State of California
California Environmental Protection Agency

AIR RESOURCES BOARD

Emission Reduction Offsets Transaction Cost Summary Report for 2004

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Prepared by

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ACKNOWLEDGMENTS

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

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EXECUTIVE SUMMARY

BACKGROUND

Since 1993, Health and Safety Code Sections 40709 and 40709.5 have required local air quality management districts/air pollution control districts (AQMDs/APCDs or districts) to collect information 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. 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 2004 DATA

The Air Resources Board (ARB) has compiled information regarding New Source Review 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 2004. All the districts reported to ARB regardless of whether they had any offset transactions or whether the reporting requirements apply. A total of 247 transactions were reported to have taken place in California in 2004. In this report we are not including information about 30 subsidiary transactions where there were no associated costs. Of the remaining 217 transactions, 38 were for NOx, 116 were for HC, 33 were for PM10, 16 were for CO, and 14 were for 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, PM10, CO, and SOx offset transactions reported in 2004. 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
2004 Prices Paid in Dollars Per Transaction per Ton of Offsets

	NOx	HC	PM10	CO	SOx
Average	$66,798	$10,792	$73,584	$15,597	$25,461
Median	$48,767	$7,014	$30,022	$11,058	$39,139
High	$210,000	$70,000	$153,425	$32,877	$41,644
Low	$10,500	$550	$300	$200	$1,000

The following districts reported offset transactions: Bay Area AQMD, Imperial County APCD, Mojave Desert AQMD, Placer County APCD, Sacramento Metropolitan AQMD, San Diego County APCD, San Joaquin Valley APCD, Santa Barbara County APCD, Shasta County AQMD, South Coast AQMD, Ventura County APCD, and Yolo-Solano AQMD.

DATA TRENDS

For the past twelve years (1993-2004), 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, the number of transactions decreased recently to 321 in 2002, 307 in 2003, and 247 in 2004. The number of districts reporting offset transactions has remained about the same, with thirteen in 2002, fourteen in 2003, and twelve in 2004.

Summary Charts A, B, and C illustrate the trends that have occurred during the past twelve years for the average transaction cost per ton of the three most actively traded criteria pollutants (NOx, HC and PM10). Summary Chart A illustrates that the average transaction cost of NOx emission credits generally decreased until 1996, then increased starting in 1997. This cost has increased over the past five years to levels higher than those of the previous seven years, increasing from approximately $10,000 per transaction per ton in 1996 to $66,798 per transaction per ton in 2004.

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 2002-2004 are less than 2001 costs, but higher that those of the four previous years. 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, then increased to $10,792 in 2004.

Summary Chart C shows that the average transaction cost of PM10 emission credits has shown fluctuations over the past twelve years, with a trend toward increasing costs in more recent 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 a dramatic increase in 2004. 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, then more than doubled to $73,584 in 2004.

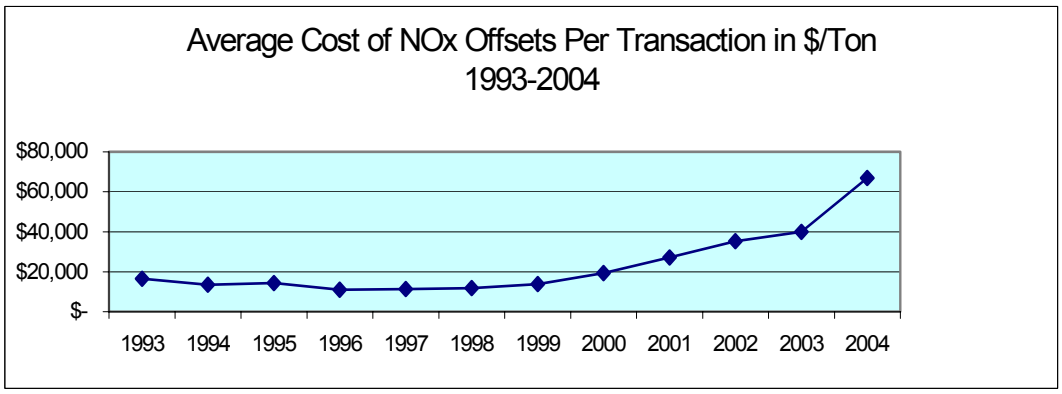
Summary Charts D and E illustrate the trends for the number of transactions and the number of tons traded during the past twelve years for the three most traded pollutants (NOx, HC and PM10). Summary Chart D illustrates that the number of transactions have generally increased between 1993 and 2001 for all three pollutants and then show a trend toward decreasing numbers beginning in

2002. The number of NOx and PM10 transactions have fluctuated such that they are similar to each other in 2004. Over the years, HC transactions have consistently outnumbered those involving other pollutants.

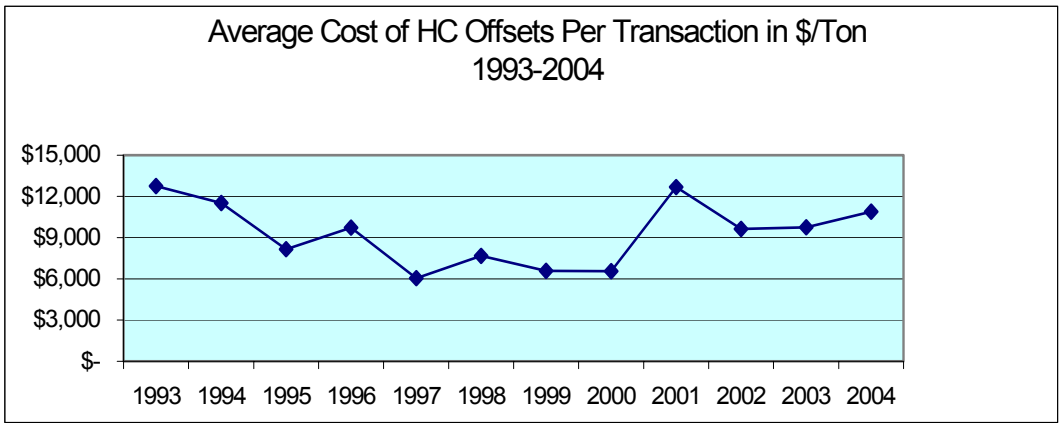
Summary Chart E shows that fluctuations have occurred over the past several years in the number of tons traded, represented by a dramatic increase in 2000 followed by a sharp decrease in 2002 for the number of tons of NOx, HC, and PM10 emission credits traded. The number of NOx and HC tons traded increased slightly in 2003, while the number of PM10 tons traded decreased that year. A decrease in the number of tons traded occurred for all three pollutants in 2004.

Visit our website "Emission Reduction Credit Offsets," at *http://www.arb.ca.gov/nsr/erco/erco.htm* for further information on California offset transactions that occurred from 1993 through 2004.

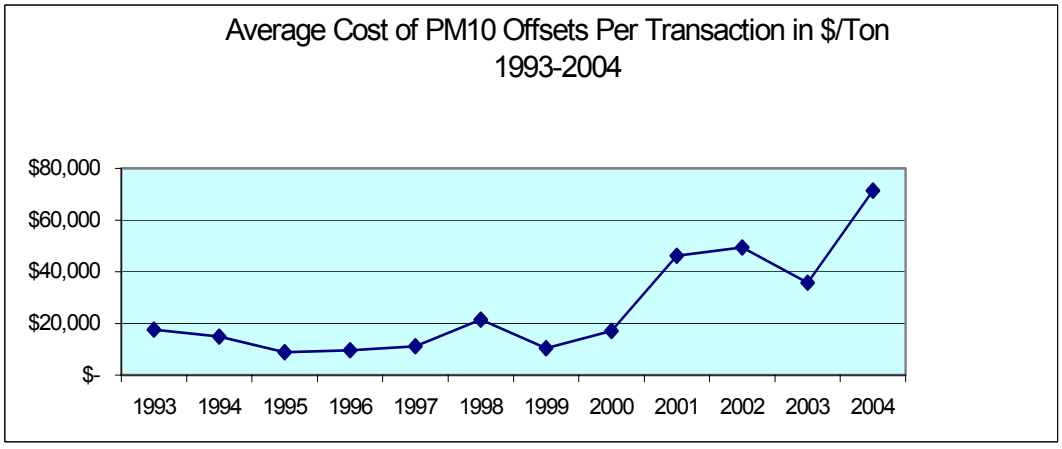
Summary Chart A



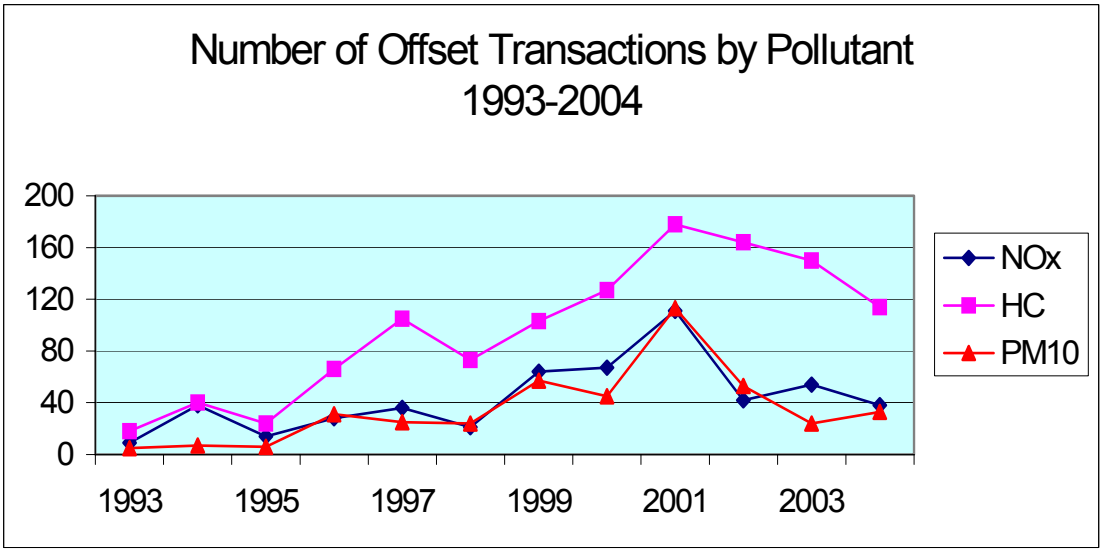
Summary Chart B



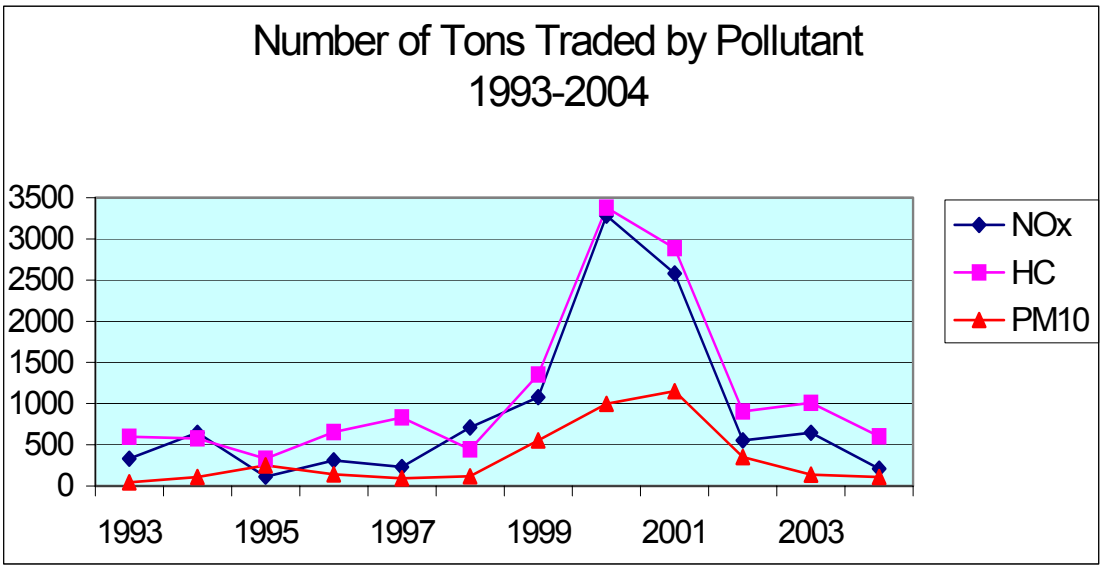
Summary Chart C



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 New Source Review programs. This report presents a compilation of the transactions in California from January 1 through December 31, 2004, 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 that 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 to construct, the source is required to demonstrate that it meets the district's NSR rules regarding applying Best Available Control Technology and providing the appropriate amounts of emission offsets. 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.

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 that 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 2004 DATA

Table 1 presents the statewide average, median, high and low costs for NOx, HC, PM10, CO and SOx offsets reported in 2004.

Table 2 presents all of the 247 reported pollutant transactions that took place in the State in 2004,

listed by individual districts. There are 30 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 30 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 40 and 41.

The majority of transactions reported involved emission reductions from stationary sources. Five of these reported were agricultural offset transactions, and there were nine mobile source emission reduction transactions reported for 2004. Of the total reported 217 transactions with costs, 38 were NOx transactions, 116 were HC transactions, 33 were PM10 transactions, 16 were CO transactions, and 14 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 2004.

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 for each transaction was calculated by dividing the cost of the transaction by the number of tons traded in that transaction. There are no assumptions 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 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 summarize the data in each preceding table. The summary tables include 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 to include in the calculations.

TABLE 2

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
Bay Area	HC	$9,000	5.87	Stationary
Total of 3 Transactions	HC	$10,500	2	Stationary
	HC	$11,500	5.87	Stationary
Imperial County	HC	$550	1	1 Year Agricultural Offset
Total of 5 Transactions	PM10	$300	2	1 Year Agricultural Offset
	PM10	$300	2	1 Year Agricultural Offset
	PM10	$500	3.46	1 Year Agricultural Offset
	CO	$200	3.5	1 Year Agricultural Offset
Mojave Desert	NOx	$10,500	25	Stationary
Total of 4 Transactions	HC	$5,590	21	Stationary
	PM10	$5,000	4	Stationary
	SOx	$0	27	Subsidiary
Placer County	NOx	$19,500	10.1	Stationary
Total of 5 Transactions	HC	$7,500	67	Stationary
	HC	$13,363	0.22	Stationary
	PM10	$19,500	29.4	Stationary
	PM10	$30,022	28.4	Stationary
Sacramento Metropolitan	NOx	$0	0.51	Subsidiary
Total of 9 Transactions	NOx	$25,000	3.34	Barter transaction
	HC	$0	0.04	Subsidiary
	HC	$23,500	29.72	
	HC	$24,999	10.17	
	PM10	$0	0.18	Subsidiary
	PM10	$25,000	3.59	Barter transaction
	CO	$0	0.46	Subsidiary
	SOx	$0	0.01	Subsidiary
San Diego	NOx	$50,000	2.53	Mobile
Total of 32 Transactions	NOx	$50,000	4.39	Mobile
	NOx	$50,000	5.83	Mobile
	NOx	$50,000	6.79	Mobile
	NOx	$50,000	7.62	Mobile
	NOx	$105,000	14.73	Stationary
	NOx	$105,000	14.73	Stationary

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
San Diego (continued)	NOx	$140,000	1.33	Stationary
	NOx	$140,000	1.33	Stationary
	NOx	$140,000	4.43	Stationary
	NOx	$210,000	7.39	Mobile
	NOx	$210,000	8.75	Mobile
	NOx	$210,000	9.22	Mobile
	NOx	$210,000	9.89	Mobile
	HC	$2,415	1.86	Stationary
	HC	$2,415	1.86	Stationary
	HC	$2,500	0.2	Stationary
	HC	$2,500	1	Stationary
	HC	$3,000	1.2	Stationary
	HC	$43,500	5.5	Stationary
	HC	$52,000	0.88	Stationary
	HC	$52,000	0.88	Stationary
	HC	$52,000	5.5	Stationary
	HC	$70,000	0.49	Stationary
	PM10	$4,500	0.1	Barter transaction
	PM10	$4,500	0.17	Barter transaction
	PM10	$4,500	0.61	Barter transaction
	CO	$500	0.37	Barter transaction
	CO	$500	4.52	Barter transaction
	CO	$1,250	0.6	Barter transaction
	SOx	$1,500	0.09	Barter transaction
	SOx	$1,500	0.28	Barter transaction
San Joaquin Valley Total of 31 Transactions	NOx	$18,000	7.7	Stationary
	NOx	$20,000	0.5	Stationary
	NOx	$21,000	1	Stationary
	NOx	$22,000	17.1	Stationary
	NOx	$22,500	0.4	Stationary
	NOx	$22,500	1.8	Stationary
	NOx	$23,000	4.2	Stationary
	HC	$8,700	18.9	Stationary
	HC	$9,000	1	Stationary
	HC	$9,500	7.5	Stationary
	HC	$10,000	4.9	Stationary
	HC	$10,414	10.4	Stationary
	HC	$11,000	1.6	Stationary

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
San Joaquin Valley (continued)	HC	$11,000	2	Stationary
	HC	$11,250	4.2	Stationary
	HC	$12,000	1	Stationary
	HC	$12,500	9.2	Stationary
	HC	$13,000	0.6	Stationary
	HC	$13,000	4.4	Stationary
	HC	$14,261	0.4	Stationary
	HC	$15,000	0.1	Stationary
	HC	$15,000	1	Stationary
	PM10	$13,500	7.4	Stationary
	PM10	$14,000	4.8	Stationary
	PM10	$15,000	2	Stationary
	PM10	$18,000	0.1	Stationary
	PM10	$18,000	0.7	Stationary
	PM10	$18,000	10.1	Stationary
	SOx	$7,000	1.6	Stationary
	SOx	$7,307	20	Stationary
	SOx	$10,000	1.3	Stationary
Santa Barbara County Total of 4 Transactions	NOx	$35,268	2.084	Stationary
	HC	$30,000	2	Stationary
	HC	$45,000	2.916	Stationary
	PM10	$7,500	0.016	Stationary
Shasta County Total of 1 Transaction	SOx	$1,000	40	Stationary
South Coast Total of 148 Transactions	NOx	$38,356	0.9	
	NOx	$41,096	4.9	
	NOx	$42,513	3.1	
	NOx	$42,513	12.8	
	NOx	$46,575	0.2	
	NOx	$47,123	7.3	
	NOx	$48,219	4.9	
	NOx	$49,315	0.7	
	NOx	$49,315	0.7	
	NOx	$49,315	2.6	
	NOx	$52,055	0.2	
	NOx	$57,534	0.7	

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
South Coast (continued)	HC	$0	11.7	Subsidiary Transaction
	HC	$0	1.5	Subsidiary Transaction
	HC	$0	1.5	Subsidiary Transaction
	HC	$0	4.7	Subsidiary Transaction
	HC	$0	0.5	Subsidiary Transaction
	HC	$0	2.6	Subsidiary Transaction
	HC	$0	45.6	Subsidiary Transaction
	HC	$0	3.1	Subsidiary Transaction
	HC	$0	1.1	Subsidiary Transaction
	HC	$0	0.5	Subsidiary Transaction
	HC	$0	0.5	Subsidiary Transaction
	HC	$0	0.2	Subsidiary Transaction
	HC	$0	1.8	Subsidiary Transaction
	HC	$0	0.5	Subsidiary Transaction
	HC	$0	7.8	Subsidiary Transaction
	HC	$0	0.5	Subsidiary Transaction
	HC	$0	1.5	Subsidiary Transaction
	HC	$0	5.1	Subsidiary Transaction
	HC	$0	0.7	Subsidiary Transaction
	HC	$0	1.6	Subsidiary Transaction
	HC	$0	18.6	Subsidiary Transaction
	HC	$0	6.8	Subsidiary Transaction
	HC	$0	9.1	Subsidiary Transaction
	HC	$3,836	0.7	
	HC	$4,110	1.1	
	HC	$4,932	5.5	
	HC	$4,932	5.7	
	HC	$4,932	26.6	
	HC	$5,205	0.4	
	HC	$5,205	2.9	
	HC	$5,205	3.3	
	HC	$5,479	3.8	
	HC	$5,479	7.3	
	HC	$5,816	2.9	
	HC	$6,027	1.6	
	HC	$6,027	2.4	
	HC	$6,027	5.1	
	HC	$6,027	5.1	
	HC	$6,027	7.3	

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
South Coast (continued)	HC	$6,027	15.7	
	HC	$6,164	0.7	
	HC	$6,164	0.9	
	HC	$6,164	1.3	
	HC	$6,301	3.3	
	HC	$6,438	2.9	
	HC	$6,466	9.9	
	HC	$6,575	0.4	
	HC	$6,575	0.4	
	HC	$6,575	3.5	
	HC	$6,575	5.5	
	HC	$6,678	1.1	
	HC	$6,678	1.8	
	HC	$6,740	3.8	
	HC	$6,740	6.8	
	HC	$6,795	2.2	
	HC	$6,795	6.9	
	HC	$6,849	0.7	
	HC	$6,849	0.7	
	HC	$6,849	0.9	
	HC	$6,849	1.1	
	HC	$6,849	3.5	
	HC	$6,849	3.7	
	HC	$6,849	3.7	
	HC	$6,849	4.6	
	HC	$6,849	22.4	
	HC	$6,904	0.5	
	HC	$6,959	0.5	
	HC	$6,986	1.1	
	HC	$6,986	7.3	
	HC	$6,986	14.6	
	HC	$6,986	14.6	
	HC	$6,986	18.8	
	HC	$6,986	33.4	
	HC	$7,041	1.8	
	HC	$7,041	4.4	
	HC	$7,041	10.2	
	HC	$7,123	0.2	
	HC	$7,123	1.8	

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
South Coast (continued)	HC	$7,123	3.8	
	HC	$7,123	4.4	
	HC	$7,260	1.5	
	HC	$7,260	4	
	HC	$7,397	0.4	
	HC	$7,397	1.8	
	HC	$7,397	3.3	
	HC	$7,479	2.9	
	HC	$7,479	6.2	
	HC	$7,479	9.1	
	HC	$7,534	0.9	
	HC	$7,671	0.2	
	HC	$7,671	0.4	
	HC	$7,671	2.9	
	HC	$7,856	4.6	
	HC	$7,856	4.6	
	HC	$7,863	0.5	
	HC	$8,219	0.7	
	HC	$16,882	2.6	
	HC	$18,926	6.9	
	HC	$21,918	1.8	
	PM10	$109,589	0.2	
	PM10	$126,027	0.5	
	PM10	$126,027	1.3	
	PM10	$136,986	0.2	
	PM10	$136,986	0.2	
	PM10	$136,986	0.7	
	PM10	$136,986	0.7	
	PM10	$136,986	0.7	
	PM10	$142,466	0.2	
	PM10	$142,466	0.2	
	PM10	$142,466	0.4	
	PM10	$147,945	0.2	
	PM10	$147,945	0.7	
	PM10	$153,425	0.2	

TABLE 2 (contd.)

2004 California

Emission Reduction Credit Transaction Costs By District

Reported in Total Tons Traded

District	Pollutant	$/ton	Tons	Notes
South Coast (continued)	PM10	$153,425	0.7	
	PM10	$153,425	0.7	
	CO	$0	4.9	Subsidiary Transaction
	CO	$2,740	5.1	
	CO	$8,219	0.7	
	CO	$9,786	0.7	
	CO	$9,786	4.4	
	CO	$12,329	4.7	
	CO	$21,918	0.7	
	CO	$22,466	4.7	
	CO	$31,507	4.7	
	CO	$31,507	5.1	
	CO	$31,781	4.7	
	CO	$32,192	0.7	
	CO	$32,877	0.4	
	SOx	$38,356	0.5	
	SOx	$39,922	2.6	
	SOx	$41,644	0.2	
	SOx	$41,644	0.2	
	SOx	$41,644	1.8	
	SOx	$41,644	1.8	
	SOx	$41,644	8.6	
	SOx	$41,644	13.7	
Ventura County Total of 4 Transactions	NOx	$15,116	0.43	
	HC	$20,000	1.04	
	HC	$20,000	1.5	
	HC	$26,000	0.5	
Yolo-Solano Total of 1 Transaction	HC	$4,500	3	

TABLE 3

Districts With No Offset Transactions to Report in 2004

Amador County Air Pollution Control District
Antelope Valley Air Pollution Control District
Butte County 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
Monterey Bay Unified Air Pollution Control District
North Coast Unified Air Quality Management District
Northern Sierra Air Quality Management District
Northern Sonoma County Air Pollution Control District
San Luis Obispo County Air Pollution Control District
Siskiyou County Air Pollution Control District
Tehama County Air Pollution Control District
Tuolumne County Air Pollution Control District

TABLE 4

2004 California

NOx Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
Mojave Desert	$10,500	25	
Placer County	$19,500	10.1	
Sacramento Metropolitan	$25,000	3.34	
San Diego County	$50,000	2.53	
	$50,000	4.39	
	$50,000	5.83	
	$50,000	6.79	
	$50,000	7.62	
	$105,000	14.73	
	$105,000	14.73	
	$140,000	1.33	
	$140,000	1.33	
	$140,000	4.43	
	$210,000	7.39	
	$210,000	8.75	
	$210,000	9.22	
	$210,000	9.89	
San Joaquin Valley	$18,000	7.7	
	$20,000	0.5	
	$21,000	1	
	$22,000	17.1	
	$22,500	0.4	
	$22,500	1.8	
	$23,000	4.2	
Santa Barbara County	$35,268	2.084	

TABLE 4 (contd.)

2004 California

NOx Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
South Coast	$38,356	0.9	
	$41,096	4.9	
	$42,513	3.1	
	$42,513	12.8	
	$46,575	0.2	
	$47,123	7.3	
	$48,219	4.9	
	$49,315	0.7	
	$49,315	0.7	
	$49,315	2.6	
	$52,055	0.2	
	$57,534	0.7	
Ventura County	$15,116	0.43	

TABLE 5

2004 Summary Statistics For a Total of 38 NOx Transactions*

	$/ton	Tons
Total Tons Traded		211.614
Average per transaction	$66,798	
Median	$48,767	
High	$210,000	
Low	$10,500	

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

CHART 1

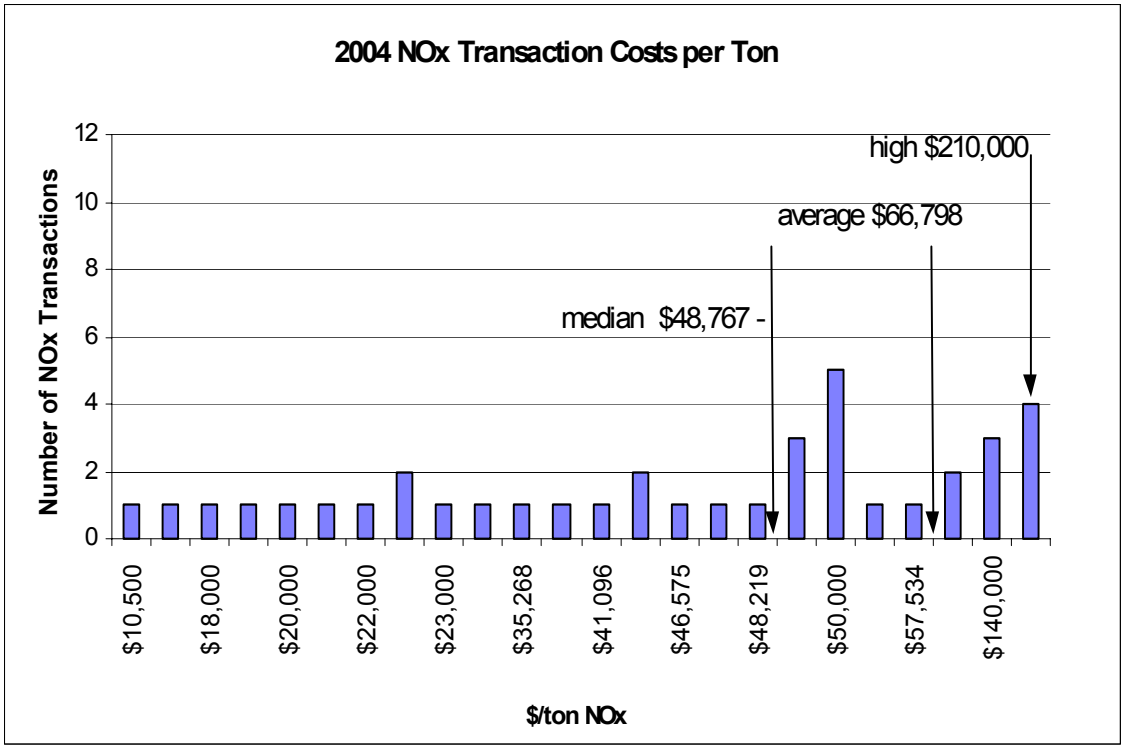


TABLE 6

2004 California

HC Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
Bay Area	$9,000	5.87	
	$10,500	2	
	$11,500	5.87	
Imperial County	$550	1	
Mojave Desert	$5,590	21	
Placer County	$7,500	67	
	$13,363	0.22	
Sacramento Metropolitan	$23,500	29.72	
	$24,999	10.17	
San Diego County	$2,415	1.86	
	$2,415	1.86	
	$2,500	0.2	
	$2,500	1	
	$3,000	1.2	
	$43,500	5.5	
	$52,000	0.88	
	$52,000	0.88	
	$52,000	5.5	
	$70,000	0.49	
San Joaquin Valley	$8,700	18.9	
	$9,000	1	
	$9,500	7.5	
	$10,000	4.9	
	$10,414	10.4	
	$11,000	1.6	
	$11,000	2	
	$11,250	4.2	
	$12,000	1	
	$12,500	9.2	
	$13,000	0.6	
	$13,000	4.4	
	$14,261	0.4	
	$15,000	0.1	
	$15,000	1	

TABLE 6 (contd.)

2004 California

HC Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
Santa Barbara County	$30,000	2	
	$45,000	2.916	
South Coast	$3,836	0.7	
	$4,110	1.1	
	$4,932	5.5	
	$4,932	5.7	
	$4,932	26.6	
	$5,205	0.4	
	$5,205	2.9	
	$5,205	3.3	
	$5,479	3.8	
	$5,479	7.3	
	$5,816	2.9	
	$6,027	1.6	
	$6,027	2.4	
	$6,027	5.1	
	$6,027	5.1	
	$6,027	7.3	
	$6,027	15.7	
	$6,164	0.7	
	$6,164	0.9	
	$6,164	1.3	
	$6,301	3.3	
	$6,438	2.9	
	$6,466	9.9	
	$6,575	0.4	
	$6,575	0.4	
	$6,575	3.5	
	$6,575	5.5	
	$6,678	1.1	
	$6,678	1.8	
	$6,740	3.8	
	$6,740	6.8	
	$6,795	2.2	
	$6,795	6.9	
	$6,849	0.7	
	$6,849	0.7	
	$6,849	0.9	
	$6,849	1.1	

2004 California

HC Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
South Coast (continued)	$6,849	3.5	
	$6,849	3.7	
	$6,849	3.7	
	$6,849	4.6	
	$6,849	22.4	
	$6,904	0.5	
	$6,959	0.5	
	$6,986	1.1	
	$6,986	7.3	
	$6,986	14.6	
	$6,986	14.6	
	$6,986	18.8	
	$6,986	33.4	
	$7,041	1.8	
	$7,041	4.4	
	$7,041	10.2	
	$7,123	0.2	
	$7,123	1.8	
	$7,123	3.8	
	$7,123	4.4	
	$7,260	1.5	
	$7,260	4	
	$7,397	0.4	
	$7,397	1.8	
	$7,397	3.3	
	$7,479	2.9	
	$7,479	6.2	
	$7,479	9.1	
	$7,534	0.9	
	$7,671	0.2	
	$7,671	0.4	
	$7,671	2.9	
	$7,856	4.6	
	$7,856	4.6	
	$7,863	0.5	
	$8,219	0.7	
	$16,882	2.6	
	$18,926	6.9	
	$21,918	1.8	

TABLE 6 (contd.)

2004 California

HC Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
Ventura County	$20,000	1.04	
	$20,000	1.5	
	$26,000	0.5	
Yolo-Solano	$4,500	3	

TABLE 7

2004 Summary Statistics For a Total of 116 HC Transactions*

	$/ton	Tons
Total Tons Traded		603.176
Average per transaction	$10,792	
Median	$7,014	
High	$70,000	
Low	$550	

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

CHART 2

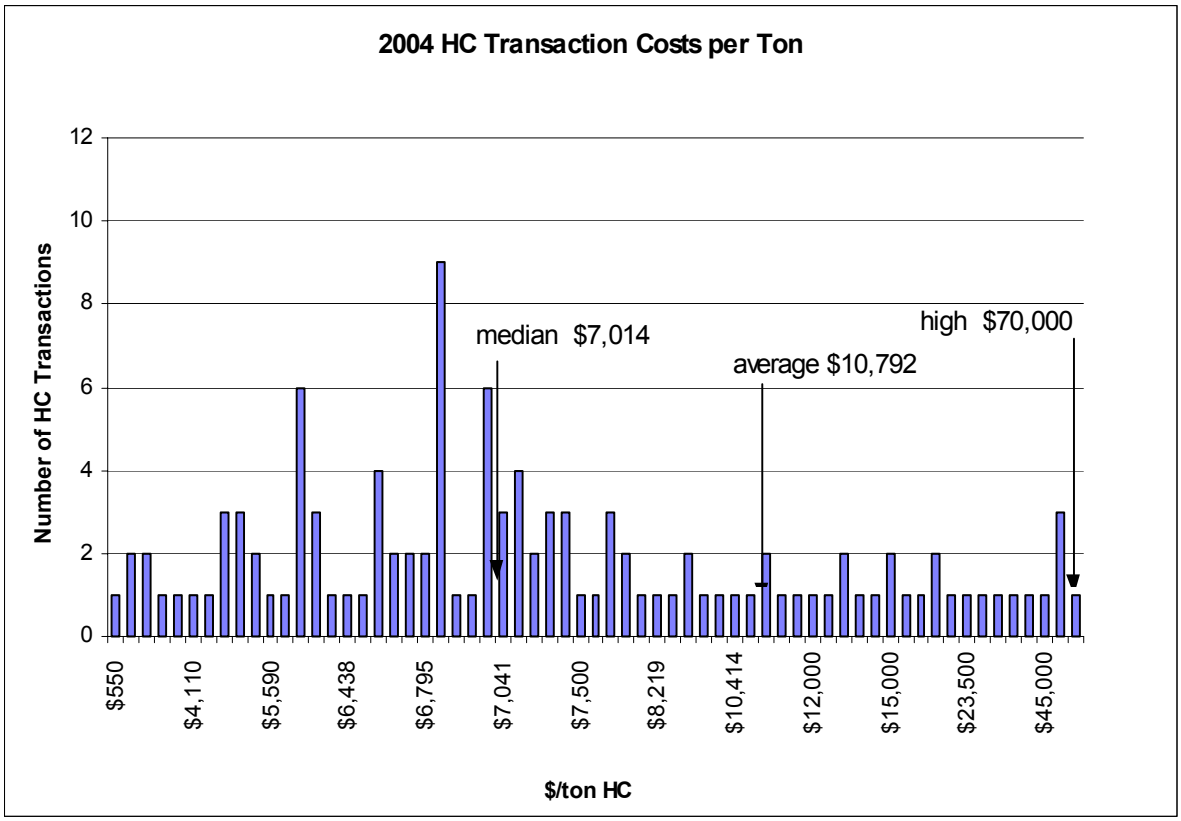


TABLE 8

2004 California

PM10 Emission Reduction Credit Transaction Costs

Reported in Total Tons Traded

District	$/ton	Tons	Notes
Imperial County	$300	2	
	$300	2	
	$500	3.46	
Mojave Desert	$5,000	4	
Placer County	$19,500	29.4	
	$30,022	28.4	
Sacramento Metropolitan	$25,000	3.59	
San Diego	$4,500	0.1	
	$4,500	0.17	
	$4,500	0.61	
San Joaquin Valley	$13,500	7.4	
	$14,000	4.8	
	$15,000	2	
	$18,000	0.1	
	$18,000	0.7	
	$18,000	10.1	
Santa Barbara County	$7,500	0.016	

TABLE 8 (contd.)

PM10 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
South Coast	$109,589	0.2	
	$126,027	0.5	
	$126,027	1.3	
	$136,986	0.2	
	$136,986	0.2	
	$136,986	0.7	
	$136,986	0.7	
	$136,986	0.7	
	$142,466	0.2	
	$142,466	0.2	
	$142,466	0.4	
	$147,945	0.2	
	$147,945	0.7	
	$153,425	0.2	
	$153,425	0.7	
	$153,425	0.7	

TABLE 9

2004 Summary Statistics For a Total of 33 PM10 Transactions*

	$/ton	Tons
Total Tons Traded		106.65
Average	$73,584	
Median	$30,022	
High	$153,425	
Low	$300	

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

CHART 3

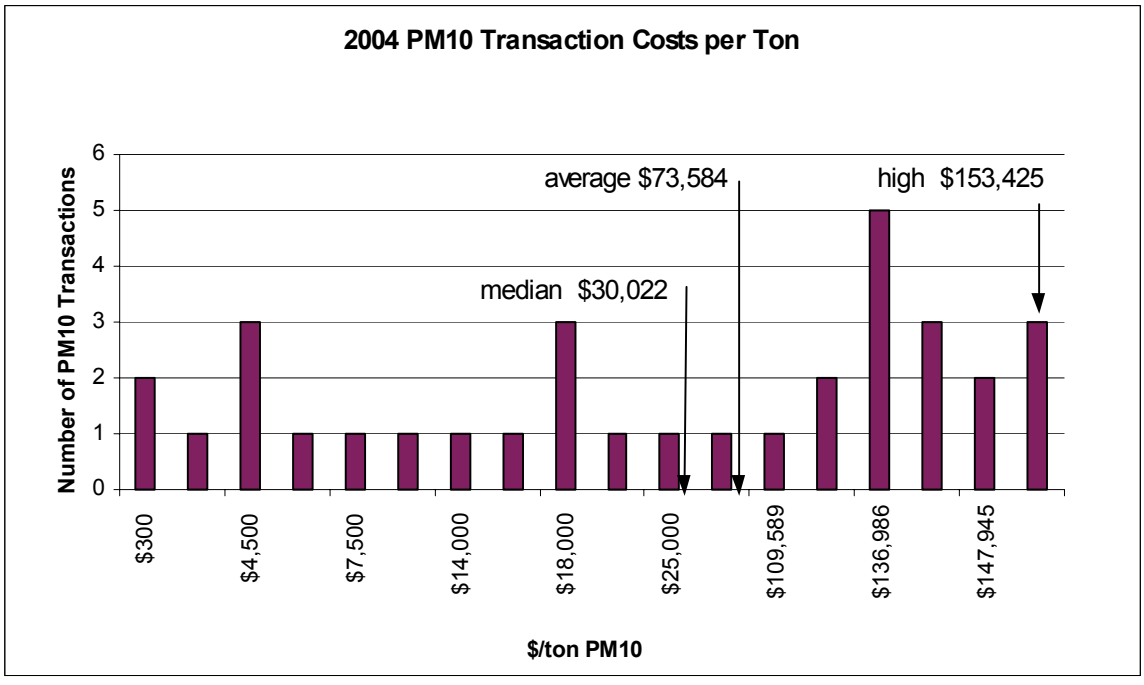


TABLE 10

CO Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded

District	$/ton	Tons	Notes
Imperial County	$200	3.5	
San Diego	$500	0.37	
	$500	0.6	
	$1,250	4.52	
South Coast	$2,740	5.1	
	$8,219	0.7	
	$9,786	0.7	
	$9,786	4.4	
	$12,329	4.7	
	$21,918	0.7	
	$22,466	4.7	
	$31,507	4.7	
	$31,507	5.1	
	$31,781	4.7	
	$32,192	0.7	
	$32,877	0.4	

TABLE 11

2004 Summary Statistics For a Total of 16 CO Transactions*

	$/ton	Tons
Total Tons Traded		
Average	$15,597	
Median	$11,058	
High	$32,877	
Low	$200	

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

CHART 4

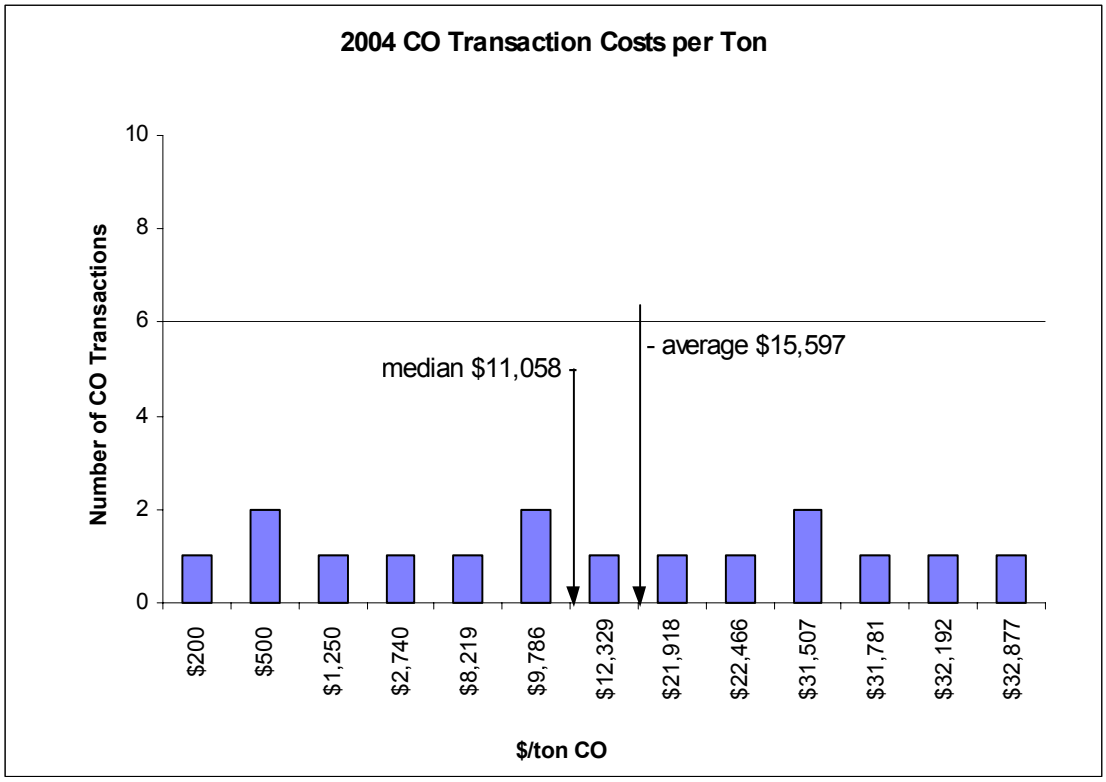


TABLE 12

SOx Emission Reduction Credit Transaction Costs By District
Reported in Total Tons Traded

District	$/ton	Tons	Notes
	$1,500	0.09	
	$1,500	0.28	
	$7,000	1.6	
	$7,307	20	
	$10,000	1.3	
	$1,000	40	
	$38,356	0.5	
		2.6	
		0.2	
		0.2	
	$41,644	1.8	
	$41,644	1.8	
	$41,644	8.6	
	$41,644	13.7	

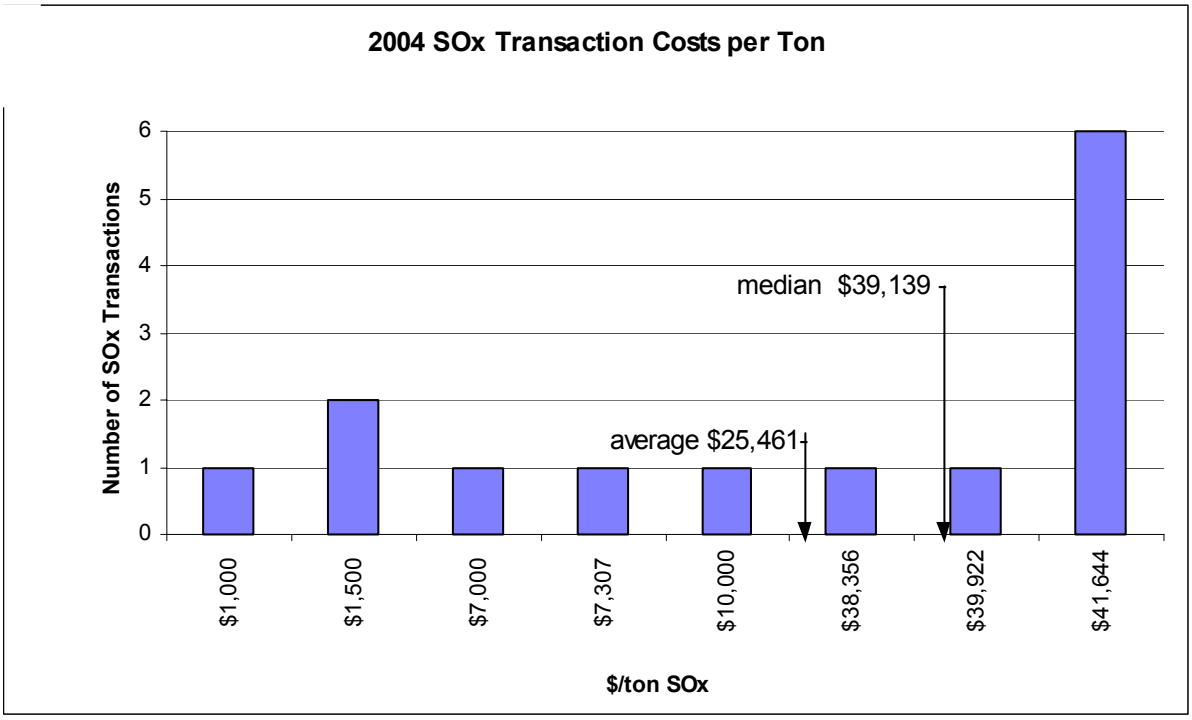
TABLE 13

2004 Summary Statistics For a Total of 14 SOx Transactions*

	$/ton	Tons
Total Tons Traded		92.67
Average	$25,461	
Median	$39,139	
High	$41,644	
Low	$1,000	

* 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

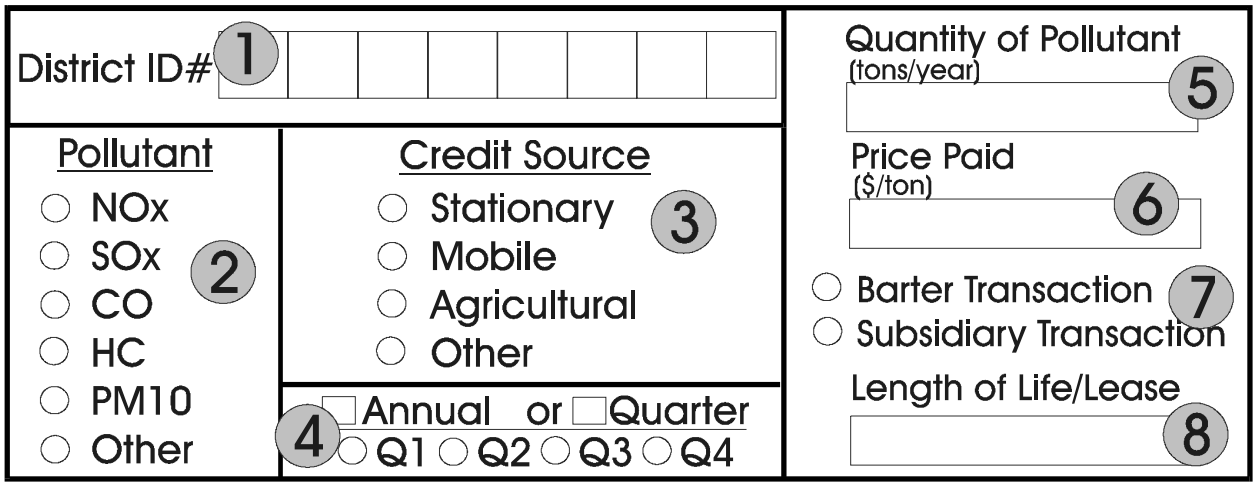
General:

One transaction record per pollutant should be filled out for each transaction which 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 the Air Resources Board no later than January 15 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.

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



District ID# | | | | | | | | |

Pollutant
- ○ NOx
- ○ SOx
- ○ CO
- ○ HC
- ○ PM10
- ○ Other

Credit Source
- ○ Stationary
- ○ Mobile
- ○ Agricultural
- ○ Other

☐ Annual or ☐ Quarter
○ Q1 ○ Q2 ○ Q3 ○ Q4

Quantity of Pollutant (tons/year)

Price Paid ($/ton)

○ Barter Transaction
○ Subsidiary Transaction

Length of Life/Lease

District ID# | | | | | | | | |

Pollutant
- ○ NOx
- ○ SOx
- ○ CO
- ○ HC
- ○ PM10
- ○ Other

Credit Source
- ○ Stationary
- ○ Mobile
- ○ Agricultural
- ○ Other

☐ Annual or ☐ Quarter
○ Q1 ○ Q2 ○ Q3 ○ Q4

Quantity of Pollutant (tons/year)

Price Paid ($/ton)

○ Barter Transaction
○ Subsidiary Transaction

Length of Life/Lease

District ID# | | | | | | | | |

Pollutant
- ○ NOx
- ○ SOx
- ○ CO
- ○ HC
- ○ PM10
- ○ Other

Credit Source
- ○ Stationary
- ○ Mobile
- ○ Agricultural
- ○ Other

☐ Annual or ☐ Quarter
○ Q1 ○ Q2 ○ Q3 ○ Q4

Quantity of Pollutant (tons/year)

Price Paid ($/ton)

○ Barter Transaction
○ Subsidiary Transaction

Length of Life/Lease

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

AAYYXXX

Where AA is a two letter district code (a list of district codes is attached), YY is a two digit year 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. **<u>Pollutant:</u> Please check one pollutant per transaction. If trade involved more than one pollutant, use separate transaction records for each pollutant traded. HC is equivalent to other acronyms used for hydrocarbons such as POC, ROC, ROG and VOC.**

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

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

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

Example 1: For Single Quarter Transactions

$$1\frac{lb}{day} \cdot 1\frac{lb}{day} X 365\frac{days}{year} X \frac{1}{2000}\frac{ton}{lbs} \cdot 0.1825\frac{tons}{year}$$

Example 2: For Annual Transactions

$$1\frac{lb}{quarter} \cdot 1\frac{lb}{quarter} X 4\frac{quarters}{year} X \frac{1}{2000}\frac{ton}{lbs} \cdot 0.0020\frac{tons}{year}$$

Example 3: For Quarterly Credits Used to Offset Annual Sources

$$(Q_1 \% Q_2 \% Q_3 \% Q_4) \cdot \frac{lbs}{year}$$ **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 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**

<u>DISTRICT TWO-LETTER CODES</u> (contd.)

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**