valid in 3rd & 4th Quarter
	\$20,000	10.4	Credits Valid in Fourth Quarter
	\$20,000	12.3	Credits Valid in Fourth Quarter
	\$20,000	35.3	
	\$21,054	0.1	Credits Valid in Third Quarter
	\$21,054	33.2	Credits Valid in Fourth Quarter
	\$22,000	0.1	
San Luis Obispo County	\$16,239	1.92	
Santa Barbara County	\$10,000	1.5	

TABLE 8 (cont.)
2002 California
PM10 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
South Coast	\$98,630	0.2	
	\$98,630	0.2	
	\$109,589	0.5	
	\$109,589	1.3	
	\$111,545	2.6	
	\$120,548	0.2	
	\$120,548	0.2	
	\$120,548	0.2	
	\$120,548	0.4	
	\$120,548	1.8	
	\$120,548	1.8	
	\$120,548	2	
	\$120,548	4.2	
	\$136,986	0.2	
	\$136,986	1.3	
Yolo-Solano	\$34,980	70.16	
	\$40,000	1.05	

TABLE 9

2002 Summary Statistics For a Total of 53 PM10 Transactions*

	\$/ton	Tons
Total Tons Traded		349.30
Average (mean)	\$49,327	
Median	\$20,000	
High	\$136,986	
Low	\$3,289	

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

CHART 3

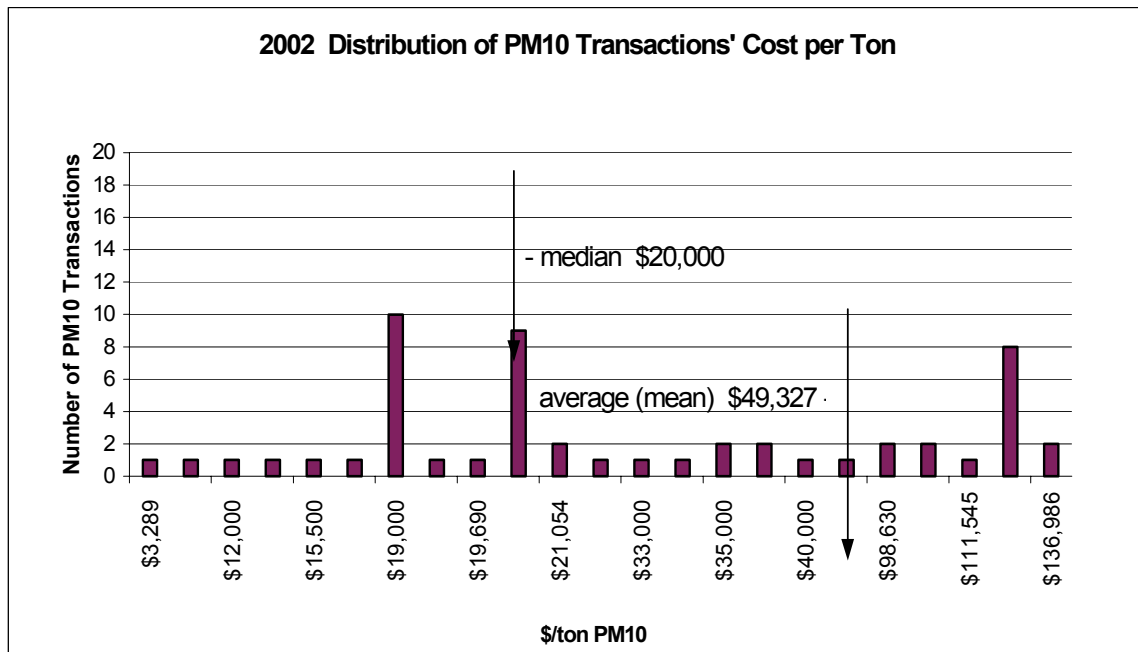


TABLE 10
2002 California
CO Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Imperial County	\$300	17.75	1 Year Agricultural Offset
	\$300	25.11	1 Year Agricultural Offset
	\$300	54.8	1 Year Agricultural Offset
	\$3,289	3.05	Barter Transaction
San Joaquin Valley	\$538	0.1	
	\$700	2.5	
	\$828	2.5	
San Luis Obispo County	\$16,239	2.62	
South Coast	\$27,397	2.6	
	\$32,877	0.2	
	\$38,356	0.4	
	\$38,356	0.4	
	\$38,356	2.4	
	\$38,356	8.2	
	\$39,726	0.4	
	\$40,548	0.7	
	\$41,096	1.5	
	\$41,096	2.4	
	\$42,466	2.7	
	\$42,466	4.6	
	\$42,466	4.6	
	\$42,740	2.2	
	\$43,836	0.7	
	\$43,836	1.5	
	\$46,027	0.2	
	\$47,397	1.8	
Yolo-Solano	\$750	11	

TABLE 11

2002 Summary Statistics For a Total of 27 CO Transactions*

\$/ton Tons		
Total Tons Traded		156.93
Average (mean)		\$27,802
Median		\$38,356
High		\$47,397
Low		\$300

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

CHART 4

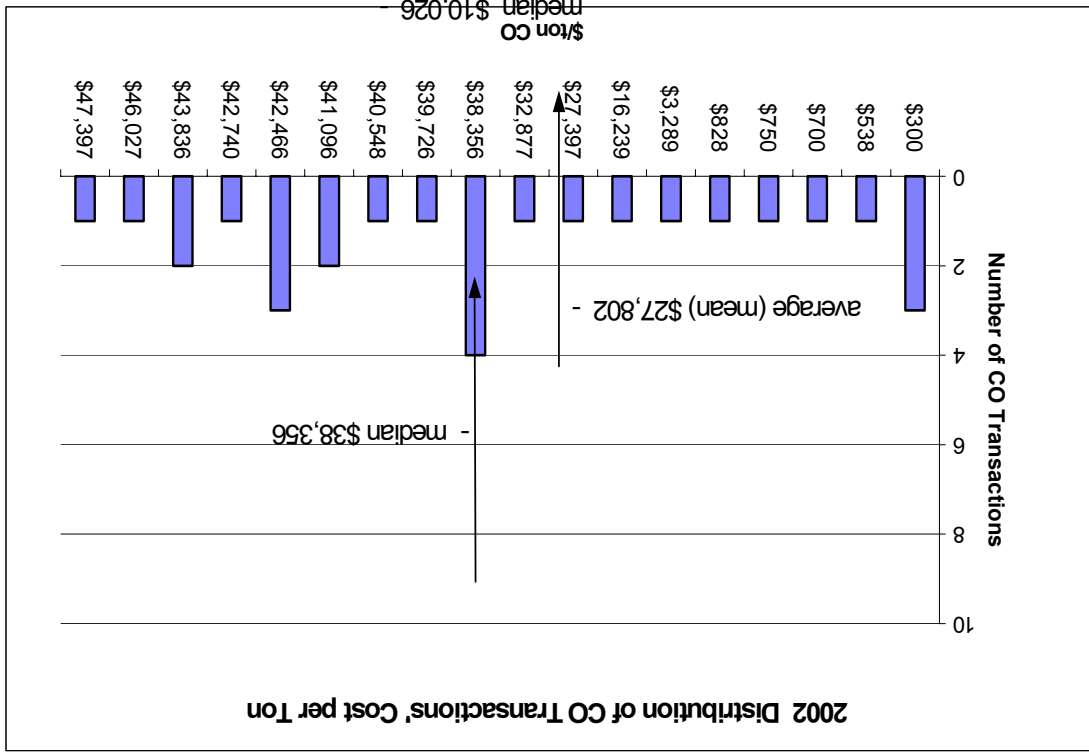


TABLE 12
2002 California
SOx Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	\$/ton	Tons	Notes
Bay Area	\$8,000	10	
Imperial County	\$3,289	0.11	Barter Transaction
Sacramento Metropolitan	\$5,000	1.45	
	\$5,000	1.6	
San Joaquin Valley	\$7,450	0.1	
	\$7,450	0.1	
	\$7,450	4.2	Credits Valid in Fourth Quarter
	\$7,450	6.7	Credits Valid in 1st & 2nd Quarter
	\$7,450	140.6	
	\$7,500	0.1	
	\$7,500	58	Credits Valid in 1st & 2nd Quarter
	\$9,000	50	
San Luis Obispo County	\$16,239	1.23	
Santa Barbara County	\$4,901	0.051	
South Coast	\$25,573	0.5	
	\$54,795	9.1	
	\$65,753	0.7	
Yolo-Solano	\$5,000	0.58	

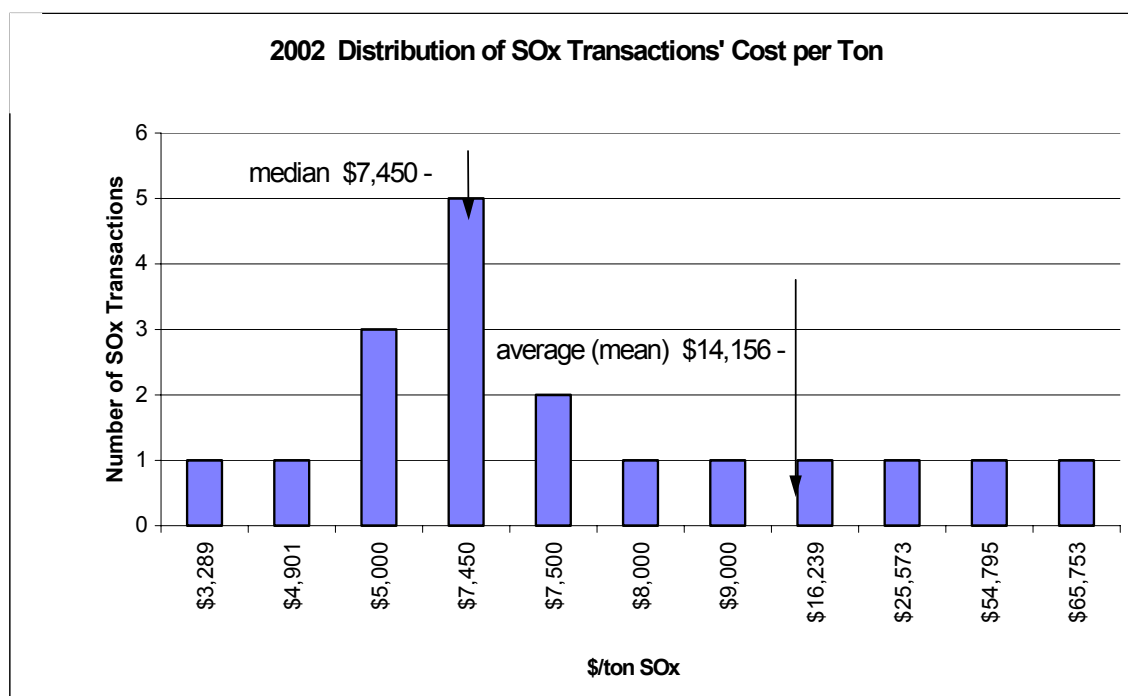
TABLE 13

2002 Summary Statistics For a Total of 18 SOx Transactions*

	\$/ton	Tons
Total Tons Traded		285.121
Average (mean)	\$14,156	
Median	\$7,450	
High	\$65,753	
Low	\$3,289	

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

CHART 5



APPENDIX A:

H&SC: 40709 District banking and Offset System

H&SC: 40709.5 Review of Emission Credit System

Gov. Code: Section 6254.7

H&S; 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&S; 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:

1. One transaction record per pollutant should be filled out for each transaction which takes place in the district between two or more parties.
2. Transactions should be reported in the year in which the final transaction occurs and money, or barter agreements are exchanged.
3. The annual report should be submitted to the Air Resources Board no later than January 31 of each year. The Air Resources Board will compile all data from the districts and publish a statewide report on the cost of offsets by the following April.
4. For cases of offset transactions which occur across district boundaries, transactions should be reported in the district in which the offsets are used. This is the district which will most likely have access to the transaction cost information necessary for reporting.

District ID# 1 		Quantity of Pollutant (tons/year) 5
<u>Pollutant</u> <input type="radio"/> NOx <input type="radio"/> SOx 2 <input type="radio"/> CO <input type="radio"/> HC <input type="radio"/> PM10 <input type="radio"/> Other	<u>Credit Source</u> <input type="radio"/> Stationary 3 <input type="radio"/> Mobile <input type="radio"/> Agricultural <input type="radio"/> Other <hr/> <input type="checkbox"/> Annual or <input type="checkbox"/> Quarter 4 <input type="radio"/> Q1 <input type="radio"/> Q2 <input type="radio"/> Q3 <input type="radio"/> Q4	Price Paid (\$/ton) 6 <input type="radio"/> Barter Transaction 7 <input type="radio"/> Subsidiary Transaction Length of Life/Lease 8

District ID# <input type="text"/>		Quantity of Pollutant (tons/year) <input type="text"/>
<u>Pollutant</u> <input type="radio"/> NOx <input type="radio"/> SOx <input type="radio"/> CO <input type="radio"/> HC <input type="radio"/> PM10 <input type="radio"/> Other	<u>Credit Source</u> <input type="radio"/> Stationary <input type="radio"/> Mobile <input type="radio"/> Agricultural <input type="radio"/> Other	Price Paid (\$/ton) <input type="text"/>
	<input type="checkbox"/> Annual or <input type="checkbox"/> Quarter <input type="radio"/> Q1 <input type="radio"/> Q2 <input type="radio"/> Q3 <input type="radio"/> Q4	<input type="radio"/> Barter Transaction <input type="radio"/> Subsidiary Transaction Length of Life/Lease <input type="text"/>

District ID# <input type="text"/>		Quantity of Pollutant (tons/year) <input type="text"/>
<u>Pollutant</u> <input type="radio"/> NOx <input type="radio"/> SOx <input type="radio"/> CO <input type="radio"/> HC <input type="radio"/> PM10 <input type="radio"/> Other	<u>Credit Source</u> <input type="radio"/> Stationary <input type="radio"/> Mobile <input type="radio"/> Agricultural <input type="radio"/> Other	Price Paid (\$/ton) <input type="text"/>
	<input type="checkbox"/> Annual or <input type="checkbox"/> Quarter <input type="radio"/> Q1 <input type="radio"/> Q2 <input type="radio"/> Q3 <input type="radio"/> Q4	<input type="radio"/> Barter Transaction <input type="radio"/> Subsidiary Transaction Length of Life/Lease <input type="text"/>

District ID# <input type="text"/>		Quantity of Pollutant (tons/year) <input type="text"/>
<u>Pollutant</u> <input type="radio"/> NOx <input type="radio"/> SOx <input type="radio"/> CO <input type="radio"/> HC <input type="radio"/> PM10 <input type="radio"/> Other	<u>Credit Source</u> <input type="radio"/> Stationary <input type="radio"/> Mobile <input type="radio"/> Agricultural <input type="radio"/> Other	Price Paid (\$/ton) <input type="text"/>
	<input type="checkbox"/> Annual or <input type="checkbox"/> Quarter <input type="radio"/> Q1 <input type="radio"/> Q2 <input type="radio"/> Q3 <input type="radio"/> Q4	<input type="radio"/> Barter Transaction <input type="radio"/> Subsidiary Transaction Length of Life/Lease <input type="text"/>

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 identifier (e.g. 95 for 1995), 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 which 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 which quarter they can be used for. 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 give the quantity of pollutant in tons/year.

Example 1: For Single Quarter Transactions

$$1 \frac{\text{lb}}{\text{day}}, 1 \frac{\text{lb}}{\text{day}} \times 365 \frac{\text{days}}{\text{year}} \times \frac{1}{2000} \frac{\text{ton}}{\text{lbs}}, 0.1825 \frac{\text{tons}}{\text{year}}$$

Example 2: For Annual Transactions

$$1 \frac{\text{lb}}{\text{quarter}}, 1 \frac{\text{lb}}{\text{quarter}} \times 4 \frac{\text{quarters}}{\text{year}} \times \frac{1}{2000} \frac{\text{ton}}{\text{lbs}}, 0.0020 \frac{\text{tons}}{\text{year}}$$

Example 3: For Quarterly Credits Used to Offset Annual Sources

$$(Q_1 \% Q_2 \% Q_3 \% Q_4)' \frac{\text{lbs}}{\text{year}} \quad \text{Convert to tons per year}$$

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. Barter 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 on 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 transaction occurred between two subsidiaries of the same parent company check the subsidiary transaction box. This also applies to transactions which 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 which 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
MB	Monterey Bay Unified APCD
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