State of California

California Environmental Protection Agency

AIR RESOURCES BOARD

Emission Reduction Offset Transaction Costs Summary Report for 2020

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Prepared by

Permit Evaluation Support Section
Enforcement Division

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EXECUTIVE SUMMARY

A. Background

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

B. Summary of 2020 Data

The California Air Resources Board (CARB) has compiled information regarding NSR offset transactions collected from all 35 districts and assembled it into this report. This report summarizes statewide emission reduction offset transactions in California for the year 2020. Districts that submit a plan for attainment of State ambient air quality standards and those that do not meet federal air quality standards are required to report their emission reduction offset transactions if they had or did not have any offset transactions.

A total of 91 transactions were reported to have taken place in California in 2020. This report does not include information covering 47 transactions where there were no monetary costs. Of the 91 transactions, zero were for carbon monoxide (CO), 34 were for hydrocarbons (HC), 34 were for oxides of nitrogen (NOx), 19 were for particulate matter with an aerodynamic diameter less than 10 microns (PM10), three were for sulfur oxides (SOx), and one was for carbon dioxide equivalent greenhouse gas reductions (CO2e). A specific breakdown of all transactions by district is presented in Table V-1 (see page 9). These transactions generally represent trades of offsets that are valid for the lifetime of the permitted source. This contrasts with other types of credits that are valid for much shorter periods (e.g., Regional Clean Air Incentives Market (RECLAIM) trading credits that are valid for one year).

C. Data Trends

CARB has collected and reported statewide data on all offset transactions since 1993. C number of reported transactions trended upward to a peak in the mid-to-late 2000s, but decreased in 2002 through 2004, and 2009 through 2010. Over the past 10 years, the number of Hydrocarbon and NOx ERC transactions have generally trended downward. The trend in the number of PM10 transactions has been a slight decrease over the past 10 years despite a maximum of 82 PM10 transactions in 2014 and a minimum of 13 transactions in 2012. In 2014, both Hydrocarbon and PM10 emissions transactions peaked, while the

greatest number of NOx transactions occurred during 2017. The number of Hydrocarbon, NOx, and PM10 transactions all trended downward over the last five years with some instances of year-to-year increases.

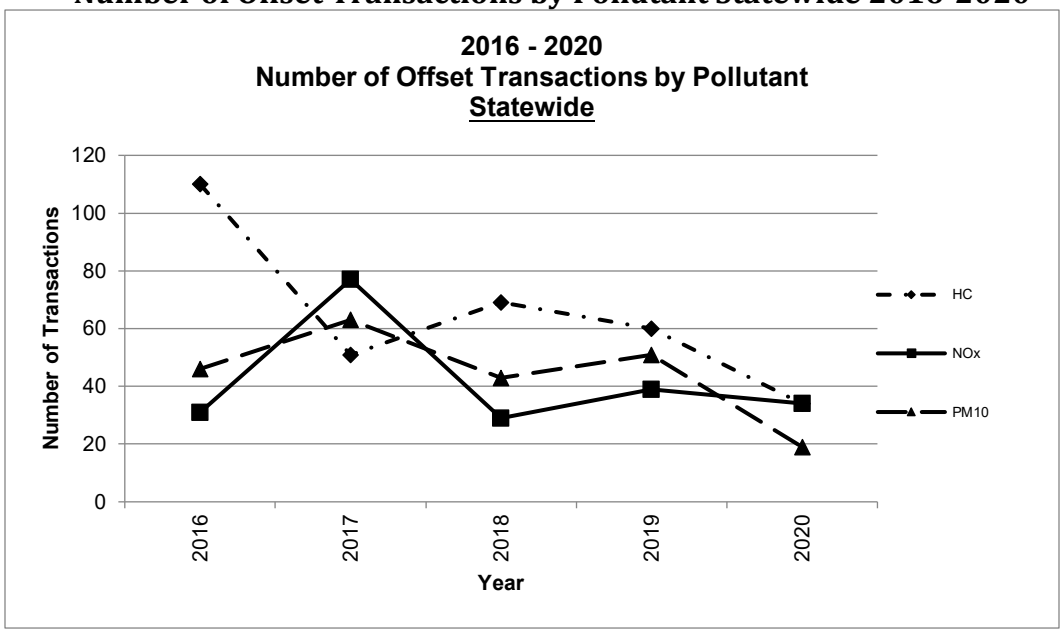
The number of transactions does not necessarily directly correlate to the quantity of offsets traded. There were five fewer NOx transactions in 2020 than there were in 2019, but the amount of NOx traded was almost 170 tons more (349.28 tons in 2020 compared to 182.44 tons in 2019). Conversely, there were 32 fewer PM10 transactions from 2019 to 2020 but the quantity of PM10 credits exchanged was only about five tons less (129.47 tons of PM10 in 2019 versus 124.35 tons in 2020). There were nearly half as many HC ERC transactions in 2020 as there were in 2019, but almost 160 tons more credits were involved in the transactions (357.18 tons in 2020 and 198.70 tons in 2019) with 2019 representing the least amount of tons of Hydrocarbon credits traded in the 27 years that CARB has been reporting this data.

Over the past five years, the total amount of credits traded overall was trending downward although the combined number of tons of emission reduction credits of Hydrocarbon, NOx, and PM10 in 2020 has rebounded from the fewest ever recorded in 2019.

Charts ES-1 and ES-2 illustrate the trends for the number of transactions and the number of tons traded during the past five years for the three most traded pollutants (HC, NOx, and PM10).

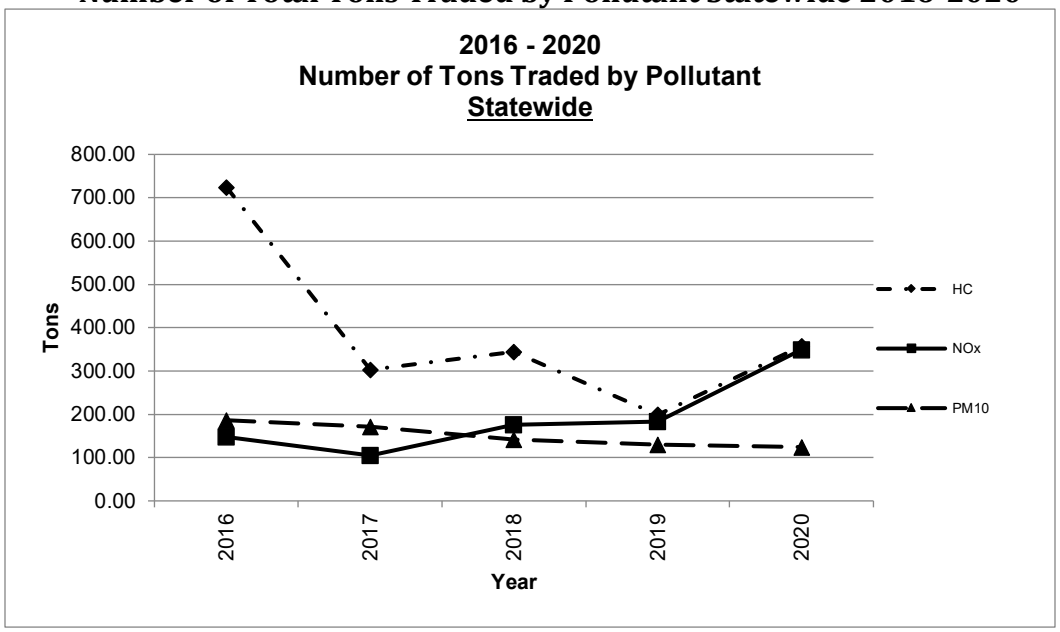
More information on California offset transactions that occurred from 1999 through 2019 can be found at ARB's Emission Reduction Credit Offsets webpage at: www.arb.ca.gov/nsr/erco/erco.htm.

Chart ES-1*
Number of Offset Transactions by Pollutant Statewide 2016-2020



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

Chart ES-2*
Number of Total Tons Traded by Pollutant Statewide 2016-2020



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

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I. INTRODUCTION

Section 40709.5(e) of the Health and Safety Code mandates that districts which are not exempt under Health and Safety Code Section 40709 collect information regarding the cost of offsets from stationary source owners who purchased offsets as required by district NSR programs. This report presents a compilation of the transactions in California from January 1 through December 31, 2020, as provided by the districts.

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

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

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

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

A. 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 and Safety Code Section 40709.5). Once created, ERCs 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 ERCs is to control or curtail the emissions from an existing stationary source. Control of emissions is generally from the application of emission control technology beyond that which is required by any regulation or rule. Curtailment could be from a reduction in operating rate of a source, or through the shutdown of a source. Another method of creating ERCs is to reduce emissions from mobile sources beyond what is required. Additionally, credits may be generated from the reductions in emissions from agricultural operations. For example, from curtailing field burning of agricultural wastes or from using agricultural water pumps equipped with cleaner engines. Credits must be generated pursuant to district rules and regulations and must be reviewed and certified by the issuing district. The legal requirements of credit generating programs are specified in the Health and Safety Code and further defined by rules in place in each district.

III. REQUIREMENTS TO REPORT COST OF OFFSETS

Sections 40709 and 40709.5 of the Health and Safety Code require districts that are not exempt to establish banking programs for ERCs and establish a mechanism 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 can be found in Appendix A. The following is a summary of the requirements of those sections of the Government Code and the Health and Safety Code:

- Section 6254.7(f) of the Government Code authorizes districts to obtain information on the cost of offsets from applicants.
- Section 40709 of the Health and Safety Code makes an emission reduction banking system mandatory in every district except any district that is not required to submit a plan for attainment of State ambient air quality standards and if
    - The district is not in a federal nonattainment area for any national ambient air quality standard unless the sole reason for nonattainment is air pollutant transport and
    - A source has not petitioned the district to establish a banking system.
- Section 40709(c) of the Health and Safety Code specifies that emission reductions proposed to offset simultaneous emissions increases within the same stationary source need not be banked prior to use as offsets.
- Section 40709.5(e) requires that any district that has established a banking system is required to develop a program that provides the following information as public record:

- Annual publication of the costs in dollars per ton, of emission offsets purchased for new and modified emission sources, excluding the identity of the parties involved.
- The annual publication shall specify for each offset purchase transaction:
  - The date of the offset transaction (year only)
  - The amount of offset purchased by pollutant
  - The total cost, by pollutant of the offsets purchased
- Each application for use of emission reductions banked shall provide sufficient information, as determined by the district, to perform the cost analysis.

IV. DATA COLLECTION PROCESS

In 1994, a subcommittee of the California Air Pollution Control Officers Association Engineering Managers worked with CARB to develop a uniform reporting form for collecting data from the districts for this report. The reporting form was designed to transmit information to CARB without disclosing the names of the transaction parties. In 2019, the reporting form was updated to collect the required information more easily. All the data fields from the original reporting form have been preserved.

The form distinguishes between ERC categories: 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 lifespan.

The lifespan of the credit may significantly affect their price. For transactions involving credits with limited lifespans, the reporting form allows the districts to report the remaining useful life of those credits. Mobile source credits and lease agreement transactions can also be distinguished using this section of the form.

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

Knowing these facts about each transaction will aid interested parties wishing to analyze credit market values.

A copy of the reporting form and instructions is in Appendix B. A glossary of terms is located in Appendix C.

V. DESCRIPTION OF 2020 STATEWIDE DATA

Table V-1 presents the 91 reported cost transactions that took place in California in 2020, listed by individual district. Of the 91 cost transactions, 34 were for HC, 34 were for NOx, 19 were for PM10, three were for SOx, and one was for carbon dioxide equivalent greenhouse gas emissions. Districts that are required to report their offset transactions

reported to CARB regardless of whether any offset transactions occurred. Table V-2 lists the districts that reported no transactions in 2020.

In 2020, there were 47 non-monetary transactions reported to CARB. These were not used to calculate the results shown in Tables A through I and Charts A-1 through I-1. Staff did not include transactions for which there were no monetary costs in Table V-1. A full list of transactions can be found in Appendix D.

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 in Appendix B.

In 2020, nine districts reported applicable transactions. Tables A-1, B-1, C-1, D-1, E-1, F-1, G-1, H-1, and I-1 present information, by district, for CO, HC, NOx, PM10 and SOx reported by each district. Each table lists the pollutant, cost per ton of pollutant, and the total tons of pollutant traded. The price paid per ton was calculated by dividing the cost of the transaction by the number of tons traded in that transaction. The information is presented individually for each district since offset markets and costs per ton vary from district to district.

Tables A-2, B-2, C-2, D-2, E-2, F-2, G-2, H-2, and I-2 provide the total tons traded and the average, median, high, and low prices paid per transaction per ton of pollutant. These tables exclude asset transfer, subsidiary, barter, and other non-monetary transactions. Average cost information was obtained by dividing the total cost for all applicable transactions, divided by the total number of tons transferred.

For each district that reported monetary transactions for the three most actively traded criteria pollutants (HC, NOx, and PM10), Charts A-1 through I-1 illustrate the average cost of offsets per transaction for the past five years (if available).

Table V-1
2020 California Emission Reduction Credit Transaction Costs by District
Reported in Total Tons Traded

District	Pollutant	$/Ton	Tons	Notes
Bay Area				
Total of 34 Transactions	NOx	$15,500	20.10	Stationary
	NOx	$14,000	10.00	Stationary
	NOx	$15,000	45.00	Stationary
	NOx	$13,500	3.00	Stationary
	NOx	$14,000	3.00	Stationary
	NOx	$23,500	0.40	Stationary
	NOx	$12,500	30.21	Stationary
	NOx	$12,500	8.99	Stationary
	NOx	$20,000	5.00	Stationary
	NOx	$15,500	5.50	Stationary
	NOx	$20,000	30.00	Stationary
	NOx	$18,500	1.23	Stationary
	NOx	$18,500	23.80	Stationary
	NOx	$20,000	36.00	Stationary
	NOx	$19,000	1.00	Stationary
	NOx	$18,500	4.40	Stationary
	NOx	$17,000	6.41	Stationary
	NOx	$17,000	1.09	Stationary
	NOx	$24,000	2.01	Stationary
	NOx	$9,000	2.07	Stationary

District	Pollutant	$/Ton	Tons	Notes
	HC	$7,000	1.34	Stationary
	HC	$8,000	2.25	Stationary
	HC	$5,000	61.14	Stationary
	HC	$5,000	61.14	Stationary
	HC	$5,000	5.17	Stationary
	HC	$5,000	0.76	Stationary
	HC	$5,000	5.17	Stationary
	HC	$5,000	0.76	Stationary
	HC	$7,000	42.01	Stationary
	HC	$8,000	42.01	Stationary
	HC	$8,000	1.11	Stationary
	HC	$6,300	34.00	Stationary
	HC	$6,500	24.44	Stationary
	HC	$6,500	24.44	Stationary
Imperial County				
Total of 24 Transactions	NOx	$3,000	0.25	Agricultural
	NOx	$2,500	5.60	Agricultural
	NOx	$883	2.39	Agricultural
	NOx	$2,000	0.25	Agricultural
	HC	$2,200	1.49	Agricultural
	HC	$2,200	0.63	Agricultural
	HC	$2,000	1.03	Agricultural

District	Pollutant	$/Ton	Tons	Notes
	HC	$2,000	2.61	Agricultural
	HC	$2,000	3.18	Agricultural
	HC	$1,688	13.31	Agricultural
	HC	$1,000	5.72	Agricultural
	PM10	$450	4.73	Agricultural
	PM10	$450	5.55	Agricultural
	PM10	$450	10.74	Agricultural
	PM10	$300	0.25	Agricultural
	PM10	$475	19.78	Agricultural
	PM10	$450	2.19	Agricultural
	PM10	$500	0.25	Agricultural
	PM10	$450	15.73	Agricultural
	PM10	$500	6.98	Agricultural
	PM10	$425	23.75	Agricultural
	PM10	$485	19.58	Agricultural
	PM10	$450	7.11	Agricultural
	PM10	$450	0.92	Agricultural
Mojave Desert				
Total of 1 Transaction	HC	$25,000	0.50	Stationary
San Diego				
Total of 3 Transactions	NOx	$71,288	4.00	Stationary
	NOx	$71,288	19.90	Stationary

District	Pollutant	$/Ton	Tons	Notes
	HC	$35,644	0.40	Stationary
San Joaquin				
Total of 16 transactions	NOx	$10,000	14.00	Stationary
	NOx	$9,500	7.50	Stationary
	NOx	$12,500	5.00	Stationary
	NOx	$55,000	0.11	Stationary
	NOx	$12,000	14.90	Stationary
	SOx	$10,000	4.00	Stationary
	SOx	$7,500	17.86	Stationary
	SOx	$30,000	0.03	Stationary
	HC	$5,000	4.00	Stationary
	HC	$5,000	4.00	Stationary (Q1, Q2, Q3)
	HC	$4,500	1.00	Stationary
	HC	$30,000	0.03	Stationary
	PM10	$20,000	1.02	Stationary
	PM10	$20,000	2.90	Stationary
	PM10	$30,000	0.01	Stationary
	CO2E	$45	1,853.56	Stationary
Santa Barbara				
Total of 2 Transactions	HC	$50,000	1.63	Stationary
	HC	$75,000	2.16	Stationary
South Coast				

District	Pollutant	$/Ton	Tons	Notes
Total of 6 Transactions	HC	$21,918	1.28	Stationary
	HC	$24,658	0.55	Stationary
	HC	$21,918	0.73	Stationary
	HC	$23,562	3.10	Stationary
	PM10	$465,753	0.18	Stationary
	PM10	$202,740	0.18	Stationary
Tehama				
Total of 2 Transactions	NOx	$7,500	16.34	Stationary
	NOx	$7,500	16.60	Stationary
Yolo-Solano				
Total of 3 Transactions	NOx	$37,800	3.23	Agricultural
	HC	$25,641	4.11	Agricultural
	PM10	$17,500	2.50	Agricultural

Table V-2
Districts with No Offset Transactions to Report in 2020

District	Year of last Reported Offsets
Amador County Air Pollution Control District	N/A*
Antelope Valley Air Pollution Control District	N/A*
Butte County Air Quality Management District	2011
Calaveras County Air Pollution Control District	N/A*
Colusa County Air Pollution Control District	2008
Eastern Kern County Air Pollution Control District	2000
El Dorado County Air Quality Management District	2006
Feather River Air Quality Management District	2016
Glenn County Air Pollution Control District	N/A*
Great Basin Unified Air Pollution Control District	N/A*
Lake County Air Quality Management District	N/A*
Lassen County Air Pollution Control District	N/A*
Mariposa County Air Pollution Control District	N/A*
Mendocino County Air Pollution Control District	N/A*
Modoc County Air Pollution Control District	N/A*
Monterey Bay Air Resources District	2016
North Coast Unified Air Quality Management District	N/A*
Northern Sierra Air Quality Management District	N/A*
Northern Sonoma County Air Pollution Control District	N/A*
Placer County Air Pollution Control District	2019
Sacramento Metropolitan Air Quality Management District	2019

San Luis Obispo Air Quality Management District	2018
Shasta County Air Quality Management District	2014
Siskiyou County Air Pollution Control District	N/A*
Tuolumne County Air Pollution Control District	N/A*
Ventura County Air Pollution Control District	2019

* No record of offset transactions reported. Districts that are not required to submit a plan for attainment of State ambient air quality standards and those that also meet federal air quality standards are exempt from the requirement to collect information regarding the cost of offset transactions.

VI. DESCRIPTION OF 2020 DATA BY DISTRICT

A. Bay Area Air Quality Management District

The Bay Area Air Quality Management District reported 34 monetary transactions in 2020. Of those 34 cost transactions, 20 were for NOx and 14 were for HC.

Table A-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
Bay Area

Pollutant	$/Ton	Tons
NOx	$15,500	20.10
NOx	$14,000	10.00
NOx	$15,000	45.00
NOx	$13,500	3.00
NOx	$14,000	3.00
NOx	$23,500	0.40
NOx	$12,500	30.21
NOx	$12,500	8.99
NOx	$20,000	5.00
NOx	$15,500	5.50
NOx	$20,000	30.00
NOx	$18,500	1.23
NOx	$18,500	23.80
NOx	$20,000	36.00
NOx	$19,000	1.00
NOx	$18,500	4.40
NOx	$17,000	6.41

Pollutant	$/Ton	Tons
NOx	$17,000	1.09
NOx	$24,000	2.01
NOx	$9,000	2.07
HC	$7,000	1.34
HC	$8,000	2.25
HC	$5,000	61.14
HC	$5,000	61.14
HC	$5,000	5.17
HC	$5,000	0.76
HC	$5,000	5.17
HC	$5,000	0.76
HC	$7,000	42.01
HC	$8,000	42.01
HC	$8,000	1.11
HC	$6,300	34.00
HC	$6,500	24.44
HC	$6,500	24.44

Table A-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
Bay Area

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	239.21	$16,602.67	$17,000.00	$24,000.00	$9,000.00
HC	305.73	$6,113.09	$6,400.00	$8,000.00	$5,000.00

*There were No CO transactions reported (last CO transaction reported in 2007)

Chart A-1
Average Cost of Hydrocarbon Offsets from 2016-2020
Bay Area

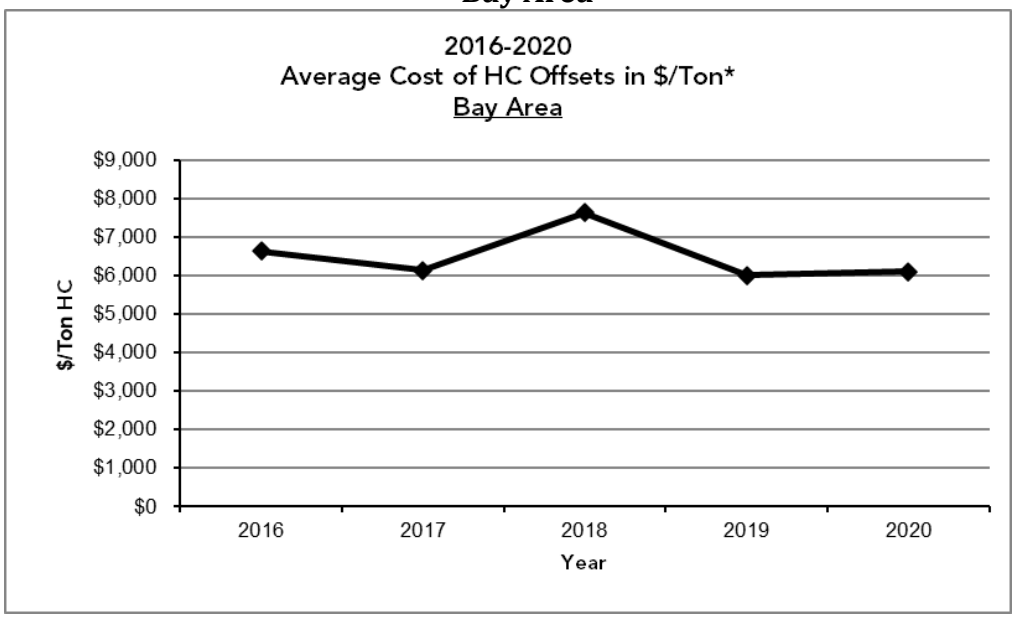
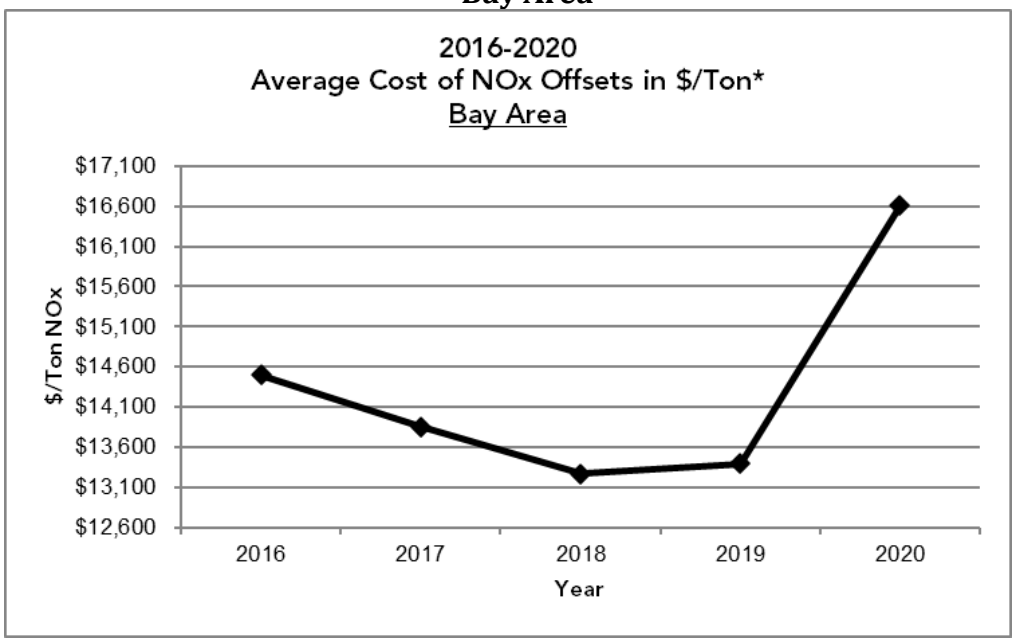


Chart A-2
Average Cost of NOx Offsets from 2016-2020
Bay Area



B. Imperial County Air Pollution Control District

The Imperial County Air Pollution Control District reported 24 monetary transactions in 2019. Of those 24 transactions, four were for NOx, seven were for HC, and 13 were for PM10.

Table B-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
Imperial County

Pollutant	$/Ton	Tons
NOx	$3,000	0.25
NOx	$2,500	5.60
NOx	$883	2.39
NOx	$2,000	0.25
HC	$2,200	1.49
HC	$2,200	0.63
HC	$2,000	1.03
HC	$2,000	2.61
HC	$2,000	3.18
HC	$1,688	13.31
HC	$1,000	5.72
PM10	$450	4.73
PM10	$450	5.55
PM10	$450	10.74
PM10	$300	0.25
PM10	$475	19.78
PM10	$450	2.19
PM10	$500	0.25

Pollutant	$/Ton	Tons
PM10	$450	15.73
PM10	$500	6.98
PM10	$425	23.75
PM10	$485	19.58
PM10	$450	7.11
PM10	$450	0.92

Table B-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
Imperial County

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	8.49	$2,044.76	$2,250.00	$3,000.00	$882.85
HC	27.97	$1,661.95	$2,000.00	$2,200.00	$1,000.00
PM10	117.56	$457.74	$450.00	$500.00	$300.00

*There were no SOx or CO transaction reported (last SOx transaction in 2008, last CO transaction reported in 2018)

Chart B-1
Average Cost of Hydrocarbon Offsets from 2016-2020
Imperial County

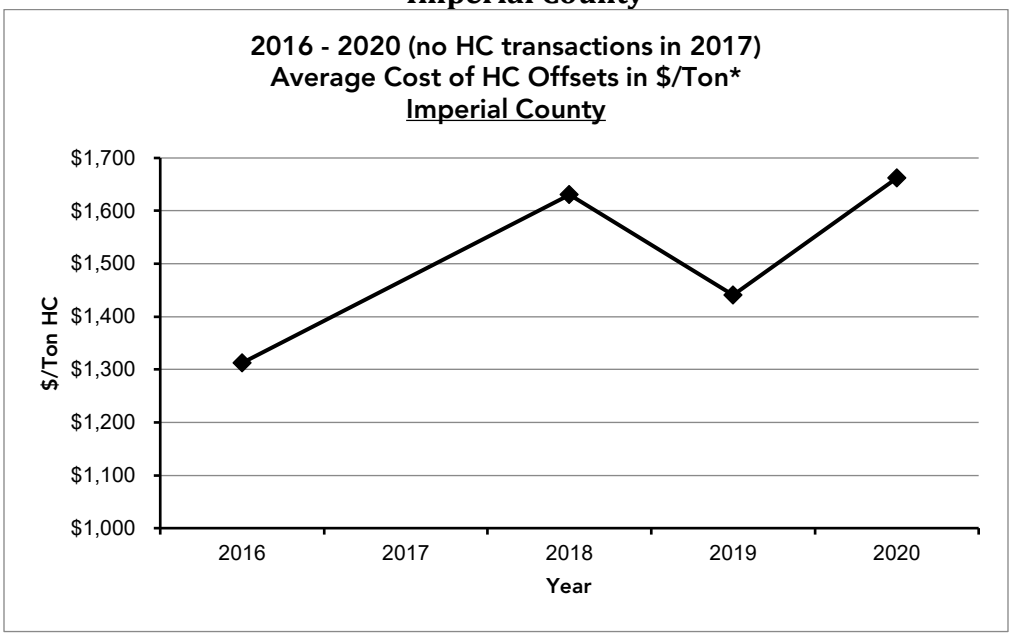


Chart B-2
Average Cost of PM10 Offsets from 2016-2020
Imperial County

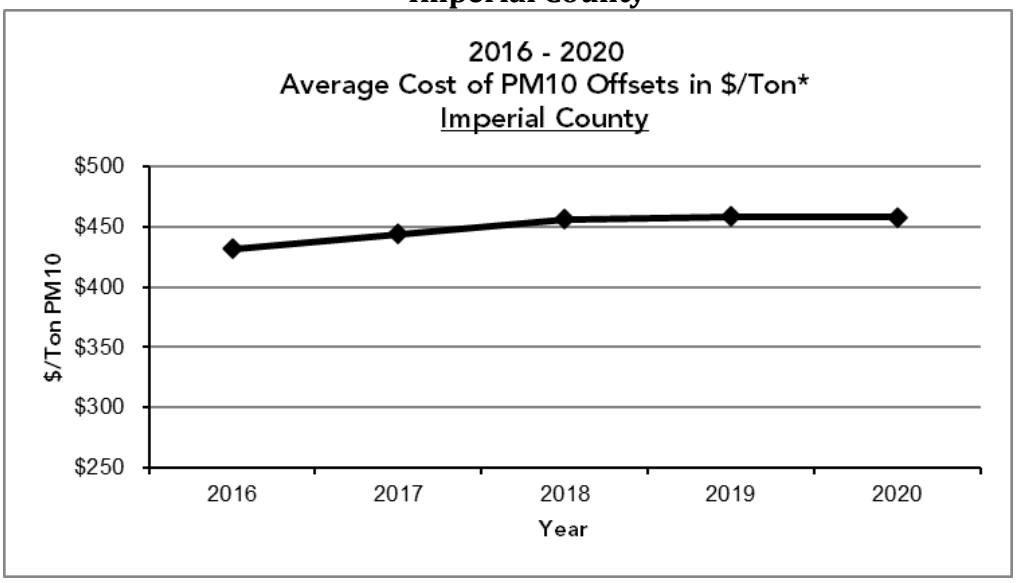
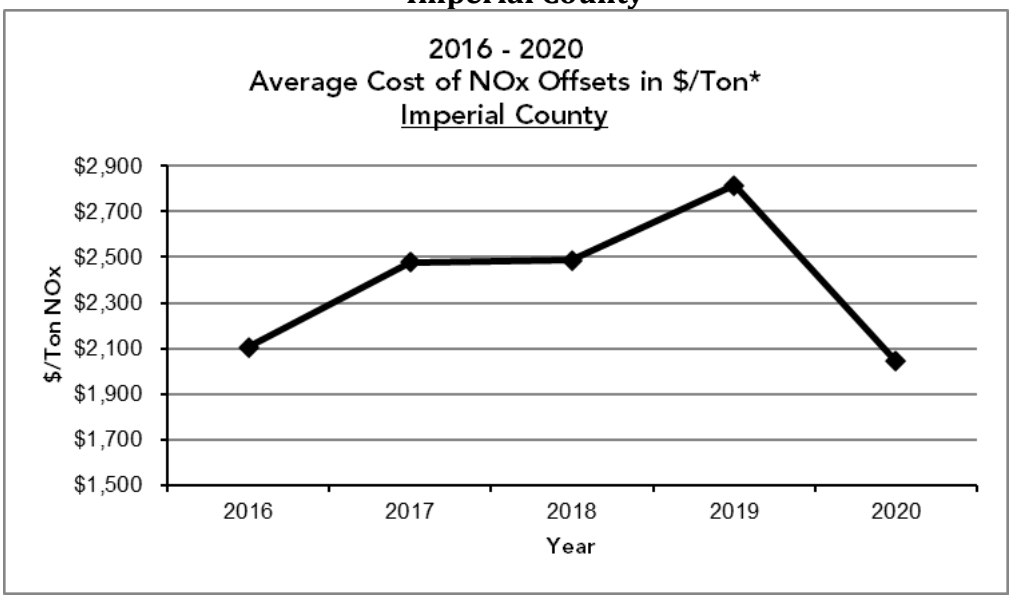


Chart B-3
Average Cost of NOx Offsets from 2016-2020
Imperial County



C. Mojave Desert Air Quality Management District

The Mojave Desert Air Quality Management District reported one transaction in 2020; an HC transaction

Table C-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
Mojave Desert

Pollutant	$/Ton	Tons
HC	$25,000	0.50

Table C-2
2020 Summary Statistics for Emission Reduction Credit Transactions
Mojave Desert

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
HC	0.50	$25,000.00	$25,000.00	$25,000.00	$25,000.00

*No CO transaction reported (last CO transaction in 2018)
*No NOx transaction reported (last NOx transaction in 2018)
*No PM10 transaction reported (last PM10 transaction in 2018)
*No SOx transaction reported (last SOx transaction in 2018)

D. San Diego Air Pollution Control District

The San Diego Air Pollution Control District reported two NOx and one HC monetary transactions in 2020.

Table D-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
San Diego

Pollutant	$/Ton	Tons
NOx	$71,288	4.0
NOx	$71,288	19.9
HC	$35,644	0.40

Table D-2
2020 Summary Statistics for Emission Reduction Credit Transactions
San Diego

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	4.00	$71,288	$71,288	$71,288	$71,288
NOx	19.90	$71,288	$71,288	$71,288	$71,288
HC	0.40	$35,644	$35,644	$35,644	$35,644

*No CO transaction reported (last CO transaction in 2012)
*No PM10 transaction reported (last PM10 transaction in 2012)
*No SOx transaction reported (last SOx transaction in 2012)

E. San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Pollution Control District reported 15 monetary transactions in 2020. Of the 15 transactions reported, five were for NOx, three were for SOx, four were for HC, and three were for PM10.

Table E-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
San Joaquin Valley

Pollutant	$/Ton	Tons
NOx	$10,000	14.00
NOx	$9,500	7.50
NOx	$12,500	5.00
NOx	$55,000	0.11
NOx	$12,000	14.90
SOx	$10,000	4.00
SOx	$7,500	17.86
SOx	$30,000	0.03
HC	$5,000	4.00
HC	$5,000	4.00
HC	$4,500	1.00
HC	$30,000	0.03
PM10	$20,000	1.02
PM10	$20,000	2.90
PM10	$30,000	0.01
CO2E	$45	1,853.56

Table E-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
San Joaquin Valley

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	41.51	$11,047.94	$12,000.00	$55,000.00	$9,500.00
SOx	21.88	$7,982.69	$10,000.00	$30,000.00	$7,500.00
HC	9.03	$5,013.85	$5,000.00	$30,000.00	$4,500.00
PM10	3.93	$20,015.29	$20,000.00	$30,000.00	$20,000.00
CO2E	1,853.56	$45	$45	$45	$45

*No CO transaction reported (last CO transaction was in 2017)

Chart E-1
Average Cost of Hydrocarbon Offsets from 2016-2020
San Joaquin Valley

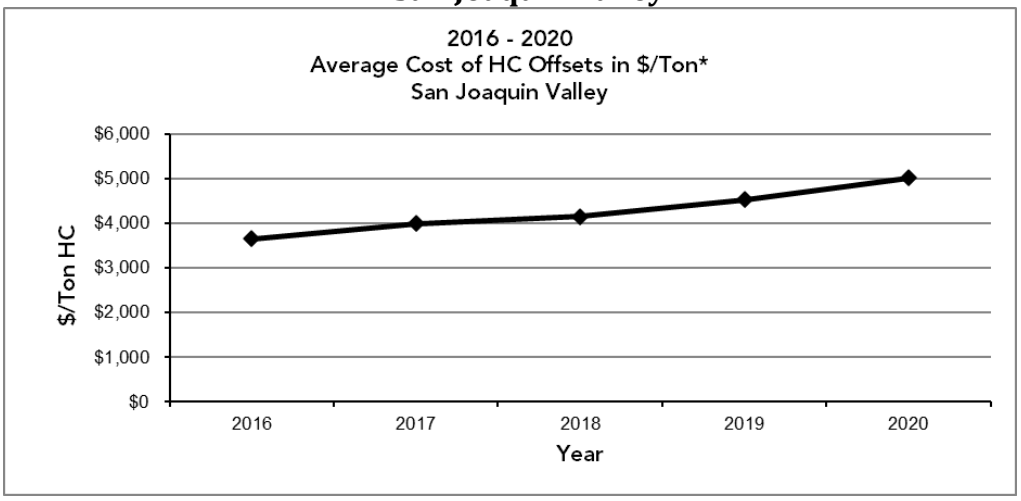


Chart E-2
Average Cost of NOx Offsets from 2016-2020
San Joaquin Valley

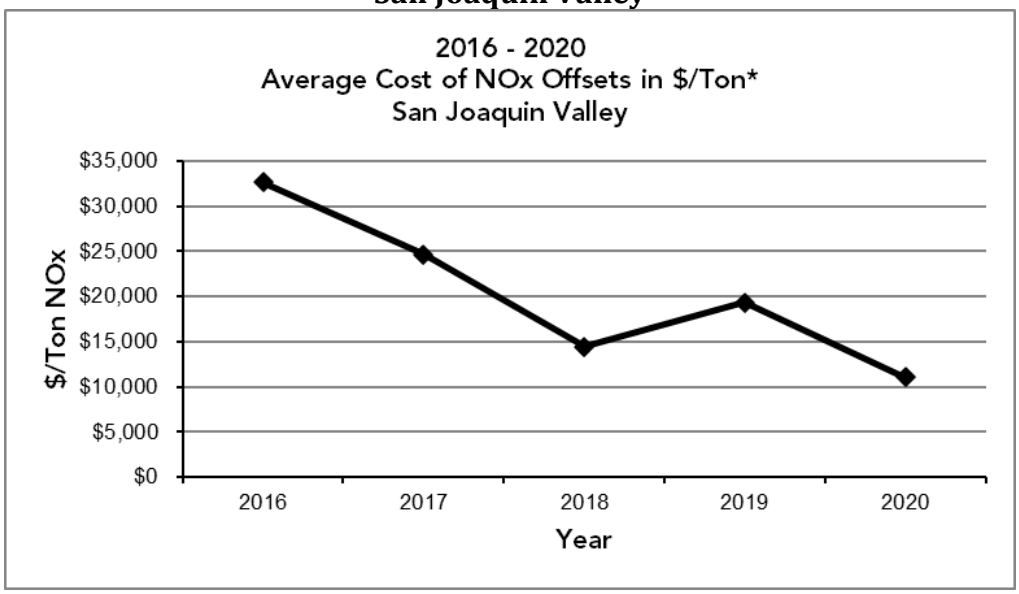


Chart E-3
Average Cost of PM10 Offsets from 2016-2020
San Joaquin Valley

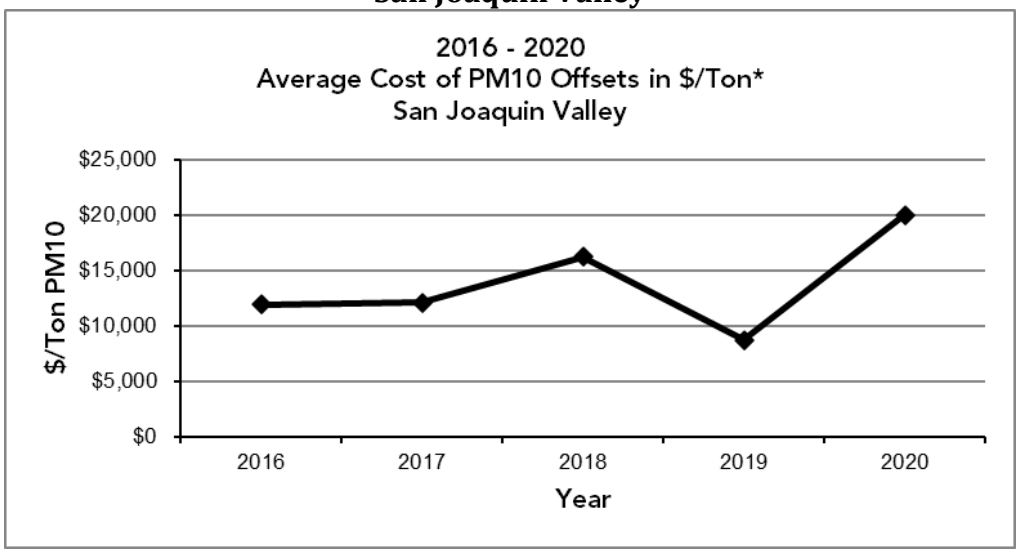
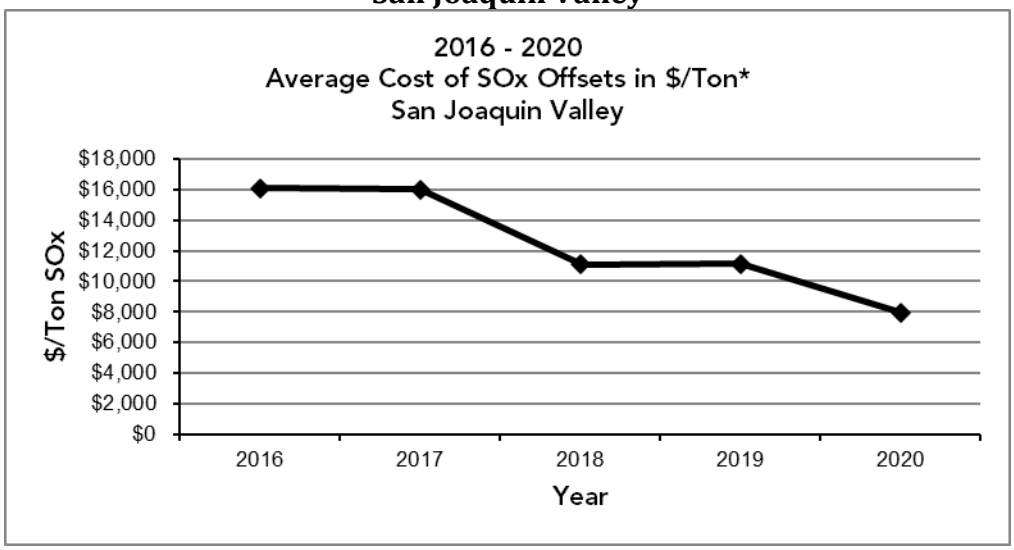


Chart E-4
Average Cost of SOx Offsets from 2016-2020
San Joaquin Valley



F. Santa Barbara County Air Pollution Control District

The Santa Barbara County APCD reported two monetary transactions in 2020. Both transactions were for HC.

Table F-1
2020 Emissions Reduction Credit Transaction Costs
Reported in Total Tons Traded
Santa Barbara County

Pollutant	$/Ton	Tons
HC	$50,000	1.63
HC	$75,000	2.16

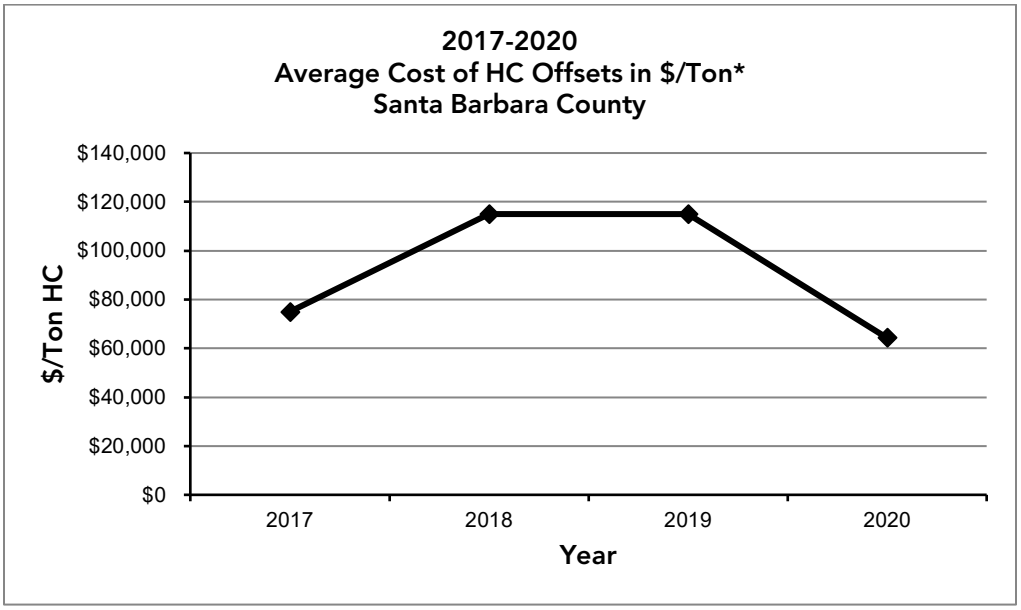
Table F-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
Santa Barbara County

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
HC	3.78	$64,258.33	$62,500.00	$75,000.00	$50,000.00

*No PM10 transaction reported (last NOx transaction in 2019)
*No NOx transaction reported (last NOx transaction in 2019)

*No SOx transaction reported (last SOx transaction in 2006)
*No CO transaction reported (last NOx transaction in 2019)

Chart F-1
Average Cost of Hydrocarbon Offsets from 2017-2020
Santa Barbara



G. South Coast Air Quality Management District

The South Coast Air Quality Management District reported six monetary transactions in 2020. Of the six transactions reported, four were for HC and two were for PM10.

Table G-1
2020 Emission Reduction Credit Transaction Costs
Reported in Total Tons Traded
South Coast

Pollutant	$/Ton	Tons
HC	$21,918	1.28
HC	$24,658	0.55
HC	$21,918	0.73
HC	$23,562	3.10
PM10	$465,753	0.18
PM10	$202,740	0.18

Table G-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
South Coast

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
HC	5.66	$23,084.00	$22,739.73	$24,657.53	$21,917.81
PM10	0.37	$334,246.58	$334,246.58	$465,753.42	$202,739.73

*No monetary NOx transaction reported (last monetary NOx transaction in 2019)
*No monetary SOx transaction reported (last monetary SOx transaction in 2016)
*No CO transaction reported (last CO transaction in 2016)

Chart G-1
Average Cost of Hydrocarbon Offsets from 2016-2020
South Coast

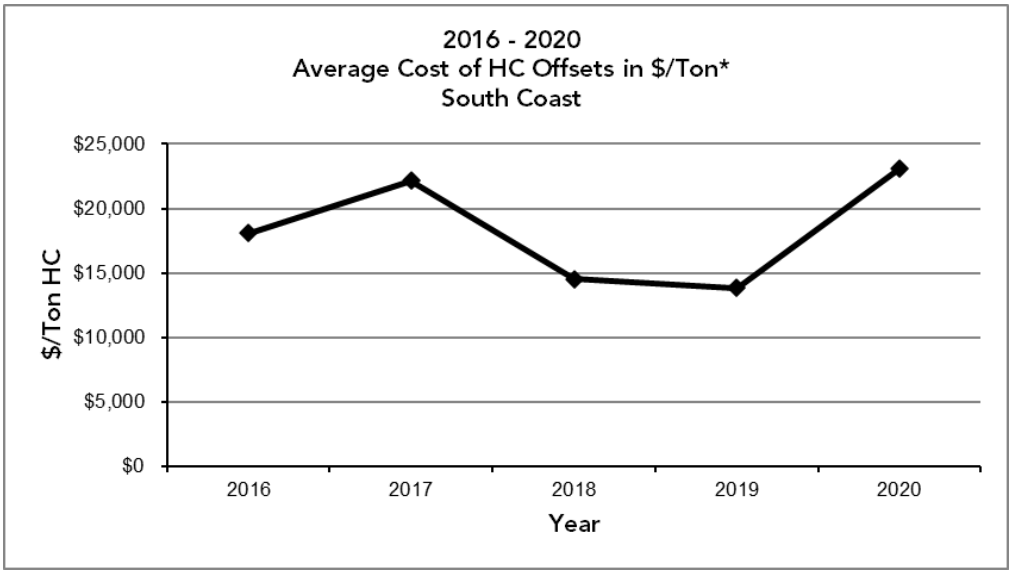
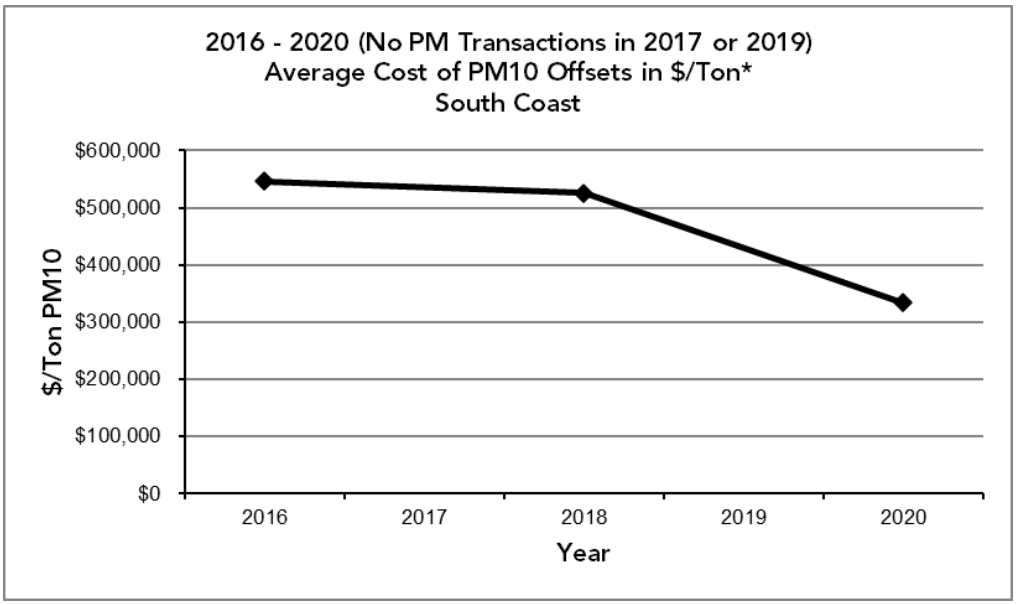


Chart G-2
Average Cost of PM10 Offsets from 2016-2020
South Coast



H. Tehama County Air Pollution Control District

The Tehama County Air Pollution Control District reported two monetary transactions in 2020. Both transactions were for NOx.

Table H-1
2020 Emissions Reduction Credit Transaction Costs
Reported in Total Tons Traded
Tehama County

Pollutant	$/Ton	Tons
NOx	$7,500	16.34
NOx	$7,500	16.60

Table H-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
Tehama County

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	32.94	$7,500.00	$7,500.00	$7,500.00	$7,500.00

*No HC transactions reported (last HC transaction reported in 2009)
*No CO transactions reported (last CO transaction reported in 2009)

*No SOx transactions reported (last SOx transaction reported in 2010)
*No PM10 transactions reported (last PM10 transaction reported in 2009)

I. Yolo-Solano Air Pollution Control District

The Yolo-Solano Air Quality Management District reported three monetary transactions in 2020: one for NOx, one for HC, and one for PM10.

Table I-1
2020 Emissions Reduction Credit Transaction Costs
Reported in Total Tons Traded
Yolo-Solano

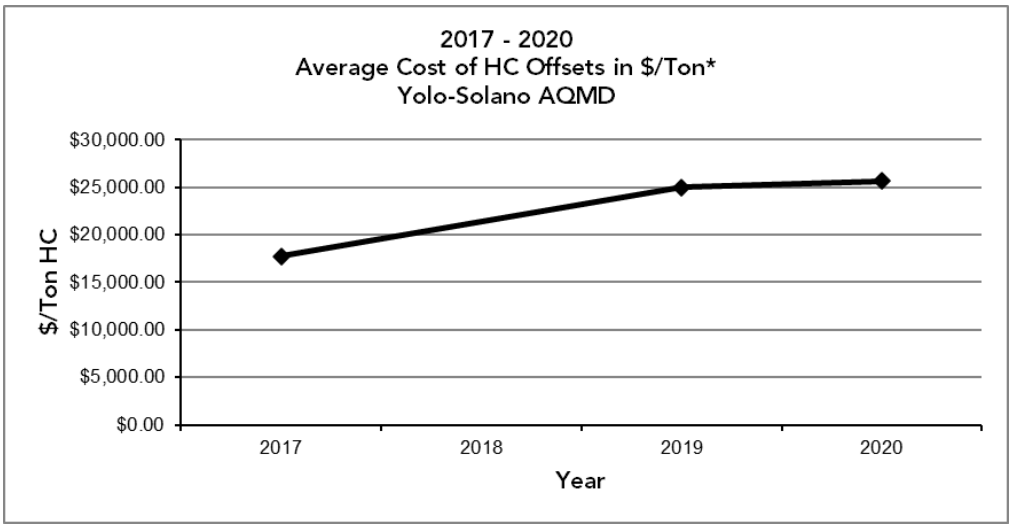
Pollutant	$/Ton	Tons
NOx	$37,800	3.23
HC	$25,641	4.11
PM10	$17,500	2.50

Table I-2
2020 Summary Statistics for Emission Reduction Credit Transactions*
Yolo-Solano

Pollutant	Total Tons Traded	Average (mean) $/Ton	Median $/Ton	High $/Ton	Low $/Ton
NOx	3.23	$37,800.00	$37,800.00	$37,800.00	$37,800.00
HC	4.11	$25,641.00	$25,641.00	$25,641.00	$25,641.00
PM10	2.50	$17,500.00	$17,500.00	$17,500.00	$17,500.00

*No CO transactions reported (last CO transaction reported in 2015)
*No SOx transactions reported (last SOx transaction reported in 2005)

Chart I-1
Average Cost of HC Offsets from 2017-2020
Yolo-Solano



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APPENDIX A

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

H&SC; 40709 DISTRICT BANKING AND OFFSET SYSTEM

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

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

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

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

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

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

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

H&SC; 40709.5 REVIEW OF EMISSION CREDIT SYSTEMS

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

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

(b) Periodic analysis of the increases or decreases in emissions that 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

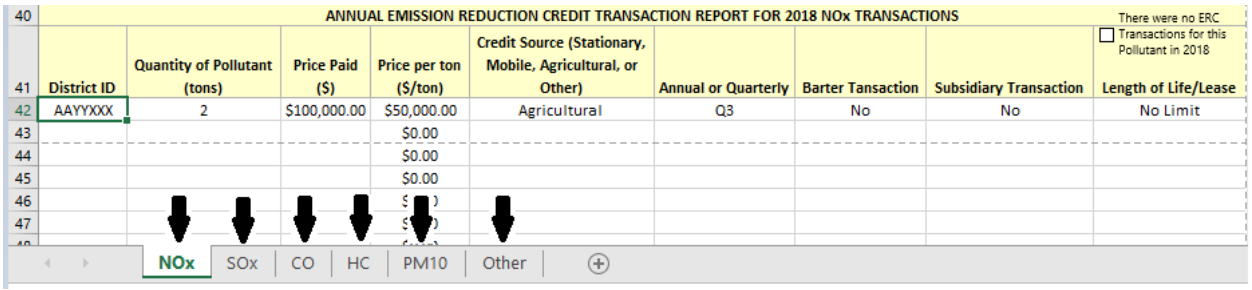
Thank you for taking the time to fill out the annual Emissions Reduction Credit (ERC) Transaction Report Form. As a reminder, several years ago we changed the form to more easily collect and report the data. While the form has changed, the information collected remains the same.

This form should be submitted to the California Air Resources Board (CARB) no later than **June 1, 2021**. CARB will compile all data from the districts and publish a statewide report on the cost of ERCs.

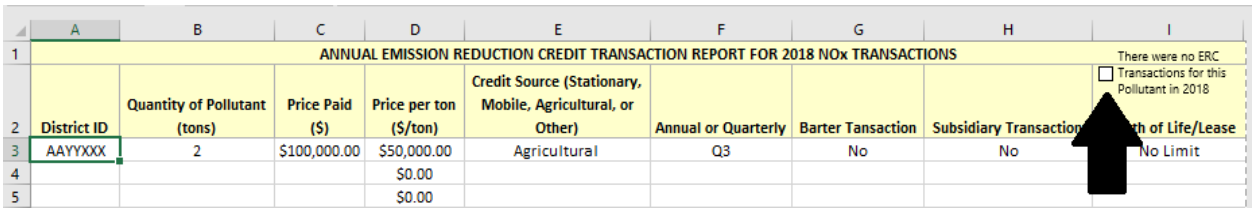
General Instructions

The new reporting form is a Microsoft Excel worksheet that requires the user to input specific information for each individual ERC transaction. Only transactions which were deemed final and where either money or barter agreements were exchanged in **2020** should be reported in this form.

As shown below, there is a new tab for each pollutant. All ERC transactions involving NOx should be input on the NOx tab, all ERC transactions involving SOx should be input on the SOx tab, and so on. You can navigate between the tabs on the bottom of the excel worksheet. Please make sure each pollutant tab is filled out. Hydrocarbons (HC) is equivalent to other acronyms used for hydrocarbons such as POC, ROC, ROG, and VOC.



If there were no ERC Transactions for a given pollutant in 2020, please mark the box in the top right corner of the table and continue to the next tab. Please see below for location of the check box.



For ERC transactions that occur across district boundaries, transactions should be reported in the district in which the ERCs were banked.

Required Information

1. ERC Transaction Number: **The ID # will only be used to track the origin of data and for internal data validation.** The assignment of a transaction number will ensure quality control of data transfer between the district and CARB. Individual transactions will not be identified in CARB summary reports. The District ID # should be in this format:

   AAYYXXX

   where **AA** is a two letter district code (a list of district codes can be found in the table below), **YY** is a two-digit year (in which the transaction took place) identifier (e.g. 18 for 2018), and **XXX** is a three-digit transaction number from 001 to 999.

Air District	Code	Air District	Code
Amador County APCD	AM	Monterey Bay Air Resources District	MB
Antelope Valley AQMD	AV	North Coast Unified AQMD	NC
Bay Area AQMD	BA	Northern Sierra AQMD	NO
Butte County AQMD	BT	Northern Sonoma County APCD	NS
Calaveras County APCD	CA	Placer County APCD	PL
Colusa County APCD	CO	Sacramento Metropolitan AQMD	SM
El Dorado County AQMD	ED	San Diego County APCD	SD
Feather River AQMD	FR	San Joaquin Valley APCD	SJ
Glenn County APCD	GL	San Luis Obispo APCD	SL
Great Basin Unified APCD	GB	Santa Barbara County APCD	SB
Imperial County APCD	IM	Shasta County AQMD	SH
Kern County APCD	KE	Siskiyou County APCD	SI
Lake County AQMD	LA	South Coast AQMD	SC
Lassen County APCD	LS	Tehama County APCD	TE
Mariposa County APCD	MA	Tuolumne County APCD	TU

Air District	Code	Air District	Code
Mendocino County AQMD	ME	Ventura County APCD	VE
Modoc County APCD	MO	Yolo-Solano AQMD	YS
Mojave Desert AQMD	MD		

2. Quantity of Pollutant: Many districts record ERC transactions in different units. To provide consistency, please provide the quantity of pollutant in tons/year. Please see the following examples for how to convert units:

Example 1: For single transactions

1 lb/day = 1 lb/day x 365 days/year x 1 ton/2000 lb = 0.1825 tons/year

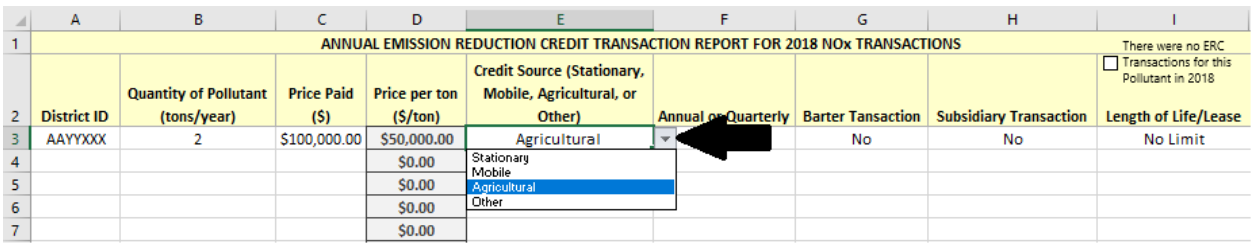
Example 2: For annual transactions

1 lb/quarter = 1 lb/quarter x four quarters/year x 1 ton/2000 lb = 0.0020 tons/year

Example 3: For quarterly ERCs used to offset annual sources

(Q1 + Q2 + Q3 + Q4) = lbs/year, then convert to tons per year

3. Amount 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. The total price paid for the credits should be reported.
4. Cost per Ton: This column is automatically populated by dividing the amount paid by the quantity of pollutant to get a cost per ton value. Do not manually fill out this column.
5. Credit Source: Please select the source of ERCs from the dropdown options. Choose from the following: stationary, mobile, agricultural, or other. Stationary source ERCs typically do not have a finite useful life, whereas mobile and agricultural source ERCs have specific limiting conditions that limit useful life. It is important that a distinction be made between these kinds of ERCs when analyzing the cost.



6. Annual/Quarter: Please indicate if credits are valid on an annual basis or quarterly.

Additionally, if credits are valid quarterly, indicate in which quarter(s) they can be used. This applies to seasonal credits or credits that are only valid in a specific quarter. Please list all quarters where valid credits were transferred. If credits in all four quarters were transferred, please indicate 'Annual'. If credits transferred are only valid in specific quarters please indicate any and all quarters in which the credits are valid (Q1, Q2, Q3, Q4).

7. Barter and Subsidiary Transactions: Please specify whether the transaction is a barter or subsidiary transaction. If barter was involved and/or no money was exchanged for the ERCs, the district should request the applicant to calculate a dollar per ton value for the credit transaction. Barters can include one company (A) placing controls on another (B) to generate credits. The price paid should then reflect what company A paid to install equipment at company B and any additional fees paid to company B as part of the agreement. The price paid for ERCs should be the value of the ERC at the time of the transaction.

If a transaction occurred between two subsidiaries of the same parent company, specify this as a subsidiary transaction. This also applies to transactions that occur between agencies of the same government system, such as between two agencies of a county. Since the price paid 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 credits that have a finite useful life. If no limit is placed on the useful life, do not specify any length of use/lease.

APPENDIX C

GLOSSARY OF TERMS

GLOSSARY OF TERMS

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

Barter: To trade without using money.

Leased: A legal agreement that lets someone use an asset for a period of time in return for payment.

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

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

Subsidiary: Serving to assist or supplement.

APPENDIX D

NON-MONETARY TRANSACTIONS

Table D-1
2020 California Emission Reduction Credit Non-Monetary Transactions
Reported in Total Tons Traded

District	Pollutant	$/Ton	Tons	Notes
South Coast				
Total of 47 Transactions	NOx	$0	0.18	Stationary
	NOx	$0	0.18	Stationary
	NOx	$0	0.55	Stationary
	NOx	$0	0.55	Stationary
	NOx	$0	0.91	Stationary
	NOx	$0	2.37	Stationary
	NOx	$0	7.30	Stationary
	NOx	$0	14.05	Stationary
	NOx	$0	0.18	Stationary
	NOx	$0	0.91	Stationary
	NOx	$0	1.10	Stationary
	NOx	$0	2.56	Stationary
	NOx	$0	3.10	Stationary
	NOx	$0	3.83	Stationary
	NOx	$0	8.03	Stationary
	NOx	$0	0.55	Stationary
	NOx	$0	25.00	Stationary
	NOx	$0	3.10	Stationary
	NOx	$0	0.18	Stationary
	SOx	$0	13.69	Stationary

District	Pollutant	$/Ton	Tons	Notes
	SOx	$0	8.58	Stationary
	SOx	$0	1.83	Stationary
	SOx	$0	1.83	Stationary
	SOx	$0	0.91	Stationary
	SOx	$0	0.18	Stationary
	SOx	$0	0.18	Stationary
	SOx	$0	0.55	Stationary
	SOx	$0	0.55	Stationary
	SOx	$0	4.02	Stationary
	SOx	$0	1.10	Stationary
	HC	$0	18.25	Stationary
	HC	$0	0.91	Stationary
	HC	$0	2.01	Stationary
	HC	$0	75.19	Stationary
	HC	$0	2.37	Stationary
	HC	$0	0.37	Stationary
	HC	$0	2.37	Stationary
	HC	$0	0.73	Stationary
	HC	$0	1.10	Stationary
	PM10	$0	1.28	Stationary
	PM10	$0	0.18	Stationary
	PM10	$0	0.37	Stationary
	PM10	$0	0.37	Stationary

District	Pollutant	$/Ton	Tons	Notes
	PM10	$0	0.18	Stationary
	PM10	$0	0.18	Stationary
	PM10	$0	0.73	Stationary
	PM10	$0	0.73	Stationary