

Central Valley Air Quality Coalition
Earthjustice
Central California Asthma Collaborative
Association of Irrigated Residents
Climate Change Law Foundation
Coalition for Clean Air
Central California Environmental Justice
Network
Community Science Institute
Leadership Counsel for Justice and
Accountability

Californians Against Fracking &
Dangerous Drilling
Center for Biological Diversity
Medical Advocates for Healthy Air
Center on Race, Poverty and the
Environment
Sierra Club, Kern-Kaweah Chapter
Sierra Club, Tehipite Chapter
Sierra Club
Valley Improvement Project

January 9th, 2019

Ms. Mary Nichols
Chair, California Air Resources Board
101 I Street
Sacramento, CA

RE: Emission Reduction Credit Banking in the San Joaquin Valley

Chair Nichols and Members of the California Air Resources Board,

On behalf of the undersigned organizations, we respectfully request the California Air Resources Board (CARB) conduct a thorough review of the Emission Reduction Credit (ERC) banks currently administered by the San Joaquin Valley Air Pollution Control District (Air District), starting with the banks for volatile organic compounds (VOCs), nitrogen oxides (NOx) and carbon dioxide and carbon dioxide equivalents (CO_{2e}). Our groups, which represent frontline communities across the San Joaquin Valley, have substantial evidence which indicates that many of the ERCs contained in the banks are invalid. Invalid credits potentially jeopardize the integrity of the ERC system, allow for the improper permitting of new sources of pollution, and threaten progress toward attainment of air quality standards in the Valley, and maintenance thereof.

This assertion of invalidity is supported by a new 30-page report released by Earthworks: “*Undeserved Credit: Why emissions banking in California’s San Joaquin Valley puts air quality at risk*” (November, 2018; see attached). Earthworks is a national nonprofit that partners with affected communities to respond to and solve threats to the environment. Earthworks spent approximately 9 months compiling extensive case studies of ERCs that represent approximately 1/3 of the emission reduction credits in the Air District’s VOC bank and 1/2 of the credits in their CO_{2e} bank.

Earthworks’ research demonstrates that, of the ERCs reviewed, a large proportion of credits in the VOC and CO_{2e} banks appear to be invalid. ERCs were found invalid for numerous reasons, including credits not meeting Clean Air Act requirements, credit issuances violating the Air District’s Emission Reduction Banking rules, credit applications submitted after the regulatory deadlines, and

credits not being “surplus” of then-current regulations. The report goes on to state that a review of even more certificates and their relationships would likely raise validity questions for an even larger proportion of credits in the San Joaquin Valley Air District’s banks.

These conclusions are especially pertinent in light of the San Joaquin Valley’s proposed PM2.5 Attainment Plan. The Valley’s PM2.5 Plan will be brought before the CARB Board on January 24th, 2019. If implemented correctly, the Plan could bring the Valley into attainment of multiple PM2.5 standards within the next 5-7 years. However, the ERC system in place intended to maintain - and guard against increases in - pollution levels appears to be insolvent. We believe a malfunctioning ERC system threatens progress toward and maintenance of attainment.

Given the evidence presented in the attached report — and in the context of severe and persistent air quality problems across the San Joaquin Valley — we ask CARB to conduct an audit of the ERCs in the San Joaquin Valley Air District’s banks and direct staff to report back to the Board with their findings. Earthworks’ research has paved the way, but more resources and emissions-related expertise are necessary for a full audit.

Sincerely,

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Undeserved Credit

Why emissions banking in California's San Joaquin Valley puts air quality at risk

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November 2018

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Table of Contents

1. Introduction	3
A. Issue overview.....	3
B. Air quality challenges in the San Joaquin Valley.....	3
2. The ERC system	4
A. Brief history	4
B. ERCs and the San Joaquin Valley	6
3. The Investigation	7
4. Case Studies	9
A. Credits held by Alon Bakersfield Refining; Bakersfield Crude Terminal LLC; Flying J Management; and Vintage Production California LLC (VOC)	9
B. Credits held by Alon Bakersfield Refining LLC (VOC)	12
C. Credits held by Chevron (VOC).....	15
D. Chevron “permanence” group credits (CO ₂ e).....	19
E. Aera Energy (CO ₂ e).....	24
5. Conclusions & Recommendations	26

1. Introduction

A. Issue overview

In the late 1970s, emission reduction credit (ERC) programs emerged from federal Clean Air Act efforts to address significant air pollution problems. The programs were based on the notion that some form of incentive, or quasi-market based mechanism, could leverage additional emissions reductions for less cost, beyond the reductions achieved through direct regulatory efforts. California's program came into being as part of this effort.

By obtaining emission reduction credits under California's program, operators whose facilities pollute can offset excessive emissions by trading or purchasing credits representing pollution elsewhere. Agencies that regulate air pollution oversee ERC "banks" and determine whether operators can "deposit" and "withdraw" credits. Credits can be transferred to other companies wanting to pollute more.

Credits are particularly coveted where air quality is so poor that the region is classified as being out of attainment with (i.e., doesn't meet) federal standards, and therefore unable to absorb the additional pollution burden posed by new industrial projects.

The banking of emission credits is a regulatory approach that seems too good to be true. A company seeking to expand—and pollute more—is incentivized to take voluntary steps to control pollution in some part of its operations. These voluntary reductions in emissions create an emission reduction credit that the company can then use to offset pollution occurring somewhere else—either in its own operations or in some other company's operations. Over time, companies can split out a portion of the credits to use and continue to bank the rest, sell credits to other companies, or transfer credits to an operation's new owners.

Companies win by getting new permits to pollute, thereby allowing additional economic activity. Because overall air pollution supposedly is controlled, the state, and presumably the environment and communities, also win.

At least that's the theory. Over the course of the last 40 years since emissions banking was established, its practice has proven far more complex and uneven. Given the increasing stakes for air quality, health, and the climate, the outcomes of emissions banking warrants examination.

The following pages explore such questions in the context of the San Joaquin Valley Air Pollution Control District (APCD, or "District") in central California. The region covers eight counties, including Fresno, a portion of Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. A large portion of California's oil and gas production is located in this region.

B. Air quality challenges in the San Joaquin Valley

The San Joaquin Valley can ill afford any compromise in efforts to reduce air pollution. According to the American Lung Association's 2018 *State of the Air* report, the Most Polluted cities nationwide included Bakersfield in Kern County, which ranked #2 for ozone, #1 for short-term particle pollution, and #3 for year-round particle pollution. Also on the list was the Fresno-Madera metropolitan area, which ranked #4 for ozone, #3 for short-term particle pollution, and #5 for year-round particle pollution. Both particulate matter and ozone are scientifically linked to a range of respiratory, pulmonary, and cardiovascular conditions and an increased prevalence of illness and premature death.¹

The San Joaquin Valley currently does not meet federal standards for ozone and fine particulate matter (PM 2.5), a status that has persisted for many years. In 2016, the US Environmental Protection Agency (EPA) determined that the District had—following a lawsuit by environmental organizations and additional pollution control efforts—reduced air pollution enough to meet the federal standard for 1-hour ozone exposure.² However, the District remains in “extreme non-attainment” for the far more health-protective 8-hour ozone exposure standard.

Addressing this problem poses continual challenges. The District is sandwiched among mountains that trap pollutants and weaken the flow of air and dispersion of pollution, has a growing population, and is crisscrossed by major transportation routes. According to the District, the primary causes of the region’s particle and ozone pollution are motor vehicles, plant and animal agriculture, oil production, wood burning, and fugitive dust.³ In the midst of intensive industrial and agricultural development, socioeconomic vulnerability and health exposure hazards are interlinked and persistent.⁴

While oil and gas production is on a downward trend in both California and the District, operators continue to drill, plan for more production, and hope that shifting market forces will work in their favor going forward. For example, the environmental analysis conducted prior to the 2015 adoption of amendments to the Kern County zoning ordinance projects that more than 3,600 new wells could come online annually for the next 20 years and includes a provision to fast-track permits in an effort to expand oil and gas production.⁵

As persistently poor air quality and the push for more industrial development converge in the San Joaquin Valley, the effectiveness of voluntary ERCs in actually reducing pollution is increasingly debated. Key reasons include:

- The primary goal is to support companies wishing to pursue industrial projects, not to prohibit the creation of pollution.
- ERCs allow operators to release pollution even in areas where air quality standards aren’t being met (i.e., non-attainment areas).
- Banking is based on a static view of air quality and its impacts, with the volume of reduction at one point in time or in one location carried over to the future or a different location, regardless of actual, changing conditions or localized impacts.
- Despite an active ERC program, localized pollution impacts and regional pollution problems can persist and even increase.
- The volume of emissions offset is based on estimates developed for the purpose of obtaining a permit—which may or may not represent a facility’s actual emissions.

2. The ERC system

A. Brief history

Emission Reduction Credits arose from efforts to expand the Clean Air Act in 1977, including introduction of the concept of emission reduction trading. The EPA initiated banking of these credits as a regulatory “reform” to encourage greater economic efficiency in meeting the requirements of the Clean Air Act.

A banking program establishes the administrative process by which a firm can receive credit for reducing its emissions beyond the baseline level required in a State Implementation Plan (SIP), which is developed to guide the attainment of legally required pollution limits. The credit or “offset,” was termed an “Emission Reduction Credit” and formed the “currency” for a banking program.

Such a market-based banking system was justified because it enabled private firms to receive credit for reducing their emissions beyond those levels that they were legally required to achieve, for example under an existing permit or SIP—therefore providing an incentive for additional investment in pollution abatement. A second rationale was that a banking system would provide a mechanism to encourage economic development without compromising efforts to improve air quality.⁶

As a result of this regulatory push in the late 1970s, California air districts developed and implemented New Source Review (NSR) programs, which included the concept of ERCs as pollution offsets. Each of the 35 Air Pollution Control Districts (APCDs) in California has its own NSR program and issues its own NSR or Prevention of Significant Deterioration (PSD) permits to site, construct, and operate. These programs regulate new industrial sources of air pollution and the expansion of existing industrial sources.

In general, offsetting means that companies can build or expand their emission-producing operations only if they first secure ERCs from another pollution source (their own or that of another company)—with the end result being no net increase in emissions. The cost of these ERCs is set, based on market conditions, by the owner of the credits and varies depending on type of pollutant and the air district in which they are generated.⁷ Pricing is in effect a classic market question of supply, or the volume of emissions represented by available credits; and demand, or the desire of companies to develop polluting projects.

In 1995, the California State Legislature enacted AB 1777, through which CARB was directed to develop and adopt a methodology for use by districts to calculate the value of credits. The methodology adopted by CARB was designed to ensure that credits were granted only for emission reductions that were **real, properly quantified, permanent, enforceable, and surplus** to applicable federal, state, and district requirements and adopted air quality plans.

AB 1777 provided districts with the flexibility to maintain distinct NSR programs to ensure the availability of ERCs needed to accommodate industrial growth and the activities of companies. Finally, the regulation called for annual performance audits by districts to ensure that the implementation of credit trading programs continued to comply with applicable state and federal requirements.

Under current California statutory language (Health and Safety Code Section 40709.5), ERC banking is defined as “a system...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.”⁸ Once created, ERCs may be banked with the air 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 in their own projects.

The essential way to create ERCs is to control or curtail the emissions from an existing stationary source. Credits must be generated pursuant to air district rules and regulations, and must be reviewed and certified by the air 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 of California's air districts.

B. ERCs and the San Joaquin Valley

The two primary rules governing ERCs in the San Joaquin Valley Unified APCD are Rule 2201 and Rule 2301.⁹ Rule 2201 is the District's NSR rule, last modified in 2016, which covers the review and permitting of sources of air pollution, resulting emissions (including VOCs, federally regulated criteria pollutants, and greenhouse gases), and the general basis for emission trade-off mechanisms, including ERC banking. Rule 2301, last modified in 2012, is the actual banking rule, which provides the eligibility standards and the administrative mechanisms for the storage and transfer of ERCs.

To be eligible for credit banking, an application for ERCs must be filed no later than 180 days after the emissions reduction occurred (Rule 2301, Sec. 4.2.3). However, in 2012, the District amended Rule 2301 (Section 5.5.2) to allow ERC applications for GHG reductions that occurred prior to January 2012, as long as the application was submitted within six months (i.e., July 2012).

The EPA has the option to review ERC applications related to ERCs for new Major Sources, Federal Major Modifications, and Major Modifications stemming from California's Senate Bill 288 passed in 2003 (i.e., a modification that has no significant net emissions increase or does not exceed plant-wide emissions limits). Under District Rule 2201, Sec. 7.1.5, those applications with supporting documents, shall be transmitted to EPA and the "creditability" of a given emission reduction "may be subject to review by the EPA."

Under Rule 2301, Section 6.2, once the rule requirements have been satisfied and the emission reduction has actually occurred, the District can issue an ERC Certificate.

Under District (and federal) rules, *no net increase in emissions* above specified thresholds from new and modified stationary sources of all affected pollutants and their precursors is allowed.¹⁰ If a new or modified emissions source would result in increased emissions, the rules provide that there must be an offset, or an Actual Emissions Reduction (AER), compared to the two years of operation prior to the ERC application. The AER, calculated on a pollutant-by-pollutant basis, shall be:

- **Real:** have actually occurred as a result of actions by the applicant.
- **Permanent:** the emissions reduction can't be reversed or replaced elsewhere in the area.
- **Quantifiable:** the emissions volume can be reliably measured and the measurement can be replicated.
- **Surplus:** in excess of any emissions reduction that is otherwise required through existing regulations or in a SIP.
- **Enforceable:** implementation of the emissions reduction is ensured through a permit or other regulatory lever.

The aspect of "surplus" poses particular challenges because of a divergence between federal and District rules.

Under EPA's NSR Rule, credits are defined as surplus at the "time of use," or when they are actually brought forth to offset emissions from a current project, regardless of when the reduction on which

the credit is based occurred. By way of example, this means that if a company received ERCs for voluntarily installing a pollution reduction technology in 1990, those ERCs couldn't be used in 2000 if in the intervening decade regulations changed to require use of the same pollution reduction technology. To be valid, these older credits would have to be "discounted" in value at the time they were proposed for use, i.e., adjusted to reflect emissions reductions required by current regulations.

In contrast, District Rule 2201 requires that the credits be surplus at the "time of issuance"—allowing credits to be used regardless of whether they would offset emissions beyond what's already required currently. As a result, ERCs based on the adoption of a pollution control technology in 1990 could be used in perpetuity, regardless of whether and when regulations change to address new air quality realities and without any additional discounting to match requirements at the time the credit is proposed for use.

Following lengthy discussions and negotiations, CARB, EPA, and the District reached agreement that the District must ensure "equivalency" in emissions reductions stemming from differences between how District and federal rules define the criterion of surplus.

Since adding Section 7 to District Rule 2201 in 2002, the District has been required to demonstrate that its "time of issuance" approach results in equally or more stringent emissions reductions. This is done by annual tracking and reporting (to CARB and EPA) of the quantity of credits that would have been required under the federal NSR rule compared to under District Rule 2201.¹¹ As long as equivalency demonstrations are successful, the District can continue to administer ERCs according to its own rules.

The District's long-held view has been that its approach to ERC banking is more than equivalent, in particular because the District has always discounted credits upon issuance and required smaller sources of pollution to seek emission offsets.

However, in 2010 the EPA also began to require even smaller sources of pollution to seek offsets—thereby closing the gap with District rules and effectively increasing the volume of emissions that must be offset. In addition, since adopting additional ERC rules and being classified as in "extreme non-attainment" for ozone, the District has by its own admission had a more difficult time achieving equivalency demonstrations for both VOCs and nitrogen oxide (NO_x) and is examining new pollution offset strategies to avoid equivalency failure.¹²

3. The Investigation

The current paper was triggered by a 2017 Earthworks report titled *Permitted to Pollute: How oil and gas operators exploit clean air protections and put the public at risk*,¹³ which examined how natural gas operators in Pennsylvania appear to be deliberately underestimating their air emissions in order to avoid the more stringent pollution control and project review requirements of federal Clean Air Act Title V permits for Major emission sources.

Following the publication of *Permitted to Pollute*, we had discussions with California partner organizations concerned about ways in which the oil industry in that state may be avoiding required reductions in air pollution. This possibility seemed particularly relevant in light of

California's initiative to drastically reduce greenhouse gas emissions, and particularly concerning given the San Joaquin Valley's powerful oil industry and persistent air quality challenges.

During these discussions, one of the emissions reduction avoidance mechanisms that came to light was the ERC system. In 2015, Earthjustice and the Central Valley Air Quality Coalition had begun investigating how the District's ERC system was administered. The preliminary conclusion of this work was that the majority of VOC-related credits in the District's ERC bank were potentially invalid.

In early 2018, Earthworks began to dig deeper into what Earthjustice and the Central Valley Air Quality Coalition had uncovered. Based on the list of ERCs in the District's bank in February 2018 (when our research began), we submitted public records requests for District records, applications, assessments, public notices, correspondence, and any other documentation related to selected certificates.

Given our specific focus on oil and gas issues, we limited our inquiry to ERCs that we could identify as being held by energy companies and requested only those certificates representing at least 10 metric tons per year of credits. This covered nearly 65 percent of the credits for VOCs and nearly 60 percent of the credits for carbon dioxide equivalent (CO₂e) in the District's ERC bank as of February 2018.

The result of our public records request included hundreds of pages of documents related to more than 50 specific ERC certificates. Following an initial review of the issuance dates and claimed reductions, we then selected a group of certificates to analyze regarding the core reasons they were issued. Finally, we selected groups of certificates on which to base in-depth case studies.

Earthjustice and the Central Valley Air Quality Coalition provided Earthworks with documents related to specific ERC certificates that they had previously obtained through public records requests. These partners also shared their initial analysis and conclusions and oriented us to the issues related to ERCs and the District's banking system.

The District's public records request office was responsive and informative, processed our requests in a timely and thorough manner, and provided all documents electronically. During the course of our research, we faced information gaps related to the specific ERC documents provided or, in some instances, simply missing from the files. These are detailed in the relevant case studies.

Overall, such information gaps reflect the difficulty of piecing together the history of credits that have been split, reduced, and reissued multiple times. In addition, every time this happens, a new ERC number is issued. This research was therefore akin to "peeling an onion"—with each layer potentially requiring a new public records request.

As a result, it proved virtually impossible to develop a complete picture of the origin, trajectory, and use of ERCs in the District's bank. It was also difficult to fully understand the connections among even those banked credits for which we had documents. To use another metaphor, as with genealogy research, some family members clearly share ancestors—but it can be difficult to say with certainty where others come from.

4. Case Studies

A. Credits held by Alon Bakersfield Refining; Bakersfield Crude Terminal LLC; Flying J Management; and Vintage Production California LLC (VOC)

A. Background

This case comprises a group of eight ERC certificates based on emission reductions that initially occurred in 1977 at the Bakersfield refinery on Rosedale Avenue. All of these certificates are derived from claimed emission reductions from the “incineration of fluid coker exhaust in the CO boiler.”

The Bakersfield refinery has changed hands several times in the ensuing decades, passing from Mohawk Petroleum Corporation to Tosco Corporation to Texaco Refining and Marketing Inc. to Shell Oil to Flying J Management. The current owner, Alon USA, purchased the refinery in 2010.

The claimed reductions represented 12,067 pounds per day of non-methane hydrocarbons; extrapolated out, this equates to about 2,000 metric tons of potential claimed VOC reduction per year. Documents show that the APCD issued subsequent renewals in at least 1989 and 1991, and the originating certificate was split into many new certificates over the ensuing decades.

As of February 2018, the certificates in the ERC bank derived from the 1977 reduction represented nearly 925 metric tons of annual VOC emissions—or nearly 20% of the volume of all VOC credits and almost 30% of the volume of VOC credits held by energy companies.

As shown in the table below, both Earthworks and Earthjustice submitted Public Records Requests to the Air District for documents related to the eight ERC certificates. Many of the documents we received were duplicated in several files, while others appeared only in a few. Some of the ERCs were issued in the last few years, even though they are based on reductions from decades earlier.

It is possible that even more credits in the VOC bank are derived from the same 1977 reduction at the Bakersfield Refinery. However, determining that is not possible given the incomplete documentary record provided in response to our records requests, and the complexity of the intertwined non-energy related ERCs and the multiple connected energy credits that were split over time.

Notably, in response to Earthworks’ public records request for information on two of the ERCs in this group (S-4191 and S-4939), the Air District provided scans of the final certificate, but no documents on the background of the credits. As a result, it is impossible to know with certainty that the originating reduction behind this ERC was actually the same 1977 reduction; however given that the ERCs are for the Alon Bakersfield Refinery and the language in the certificates are identical to that for the other ERCs, we are relatively confident that S-4191 and S-4939 are derived from the same activities and application process detailed here.

Certificates related to 1977 emission reductions at the Bakersfield Refinery, identified through public record requests			
ERC certificate number	Latest issue date in files provided	File requested by Earthworks (2018)	Files requested by Earthjustice (2015)

S-3663	2011		X
S-4472	1991		X
S-4727	1991		X
S-4189	2014	X	
S-4191	2014	X	
S-4487	2015	X	
S-4745	1991	X	
S-4939	2017	X	

B. Timeline

Timeline of the ERCs resulting from Tosco/Texaco's claimed 1977 reductions	
April 24, 1984	Tosco submits a modified County Health Department Form to APCD requesting to bank all its previous emission reductions. Because Tosco didn't provide actual documentation of the reductions or how they were calculated, APCD returns the submission.
June 14, 1985	Tosco writes to APCD stating that the year-long delay in providing documentation was the result of "a prolonged series of very difficult corporate financial problems" and the suspension of operations at the refinery in late 1983.
October 11, 1985	Tosco writes to APCD regarding the 90-day deadline for applying for ERCs following emission reductions, arguing it doesn't apply because the refinery was only temporarily "shutdown" and Tosco had maintained all operating permits.
October 28, 1985	Tosco sends APCD an application to bank credits that included documentation on the 1977 reductions.
February 12, 1986	The Air District sends a letter to the Tosco Environmental Affairs Manager stating that the emissions calculations in the new ERC application were "made in a manner not in accordance with Rule 210.3.C.3 and lacked documentation of emission reductions which may have occurred...your application for banking certificate is hereby denied."
February 27, 1986	Following a meeting with Tosco officials, APCD sends a letter to the refinery manager detailing deficiencies in its banking application. These include contradictory information on emissions from the boilers and the fluid coker, which "therefore cannot be used to validate the proposed ERC." APCD also emphasizes that the District's oxidant non-attainment plan included installation of Tosco's CO boiler as a major reduction and that, "Considering this plan, Tosco must explain how these reductions can be found to be surplus."
May 9, 1986	APCD writes to Tosco stating that the information submitted in the company's application, "is not actual emission data and actual process data. It is contradictory and inconsistent...Accordingly, we are hereby denying your October 28, 1985 request for a banking certificate."
July 10, 1986	Following Texaco's purchase of the refinery, the company submits a new application to bank credits from the 1977 reductions.
August 5, 1986	An analysis by an APCD engineer determines that permit conditions didn't require incineration of fluid coker exhaust and Tosco could operate the coker without the CO boiler. He concludes that the "ERCs claimed cannot be validated as they are not permanent and enforceable" and Texaco's application should be denied.
March 4, 1987	In a new analysis, the APCD engineer notes that Texaco plans to apply to the APCD for a variance on claimed reductions, which would allow the fluid coker to exhaust directly to the atmosphere during maintenance. He also now states that the ERCs meet the criteria of being permanent and surplus.
March 19, 1987	The APCD engineer speaks with a USEPA staff member, who says, "That is not in accordance with the principles of banking and emissions trading. They cannot get a variance and cannot operate the source when they aren't providing the emissions

	reductions.”
June 9, 1987	According to a comment letter from USEPA, Texaco submitted a new or amended application to bank the 1977 emission reductions. <i>Note: this application was not in files provided by the Air District.</i>
June 16, 1987	APCD issues a request for public comment on Texaco’s emissions credit banking proposal.
July 11, 1987	The APCD engineer speaks with a CARB representative, who states that Texaco’s “Initial submittal did not constitute an application in form prescribed by APCO [Air Pollution Control Officer]. Submittal which was evaluated was submitted after expiration of statutory time period.”
July 17, 1987	The Air Management Division at USEPA responds to APCD’s request for public comment on Texaco’s application, advising the District not to issue the banking certificate. A comment letter summarizes the reasons: “In all likelihood, these reductions are not surplus since they occurred so long ago;” “EPA has previously advised the District that banking credit may not be awarded for any reductions which occurred prior to the Clean Air Act Amendments of August 7, 1977...EPA will not recognize these reductions as valid offsets;” the application was submitted “well beyond the required time limits. It is not reasonable to accept the company’s rationale for the delay;” and “If the District issues the banking certificate to Texaco, any source which attempts to use these emission reductions as an offset may be subject to federal enforcement action.”
July 17, 1987	The Chief of the Project Review Branch at CARB responds to APCD’s request for public comment on Texaco’s application, telling the District that the 1984 application was incomplete and the 1985 banking application “was not submitted within the allowable time limits” of APCD Rule 210.3 and “should be considered invalid.”
July 23, 1987	APCD issues ERC number 2007148/501 to Texaco for the banking of 12,067 pounds per day of non-methane hydrocarbons.
August 7, 1987	An engineer with APCD responds to CARB’s comments, stating that the ERC certificate application “complies with the filing requirements of Rule 210.3. The application, although returned, was not rejected,” and because the APCD added source testing to the boiler permit, Texaco could now meet the ERC requirements for permanence and enforceability.

C. Why the credits are invalid

To summarize what is in the record for this ERC, the applications underpinning these credits were not timely and appear not to have met the required criteria of being surplus, permanent, and enforceable. Despite denying the banking application twice and strongly worded recommendations from both CARB and USEPA to deny the credit, the District went ahead and issued an ERC certificate in 1987. Following careful review of dozens of records related to these credits, we could not identify any underlying justification for the Air District’s reversal of its own position nor its subsequent decision to ignore the advice of its own engineers and state and federal agencies.

The credits don’t meet Clean Air Act requirements

The Air District issued the Authority to Construct for the CO boiler in January 1976, and operations began in May 1977. The Clean Air Act (Section 51.165(a)(2)(ii)(C)(1)(ii)) states that, “in no event may credit be given for shutdowns that occurred before August 7, 1977.” Because the emission reductions claimed by Tosco/Texaco occurred prior to this date, the related ERCs are invalid and couldn’t have been used to offset project emissions.

Issuance of the credits violated the Air District’s Emission Reduction Banking rule

The Kern County Air Pollution District (the precursor to the San Joaquin Valley Air Pollution Control District) adopted Rule 210.3 on April 25, 1983 (with amendments made in 1987 and 1996). Section III (D)(2) states that, “Application for qualifying emissions reductions occurring before the date of adoption of this rule shall be filed within one year of adoption.”

Tosco’s submitted an incomplete ERC application—which among other things lacked any reduction data—one year to the day in order to meet the Rule 210.3 deadline. Although the District rejected it, the District appears to have allowed the initial submission date to control subsequent decisions. Texaco’s subsequent application, on which the issued ERCs were based, was submitted more than two years after the application deadline, and nearly a decade after the reductions actually occurred.

In addition, according to Section (III)(A) of the rule, “Banking Certificates cannot be issued for emission reductions represented by Authorities to Construct (ATC) or Permits to Operate originally issued before December 28, 1976.” According to a “Chronology of events for the Coker CO Boiler” provided by Texaco to the Air District, the District’s issued an ATC for the boiler—the primary equipment on which the claimed reductions were based—on January 13, 1976; the EPA followed with an Approval to Construct on November 4, 1976. For either date, the ATC was not issued in accordance with the rule’s requirements.

The credits may already have been accounted for

As indicated in the timeline above, an application deficiencies letter sent by APCD to Texaco in February 1986 raises the possibility that the claimed reduction didn’t qualify as “surplus” because the primary source of the reduction—Tosco/Texaco’s CO boiler installed a decade earlier—was already considered in the District’s air quality planning, specifically the District’s “oxidant non-attainment plan.” (We presume this referred to the plan addressing *ozone* non-attainment status.)

B. Credits held by Alon Bakersfield Refining LLC (VOC)

A. Background

This case comprises a group of three ERC certificates based on emission reductions that initially occurred in 1983 at the Bakersfield refinery on Rosedale Avenue. All of these certificates are derived from claimed emission reductions from the “Shutdown of Themofor catalytic cracking unit, fluid coker unit, and CO boiler serving fluid coker.”

The Bakersfield refinery has changed hands several times in the ensuing decades, passing from Mohawk Petroleum Corporation to Tosco Corporation to Texaco Refining and Marketing Inc. to Shell Oil to Flying J Management. The current owner, Alon USA, purchased the refinery in 2010.

The claimed reductions represented 1,432 pounds per day of non-methane hydrocarbons; extrapolated out, this equates to almost 240 metric tons of potential claimed VOC reduction per year. Documents show that APCD issued a subsequent renewal of the original ERC in 1990, and that the originating certificate was split into other new certificates over the ensuing decades.

As of February 2018, the certificates in the ERC bank derived from the 1983 reduction represented more than 63 metric tons of annual VOC emissions—or about 1% of the volume of all VOC credits and 2% of VOC credits held by energy companies.

As shown in the table below, both Earthworks and Earthjustice submitted Public Records Requests to the Air District for documents related to three ERC certificates based on the 1983 emission reductions. Most of the documents we received were duplicated in two of the files.¹⁴

Of the three ERCs in this group, only S-4678 was in the air district’s VOC bank as of February 2018. The other two ERCs were not listed in the bank at that time but may have been split into certificates with new numbers, which we were unable to identify through the documents provided to us by the District.

Certificates related to 1983 emission reductions at the Bakersfield Refinery, identified through public record requests			
ERC certificate number	Latest issue date in files provided	Files requested by Earthworks (2018)	Files requested by Earthjustice (2015)
S-3465	1990		X
S-3467	1990	X	
S-4678	2016	X	

B. Timeline

Timeline of the ERCs resulting from Texaco’s claimed 1983 reductions	
July 31, 1987	Texaco submits an application to the Kern County Air Pollution District for five separate ERCs, including one for non-methane hydrocarbons. A letter accompanying the application states that the equipment on which emissions reductions are based “was operated through November 1983.”
August 27, 1987	An APCD engineer evaluates Texaco’s application with regard to eligibility for ERCs. He concludes that the “requested ERCs must be denied” because Rule 210.3 requires banking certificate applications to be submitted no more than 90 days after the reduction occurred—and Texaco’s application was submitted three years and five months after the deadline. In a letter dated the same day, APCD informs Texaco of the decision to deny the ERC application because “this request is not timely.”
September 10, 1987	In a letter to APCD, Texaco contests the decision to deny the ERC because of the wording of Rule 210.3, Section C.4.b on the 90-day application restriction. (This is Section III (D)(2) in the current rule.) Texaco states that, “We do not believe that the interpretation of that section was intended to apply to the actual operation of the equipment. We interpret the words ‘date the reduction occurs’ to mean the effective date that the equipment is physically unable to be used again or the date that the permit is surrendered.” Texaco asserts that since the company still has a permit to operate the equipment and it could be brought back on line at some point, the application timing restriction shouldn’t apply. Texaco indicates its intention to file a petition for review of APCD’s ERC denial.
October 19, 1987	In a letter to APCD, Texaco states that on the basis of an October 1, 1987 memo by APCD and “various discussions with you,” Texaco now understands that “the District finds our application [for ERC certificates] was filed timely.” <i>The referenced APCD memo was not included in the files provided by APCD in response to our records request.</i>
January 14, 1988	An APCD engineer re-evaluates Texaco’s application with regard to eligibility for ERCs. His memo states that, “The equipment shut down includes all process equipment associated with the Area 2 TCC Unit...this equipment was last operated by Tosco Corp. in Nov. 1983, however, Permits to Operate for this equipment have been maintained...and the equipment is reported to be in operable condition.” He

	concludes that since the equipment meets the definition of “operating source,” the application is “considered as timely under Rule 210.3 Section C.4.b.”
February 22, 1988	In letters to CARB (Project Review Branch) and the USEPA (New Source Section), APCD informs the agencies that Texaco’s banking project will be released for public comment and indicates that the air District is providing drafted certificate documents and the District’s analysis. <i>In response to our records request, APCD did not provide this documentation nor any correspondence or information indicating whether CARB and USEPA commented on the project.</i>
April 14, 1988	APCD issues ERC number 2007130/501 to Texaco for the banking of 1,431.69 pounds per day of non-methane hydrocarbons.

C. Why the credits are invalid

The application was submitted after the regulatory deadline

In August 1987, the District correctly interpreted its own rules when it denied Texaco’s application on the basis of not being timely—having been submitted more than three years after the regulatory deadline and nearly four years after the emissions reduction occurred. The language of Rule 210.3, Section C.4.b (the current Section III (D)(2)) is very clear: “To obtain an ERC, a stationary source owner/operator shall file an application as prescribed by the Control Officer no more than ninety (90) days after date such reduction occurs...”

Texaco’s ERC application (and presumably the accompanying emissions calculations) was based on the shutdown of three pieces of equipment at the Bakersfield refinery—and not for the shutdown of the entire facility. In claiming that only the surrender of permits of a stationary source constitutes an emissions reduction, Texaco incorrectly conflated the definition of “shutdown” in Rule 210.3 and the definition of an “operating source” according to District policy. Unfortunately, the District acquiesced with this flawed argument, favoring Texaco’s pressure over its initial interpretation of its own ERC Rule.

The decision to approve the ERC is inconsistent with credit banking rules

Texaco’s argument that only permit surrender constitutes a “shutdown” contradicts a core purpose of emissions reduction credit banking: to encourage less polluting operations. It implies that credits can’t be based on the modification of specific equipment or curtailment of a portion of operations within facilities. Yet this is something that the industry does on a regular basis.

In fact, the District’ Rule 2301 on Emission Reduction Credit Banking, Section 3.14 defines shutdown for the purposes of offsets as “...*either* the earlier of the permanent cessation of emissions from an emitting unit *or* the surrender of that unit’s operating permit” (emphasis added). Further, Rule 2301 Section 6.1 mentions various circumstances under which reductions can be created even while a source remains in operation, including greater operating efficiencies, more efficient control technology, and reduced production or production rates.

Granted, the District adopted Rule 2301 in 1991, after Texaco’s ERC application. However, an October 1985 memo by the District’s air pollution control officer (Leon Herbertson) on the topic of Shutdown Emissions clarifies the difference between claiming a reduction and a permit being surrendered in the context of offsets.

Included in the District files for S-3465 and S-3467, the memo states, “A source may modify its operation, shutdown, or curtail production or operating hours, or make other changes within the limits of permit conditions without affecting these permits. Source shutdown, shutting down,

curtailments and permanently curtailing are terms found in Appendix S-Emission Offset Interpretive Ruling, Title 40 CFR. These terms are therefore only applicable to ‘offsets’ and do not affect a source experiencing temporary shutdown or curtailments and then wishing to restart provided permits are kept current.”

Texaco wanted to “have its cake and eat it too”

Texaco appears to have wanted to claim the shutdown of equipment in a specific area of the Bakersfield Refinery as an emissions reduction. To qualify as a reduction, this equipment shutdown would have to meet the prerequisite of being permanent—meaning that the equipment couldn’t be operated again.

At the same time, Texaco wanted to reserve the right to bring the equipment back into operation at some point, arguing that the timing of the reduction (November 1983) shouldn’t be the basis for determining whether the application was timely or not because the equipment still had the potential of being operated.

However, if the equipment could still be operated then the reduction achieved through a shutdown (versus e.g., an equipment modification) couldn’t be defined as permanent. Rule 2301, Section 6.1.2 is clear on this point: “If the emission reductions were created as a result of the shutdown of a permitted emissions unit, the relevant Permit(s) to Operate has been surrendered and voided.”

In sum, either Texaco’s application wasn’t timely because the application was submitted years after the deadline; or the reduction wasn’t permanent because the equipment could be operated again at some future date. To be consistent with District Rules, both conditions had to be met.

C. Credits held by Chevron (VOC)

A. Background

This case comprises two ERC certificates for reductions that occurred in 1980. The reductions originated with equipment modifications to control gases from steam drive well casings at a series of Chevron heavy oil production wells.

The claimed reductions represented 7,963 pounds per day of VOCs; extrapolated out, this equates to almost 1,320 metric tons of potential claimed VOC reduction per year. Documents indicate that the District issued permit renewals for the original project throughout the 1980s and that subsequent ERC certificates based on the original offsets have been split and used in recent decades.

As shown in the table below, both Earthworks and Earthjustice submitted Public Records Requests to the Air District for documents related to two of the ERC certificates based on the 1980 emission reductions.

Only S-4859 was in the District’s VOC bank as of February 2018, equaling about 52 metric tons per year—or 1% of the volume of all VOC credits and about 2% of the volume of VOC credits in the bank held by energy companies.¹⁵ Chevron used the credits as recently as 2015 for a project to construct eight new natural gas fired steam generators and in 2017 for three new storage tanks.

Notably, we received files that indicate an additional five ERC certificates in the District’s VOC bank (as of February 2018) are related to the addition of casing collection systems “pre 4/25/83” to

TEOR [Thermally Enhanced Oil Recovery] wells in Central Heavy Oil Stationary Source.” These certificates (S-4670, S-4355, S-4576, S-4198, and S-3701) were issued in 2011-2016; taken together, they represent almost 530 metric tons per year of VOC credits—or over 11% percent of the volume of all VOC credits in the bank and over 15% of the volume of VOC credits held by energy companies as of February 2018.

Given that the language in these certificates is the same as language in the two that we investigated, we are relatively confident that they also originated with the 1980 reductions. However, we could not definitively confirm this connection based on the documents provided by the District.

Certificates related to 1980 reductions at Chevron production wells, identified through public record requests			
ERC certificate number	Latest issue date in files provided	Files requested by Earthworks (2018)	Files requested by Earthjustice (2015)
S-3869	1997		X
S-3869	2016	X	
S-4859	2017	X	

B. Timeline

Timeline of the ERCs resulting from Chevron’s claimed 1980 reductions	
December 17, 1979	Chevron submits an application to the Kern County Air Pollution District to modify existing wellhead casing vent vapor recovery systems on 45 wells having a 99% “non-methane hydrocarbon collection efficiency.”
May 20, 1980	APCD issues an Authority to Construct for the equipment modification project. Because District Rule 411.1 (on Steam-enhanced Crude Oil Production Well Vents) required 93 percent operating efficiency to control emissions at the time, APCD credited Chevron with offsets amounting to the difference (6% of emissions by weight).
June 1987	APCD adopts revisions to Rule 210.1 (on New and Modified Stationary Source Review), resulting in facilities having their emission credits set to zero. (This may have been because the Rule 210.1 revisions required Best Available Control Technology with 99.9% operating efficiency.) Operators are given the option of reestablishing reductions provided they pass the test of being “real, quantifiable, permanent, and enforceable” and hadn’t yet been used to offset other projects.
October 1990	Chevron submits a report to the APCD to support the reestablishment of VOC offsets for the 1980 reductions, including data on reduction volume, sources, and weighted emission factors. Titled “Reestablish VOC Offsets for Central and Western Sources,” the report argues that the offsets meet all legal requirements for reestablishment and sets out the requested emissions volume.
March 16, 1992	Chevron files a formal application to convert the company’s “internal profile” for hydrocarbons to a new San Joaquin Valley Unified APCD ERC certificate. This is the last day of APCD’s deadline for reestablishing emission reductions occurring prior to January 1, 1988, as specified in District Rule 230.1 (adopted in September 1991).
March 23, 1992	APCD returns the application to Chevron, explaining in a letter that it is denied because District Rule 230.1 restricts the issuance of the new ERC certificates for pre-1988 emissions reductions to those that had been “previously recognized by a banking certificate.”
November 13, 1992	Chevron submits a new application for an ERC certificate representing offsets “that occurred prior to adoption of KCAPCD [Kern County APCD] Banking Rule 210.3.” Chevron asserts that because the reductions occurred prior to the adoption of the Rule (in April 1983) and Kern County APCD recognized the reductions in Chevron’s

	internal profiles, the reductions are eligible for a new ERC certificate.
February-May 1993	APCD apparently changes its mind about the validity of Chevron's application and reviews Chevron's ERC application for Project #920255, which appears to comprise 15 ERC applications. In the resulting project review memo, APCD indicates that the application is based on data in Chevron's 1990 report on reestablishing VOC offsets, but "Due to the large volume of data in this report only random reductions were verified, the rest were assumed to be correct."
July 30, 1993	APCD writes a memo to EPA Region IX about the ERC application in response to questions previously posed by EPA, including how Chevron was able to demonstrate a 99% VOC control efficiency and that the reductions are enforceable.
August 11, 1993	The Chief of the Stationary Source Branch at EPA Region IX submits comments to APCD about Chevron's application. EPA determines that the credits don't meet the definition of being surplus because the controls that generated them are now a Reasonably Available Control Technology (RACT) required by other regulations. EPA emphasizes that according to the US Clean Air Act Section 173 (C)(2), "the retained reduction credits must be used in accordance with the current requirements in the area, not the requirements in effect at the time the credits were established." EPA also comments that the credits aren't surplus because APCD Rule 4401.53 already requires a 99% control efficiency.
August 18, 1993	The Chief of the Stationary Source Branch at EPA Region IX writes to APCD about six public notices of ERC applications, including Chevron's for the 1980 reductions. The primary comment is that according to the US Clean Air Act, credits for pre-1990 emission reductions may be used only if they're included in the emissions inventory—but that phone calls with APCD made it clear that, "planners do not have the ability to add the emissions to the 1987 inventory."
December 21, 1993	APCD writes to Chevron informing the company that it has decided to approve Project #920255 and is enclosing associated ERC certificates. The approval letter states that Chevron should "be aware that EPA has commented that these credits are not surplus of federal RACT requirements and, therefore, cannot be used as offsets until they are RACT adjusted...The District does not concur with EPA on this matter at this time. EPA may challenge any project which uses these credits to gain approval."
December 21, 1993	On the same day that APCD approves Chevron's ERC application, APCD writes to the Project Review Branch at CARB informing the agency of its decision to approve Project #920255. APCD also writes to EPA in response to its August 11 comments, stating that the credits are surplus according to District Rule 2301 and that reductions should be adjusted based on rules and plans "in effect at the time the Authority to Construct was deemed complete." APCD indicates it intends to revise its emissions inventory to reflect pre-1988 reductions approved for banking.
July 1994	Under a cooperative agreement, CARB, EPA, and APCD conduct a review of 110 district ERC banking actions, including Chevron's Project #920255. A draft report concludes that Chevron's application was filed after the deadline in District rules and that the San Joaquin APCD was allowing pre-1983 emission reductions in Kern County to be banked as ERCs, which contradicted District Rule 230.1.
August 1994	CARB reviews over 20 ERC projects in the San Joaquin APCD. A draft project summary concludes that the emission reductions in Chevron's Project #920255 aren't enforceable by conditions in the Permit to Operate (PTO) or Authority to Construct (ATC).
September 6-12, 1994	APCD responds to CARB's conclusions in the draft audit report about the Chevron ERC project, stating that because Chevron filed an original application on March 16, 1992, it was timely. APCD acknowledges that nine years passed from the time of reduction to the time the application was filed. APCD also states that the reductions are enforceable because a 99% efficiency rate was included in PTOs and ATCs issued in the 1980s for Chevron's modification of vapor recovery systems.

C. Why the credits are invalid

The application was submitted after the regulatory deadline

In July 1994, EPA concluded that Chevron's application was filed after the deadline in Rule 230.1, which specified (in Section IV.A.2 at the time) that ERCs for emission reductions occurring prior to January 1, 1988 must be submitted within 180 days of the adoption of the rule, i.e., by March 16, 1992.

This was the date of Chevron's first ERC application—an application that the District denied and returned without conducting any review. Yet in reviewing Chevron's second ERC application, the district asserted that the application was timely because it was submitted on March 16—when in fact, it was submitted in November 1992 (i.e., eight months after the submission deadline).

In addition, the Kern County Air Pollution Control District (KCAPCD, the precursor to the San Joaquin Valley Air Pollution Control District) adopted Rule 210.3 on April 25, 1983. Section C.4.b (or Section III (D)(2) in the current rules) states that the, "Application for qualifying emissions reductions occurring before the date of adoption of this rule shall be filed within one year of adoption."

Since the District had credited Chevron's reductions (i.e., the 6% above the 93% control efficiency required at the time) in January 1980, it appears that Chevron could have formally applied to have those credits banked under Rule 210.3, but didn't. The 1994 joint audit (by CARB, EPA, and the District) on the District's banking actions noted this one-year grace period, emphasizing that, "After this period, pre-1983 reductions could be carried on a stationary source's net emissions increase, but could not be recognized as ERCs."

The credits weren't surplus

These Chevron ERCs reflect the divergence between the EPA's and the District's definition of "surplus" when it comes to evaluating ERCs. In short, the District allows for credits that are "surplus at the time of issuance," while EPA mandates that they be "surplus at the time of use." As discussed in the introduction to this paper, the District and EPA argued over this difference for a long time and ultimately reached an agreement on how to address it.

With regard to Chevron's emission reduction credit claim for the 1980 shutdown, by the time the company submitted the application that the District formally reviewed (November 1992), the basis for the reductions was already covered by existing regulations. This means they couldn't be classified as surplus.

EPA's August 1993 comments to the District stated that, on the basis of Sections 172 and 173 of the US Clean Air Act, "retained reduction credits must be used in accordance with the current requirements in the area, not the requirements in effect at the time the credits were established."

In addition, the Kern County Air District revised Rule 210.1 requiring Best Available Control Technology (the current SJVUAPCD Rule 2201) in June 1987, about five years before Chevron's ERC application. District Rule 4401 on Steam-Enhanced Crude Oil Production Wells, adopted in April 1991 (i.e., more than 18 months prior to Chevron's ERC application), required 99% control efficiency for VOCs.

In order to be surplus, the original date of equipment modification and emissions reductions (May 1980) would have to be considered as the "date of issuance." However, in 1980, the District simply

allowed Chevron to include the 6% of reductions above regulatory requirements in the company's internal profiles for hydrocarbons. This action does not seem to have constituted an "issuance" of credits because at the time, the District didn't have a rule on banking emissions reductions until 1983.

This was the same conclusion reached by the District when it denied Chevron's first ERC certificate application in March 1992. The denial letter emphasizes that only pre-1983 reductions represented by *banking certificates* could be banked—meaning that the 6% of reductions credited to Chevron's internal profiles didn't qualify. Yet when the District responded to EPA's ERC Audit, which included the Chevron project, it asserted that the reductions were valid because they had been "formally recognized" in a 1980 Authority to Construct for the equipment modification.

The files provided in response to our records request did not explain why the District changed its mind and instead agreed with Chevron's assessment that inclusion of the reductions in the company's internal profile for hydrocarbons made them eligible for a banking certificate.

Chevron wanted to "have its cake and eat it too"

In its response to CARB and EPA's comments during the 1994 audit, the District stated that the "emission reduction is surplus provided that it was proposed before any rule would have required the reduction." This statement reflects the fact that Chevron, with the District's support, was trying to have it both ways.

If 1980 was the date the reductions were proposed, then the credits in the November 1992 application may have potentially met the definition of surplus but the application itself wasn't timely. If a 1992 application and reduction "proposed" date was used in order to make the application timely, then the reductions couldn't be considered surplus because of regulatory requirements in place at the time.

D. Chevron "permanence" group credits (CO₂e)

Chevron applied for and received ERC certificates for a series of reductions from equipment used in oil fields over the course of several years. These credits share the characteristic of asserting the requirement of the "permanence" of the emissions reductions on the basis of a statewide geographic boundary and the overall downward trend in oil and gas production in California. Below we discuss reasons why these broad claims call the validity of the credits into question, followed by an overview of additional concerns regarding three of the certificates in this group.

As the table below shows, the volume of credits ranges considerably among the five individual certificates in this group. Taken together, however, they represent 56% of the total volume of ERCs and 96% of the total volume of ERCs held by energy companies in the CO₂e bank as of February 2018. Some of the ERCs were issued in recent years, even though they are based on reductions from decades earlier.

These credits were claimed for the shutdown of two engines in the Coalinga oil field (S-1372); removal of four gas turbines in the Kern River oil field (S-4113 and S-4114, initially applied for together); shutdown of three gas turbine engines at the North Midway cogeneration facility in the Kern River oil field (S-4304); and reduced operation of four gas turbine engines at the Sycamore cogeneration facility in the Kern River Oil Field (S-4808).¹⁶

Certificates related to Chevron’s claim of a statewide geographic boundary for reductions, identified through public record requests			
ERC certificate number	Latest issue date in files provided	File requested by Earthworks (2018)	Claimed reduction in MT/Year
S-1372-24	2015	X	161
S-4113-24	2014	X	36,937
S-4114-24	2014	X	33,851
S-4304-24	2014	X	30,279
S-4808-24	2017	X	257,426
		Total	358,654

A statewide boundary is too broad

In all these cases, the District’s initial evaluation of ERC applications questioned Chevron’s claim of permanence and whether the equipment (and resulting emissions) wouldn’t just be replaced elsewhere by other operations. The District also requested documentation specific to the types of engines and processes for which the reductions were being claimed.

For example, in April 2012, the District sent a letter to Chevron about its application for ERC certificates S-4113 and S-4114 (both related to the same project), stating that the application was incomplete and asking Chevron to “provide documentation that the emissions from the electrical and thermal energy produced by the turbines are permanent, i.e., electrical and thermal energy is not being replaced by any new or existing equipment.”

In May 2013, the District sent a letter to Chevron about its application for ERC certificate S-1372, stating that additional information was needed and Chevron needed to provide “an explanation/justification of how the GHG emission reduction is permanent (i.e., not shifted to other equipment or processes) *within the boundary of the emission reduction project.*” (Emphasis added.) The District used this same language in a December 2013 letter to Chevron informing the operator of its intent to deny the application for ERC certificate S-4304.

In response to these challenges, Chevron asserted that the entire state of California was the boundary for claiming permanence. Chevron’s primary rationale for this position was California’s cap-and-trade program, which is based on the presumption of a significant reduction in GHG emissions statewide. Chevron argued that because the company participates in the program, it would not be allowed to increase its emissions anywhere in California going forward—including in the areas where the specific reductions from shutting down some engines occurred.

In all of the cases reviewed here, the District accepted Chevron’s argument and general statements about its participation in the cap-and-trade program. Shortly after receiving letters from Chevron contesting the District’s request for documentation on the permanence of the reductions, the District deemed the applications complete and subsequently issued ERC certificates.

We recognize that the cap-and-trade system is based on measuring reductions in terms of the “boundary” of a company’s operations across a broad geographic area. However, even in that context, Chevron did not provide any information to the District to substantiate the claim that the company would not at the time, or ever, increase its allowed emissions in the oil production regions where the reductions were initially claimed. As a result, the District had no basis to presume that a statewide boundary in fact results in permanent reductions in those areas.

In June 2016, the Center for Biological Diversity (CBD) expressed this concern to the District in a comprehensive comment letter on ERC certificate application S-4320-24, which (as explained above) also applies to S-4808-24. The CBD comment letter emphasized that while the cap-and-trade program's goal is a reduction in statewide emissions, operators have numerous options in which to achieve this that may have nothing to do with the reductions claimed for ERCs; in addition, the "prolific use of offsets and the 'pay to pollute' approach intrinsic to cap-and-trade systems erodes the certainty of reduced energy demand."

According to CARB's Mandatory Greenhouse Gas Reporting Database, Chevron's emissions appear to have increased in the years since the company applied for these ERC certificates on the basis of statewide permanence and the promise of statewide emission reductions. Entries in the database indicate that from 2012-2016, metric tons of total CO₂e reported by Chevron increased nearly 3 percent for all operations statewide and nearly 30 percent for operations in the San Joaquin Valley air basin.

Declining oil and gas production isn't the same as emission reductions

Chevron gave another reason for its position that all of California should serve as the boundary for determining the permanence of emission reductions: declining oil and gas production in the state.

In both a September 2013 letter in the files for S-1372, S-4113, and S-4114 and a December 2013 letter in the files for S-4304, Chevron stated that oil field production, "has declined in the past thirty years...There have been no significant new oil discoveries in California during that time and the decline is expected to continue."

To support this aspect of its statewide "boundary" claim, Chevron provided a single plot graph on California's gas production during 2009-2012 from the California Natural Gas Producers Association (in the files for S-1372) and a single plot graph on California field production of crude oil during 1985-2010 from the US Energy Information Administration (in the files for S-4113-, S-4114, S-4304, and S-4808).

These graphs are insufficient to substantiate the claim that such trends are permanent. In its comment letter on ERC certificate application S-4320, CBD correctly stated that the "oil market is highly volatile, making historic trends questionable predictors." Price volatility, new production technologies and field discoveries, and shifts in demand make markets hard to predict with certainty.

Yet even if California's overall oil production continues to decline, oil and gas companies are seeking to expand their operations. For example (as noted above), the environmental analysis conducted prior to the 2015 adoption of amendments to the Kern County zoning ordinance projects that more than 3,600 new wells could come online annually for the next 20 years, and includes a provision to fast-track permits in an effort to expand oil and gas production.¹⁷ (This policy change led several organizations to sue over the lack of environmental review and public participation.)

For Chevron's part, the company is investing heavily in enhanced oil recovery (EOR) technologies to extend the life of its oil wells. According to the company's website on EOR, these efforts "have flattened Chevron's natural decline curve for existing assets from 14 percent to less than 2 percent over the last several years," and will help achieve Chevron's stated "goal of growing production."

At the very least, in the ERC applications Chevron should have demonstrated that the company's own production declines would be permanent—rather than relying on trends for all operators across the entire state.

Nor did Chevron's ERC applications provide any information substantiating the claim that lower production volumes among operators statewide means permanent emissions reductions in an area where engines have been shut down at some of the company's wells. Emissions from different parts of the production process are highly variable depending on equipment and activities. The substances in and levels of emissions vary among processes, making it specious to equate, for example, the emissions associated with drilling or flowback with emissions from compressor engines.

Unfortunately, it appears that despite initial questions, the District encouraged Chevron's unsupported substitution of emissions reductions from specific equipment in a limited geography with statewide production declines for the purposes of claiming permanence. In November 2013, an air district engineer with the permits services division emailed a Chevron employee regarding the application for ERC S-1372, stating:

I don't see how we made the leap between the Nose Unit [in the Coalinga oil field] and the State of California as boundaries for permanence.

I realize that the Nose Unit is dried up (and to me personally - that gas can never be compressed again - anywhere in the world because it's ALL GONE –and that's as permanent as you can get)... but the District is asking: Can't someone else in California compress gas to make up the production that's lost in the Nose Unit?

Do you have a graph of natural gas decline in CA similar to the graph of oil production decline that Steve Davidson used in his project? We're ready to roll and I want to get these projects done for you.

According to California's Division of Oil, Gas, and Geothermal resources active well database, in September 2018 Chevron owned 40 producing oil and gas wells in exactly the same Section/Township/Range for which the ERC engine reductions were claimed. This appears to counter the District engineer's assertion five years prior that the Coalinga Nose Unit was already "dried up" and "all gone."

Additional questions based on ERC criteria

Our review of files for this group of Chevron certificates raised additional questions regarding the validity of three of them based on statutory requirements for ERC banking.

Certificate S-1372-24. Chevron submitted an application on February 15, 2013 for credits based on reductions from the shutdown of an engine on August 5, 2011 and another engine on April 11, 2012. In its review, the District determined that the latter shutdown wasn't eligible because it occurred after the deadline for being considered surplus. According to District Rule 2301 Section 4.5.3.1, "Greenhouse gas emission reductions that occurred at a facility subject to the CARB greenhouse gas cap and trade regulation on or after January 1, 2012 are not surplus."

In determining whether Chevron's application was timely, the District cited District Rule 2301, Section 5.5: "ERC Certificate applications for reductions shall be submitted within 180 days after the emission reduction occurs." The District stated that because Chevron had *surrendered the permits* for the two engines on August 27, 2012, the application was timely. However, the language

in Section 5.5 refers to 180 days after the *emissions reduction*, which in this case was the shutdown of engines.

In addition, the District had already eliminated the April 2012 reduction from the application because it didn't meet the requirement of being surplus. At this point, only the August 2011 reduction was in play—meaning that the application being analyzed was submitted nearly 18 months (in February 2013) after the reduction occurred.

Interestingly, in the ERC application analysis, the District also cites District Rule 2301 Section 5.5.2: “For reductions covered under Section 4.5.1 [related to GHG reductions] that occurred prior to January 19, 2012 ERC Certificate applications shall be filed with the District by July 19, 2012.” This date was not met by the application for Certificate S-1372-24 either, which Chevron filed in February 2013, seven months after the deadline stipulated in Section 5.5.2.

The District also referred to an application submitted on May 27, 2011 to assert timeliness. It is not clear from the files what this earlier application was for. However, this earlier application was not the one being analyzed by the district, and its date would have been more than two months *before the reduction occurred* in August 2011.

Certificate S-4304-24. Chevron submitted an application on July 19, 2012 for emission reductions from three gas turbine engines (GTEs). According to the District's application analysis, the last day of operation of the three GTEs was December 28, 2011.

These dates fulfilled requirements in District Rule 2301: first, the application was submitted in time for applications based on reductions prior to January 19, 2012 to be considered surplus according to Section 5.5.2; and the reduction occurred a few days before the cutoff (January 1, 2012) for greenhouse gas reductions to be considered surplus according to District Section 4.5.3.1.

However, the District's analysis states that the “GTEs were in a dormant state;” were permitted as “dormant non-compliant;” and were therefore “capable of resuming operation” even after Chevron stopped using them in December 2011. This means that the reductions were the result of a permit and/or operating condition that could be reversed—and any reductions that occurred in December 2011 weren't permanent.

In its application analysis, the District indicated that the “Permit to Operate for each turbine was surrendered when the ERC application was received on July 19, 2012. Therefore the application was submitted in a timely fashion.”

This statement indicates that Chevron and the District used the date of the permit surrender as a proxy for the date of emission reductions, which was necessary to establish the reductions as permanent. The application analysis confirms this approach, stating that the criterion of permanent has been met because “The gas turbines have been shut down and the RTOs have been surrendered.”

However, if July 19, 2012 was the “reduction” date (rather than December 28, 2011), then Chevron missed the January 1, 2012 cutoff for greenhouse gas reductions to be considered surplus according to District Rule 2301 Section 4.5.3.1.

In other words, *either* the credits were surplus because the reduction occurred in December 2011 *or* they became permanent in July 2012 when the permits were surrendered. To be compliant with District Rules, they had to be both—and yet they were not.

Certificate S-4808-24. CBD’s comment letter on S-4320-24, which applies to the derived certificate S-4808-24, emphasizes that the proposed credits were not surplus because according to District Rule 2301 Section 4.5.3.1, “Greenhouse gas emission reductions that occurred at a facility subject to the CARB greenhouse gas cap and trade regulation on or after January 1, 2012 are not surplus.”

Chevron applied for the ERC application on December 27, 2011, just a few days before this deadline. However, it isn’t clear from the ERC files when the reductions actually occurred. It therefore is possible that Chevron and the District used the date of ERC application as a proxy for the date of emission reductions for the purposes of claiming they were surplus. District and state rules clearly state that credits are determined to be surplus based on the date of *reduction* (i.e., not the date of application).

In its application, Chevron asserted that the reductions were the result of curtailed use of four gas turbine engines following a decline in production. However, as CBD pointed out, the claimed reductions didn’t become part of Chevron’s permits until June 2012, so weren’t enforceable until after the deadline for being surplus had passed. In other words, the reductions were *either* surplus *or* enforceable at the time of application. To be compliant with District Rules, they had to be both—and yet they were not.

E. Aera Energy (CO₂e)

In March 2015, the District issued ERC certificate **S-4212-24** to Aera Energy for 12,003 metric tons per year of CO₂e. This represents about 2% of the total volume of all CO₂e credits and 3% of the volume of credits held by energy companies in the bank as of February 2018.

The files we received for this certificate were identical to those received for S-2988-1, which was in the bank as of February 2018 for a small volume of VOCs held by Federal Power Avenal; the connection between these two ERC certificates isn’t clear based on the documents sent to us by the District.

Aera Energy submitted an application on July 16, 2012 for emissions reductions from the shutdown of six compressor engines and an oil heater at the company’s Lost Hills Gas Plant. Aera sought the certificate under District Rule 2301 Section 5.5.2, which states that, “For reductions covered under Section 4.5.1 that occurred prior to January 19, 2012 ERC Certificate applications shall be filed with the District by July 19, 2012.”

In its application, Aera stated that use of the equipment had been significantly curtailed starting in 2004 because operators had cut back their use of the plant for processing and the equipment permits had been surrendered in August 2007. Aera stated that the equipment had been sold around that time to Crimson Resources and removed from the site, and that Crimson would need to seek a permit to put it back into use in the future.

A statewide boundary is too broad

On August 21, 2012, a District permit services manager wrote to an Aera employee asking for more information “to demonstrate that the GHG emission reductions are permanent, and not replaced by emissions elsewhere.”

This question apparently arose because Aera had selected the entire state of California as the geographical boundary to determine the reduction's permanence. This was the same approach taken by Chevron for the group of ERC certificates detailed above; for the same reasons, we believe this calls the validity of ERC certificate S-4212-24 into question.

Aera's rationale for such a broad and general boundary was the decline of natural gas production statewide. As in the Chevron cases, the only documentation that Aera provided to substantiate this was a single plot graph showing a general downward trend in California's gas production from 2009-2012.

In its application analysis, the District appeared to accept the statewide boundary, stating that the credits could be issued "with none of the load being shifted to any other compressor engines or electric motors in California," in part because the engines were in a "depleted gas field."

However, according to California's Division of Oil, Gas, and Geothermal resources active well database, in September 2018 Aera still operated more than 50 active oil and gas wells in exactly the same Section/Township/Range in which the Lost Hills gas plant was located and for which the engine reductions were claimed.

This counters the District's rationale that the reductions couldn't be shifted because the engines occurred in a "depleted gas field." In addition, if the District viewed the condition of a specific gas field as the basis for the permanence for the claimed reductions, it is unclear why Aera had to also claim a statewide boundary.

Economic factors are not a basis to claim GHG credits

On April 17, 2014, CBD submitted a comment letter to the District regarding the proposed issuance of ERCs for Aera's engines and heater shutdown at the Lost Hills gas plant. CBD's primary comment was that issuance of the credits was not allowed under the California Environmental Quality Act (CEQA) because Aera conducted the shutdowns in 2007 for economic reasons—not for the purpose of GHG mitigation.

Aera made its reason for the equipment shutdown very clear. On January 16, 2014, a district engineer emailed an Aera employee asking why the Lost Hills gas plant was shut down; Aera responded that, "The Section 15 Gas Plant was shut down due to declining gas production in the fields surrounding the plant." Aera had also stated in its ERC application that the subsequent sale of all equipment at the plant to another company was a reason the shutdown met the ERC criterion of being permanent. In addition, Aera used 2002-2004 as the baseline for calculating emissions to obtain ERC credits because operations at the plant had already been "severely curtailed" in the two years prior to the final equipment shutdown.

Given this, the sought credits didn't meet the ERC criteria of being surplus in the sense that Aera would have removed the equipment from operation for reasons that had nothing to do with the pursuit of GHG reductions. According to the CBD letter, "CEQA lead agencies must identify *additional* feasible emissions reductions that would not already have occurred in the absence of the mitigation requirement."

In February 2014, CBD had also sent a letter to the California Air Pollution Control Officers Association (CAPCOA) explaining concerns with the District's credits listed on CAPCOA's GHG exchange. CBD's letter emphasized that a large number of credits on the exchange were based on claimed reductions that occurred because of the cessation of operations at sugar and beet

processing facilities. However, in these cases—as with Aera’s application for equipment at the Lost Hills Gas Plant—economic considerations (i.e., declining production and prices and increasing operational costs) did not comport with CAPCOA’s requirement that credits be “high quality” and “created when projects or practices are implemented specifically to reduce GHG emissions.”

In May 2013, CARB issued “Process for the Review and Approval of Compliance Offset Protocols in Support of the Cap-and-Trade Regulation.” This paper stated that, “The GHG emissions reduction must be additional, or beyond any reduction required through regulation or action that would have otherwise occurred in a conservative business-as-usual scenario.” This indicates that because Aera’s choice in 2007 to shutdown the gas plant was financial in nature, the subsequent reductions couldn’t be used to claim ERCs.

In response to CBD’s comments, the District apparently decided not to list the credits in ERC Certificate S-4212-24 on the CAPCOA exchange. However, the District ignored the question of Aera’s equipment shutdown being a financial decision, emphasizing only that CEQA allows “off-site measures, including offsets that are not otherwise required” to be used for GHG mitigation.

There are no documents in the files provided for Certificate S-4212-24 to indicate whether or not CARB or EPA commented on Aera’s application before the credits were issued.

5. Conclusions & Recommendations

As the case studies in this report demonstrate, a significant proportion of ERCs in the San Joaquin Valley Air Pollution Control District’s bank appear to be invalid.

The certificates reviewed for these case studies represent about 22% of the volume of credits in the VOC bank (as of February 2018); this may be as high as 33% if the additional certificates identified in the research for case C (Chevron VOC) are also related to the originating 1980 reduction. In addition, the certificates reviewed for the two CO₂e cases represent 58% of the volume of those credits in the bank for that pollutant (as of February 2018). The review of even more certificates and their relationships would likely raise validity questions for an even larger proportion of credits in the District’s banks.

While the details of each case and certificate vary, some clear trends emerged from our research:

- The District accepted ERC applications years after reductions actually occurred and allowed various dates to be “mixed and matched” to justify the timeliness of the applications.
- During ERC application review, the District’s interpretation of ERC rules was often loose and variable (e.g., with regard to credits having to be surplus and permanent).
- When applicants objected to the District’s conclusions regarding problems with applications (e.g., missed deadlines or inadequate emissions data), the District changed its mind and accepted the operator’s arguments.
- Despite objections from EPA and CARB about the basis for claimed reductions and the validity of the associated credits, the District issued them anyway.

In sum, there are three underlying problems with regard to the District’s ERC banks. First, despite extensive research, **it proved virtually impossible to develop a complete picture of the origin,**

trajectory, and use of ERCs. It was difficult to fully understand the connections among even the banked credits for which we had documents. The resulting opaque nature of the credits makes it very difficult to sort out whether there are many other credits that should never have been issued and therefore should now be retired, or should be further discounted before being applied to current projects.

Second, for a period of time, **the District amended its banking rules in order to allow operators to claim credits for emission reductions that happened years earlier.** This means operators were able to identify aspects of past activities in order to claim reductions for years going forward. Such a retrospective approach to emission credit banking has made it far more difficult to ensure the validity of credits currently in the bank that stem from decades-old reductions.

Importantly, this could mean that the District's ERC system has long appeared to be having a more meaningful impact on reducing air pollution than it actually has. The District may no longer be allowing very old reductions to be included in applications, but a significant proportion of credits in the current bank—which continue to be withdrawn and used for new projects—reflect such past practices.

Third, **credits in the District's bank never expire and are considered valid at time of issuance,** so they can be split and change hands endlessly. This is problematic because over time, the ERCs may be considered valid even if they no longer meet the legally required criteria of being real, permanent, quantifiable, surplus, and enforceable. Even credits that would never be issued today remain in emission credit banks and can be used for new projects.

As a result of these findings, we strongly recommend the following two actions.

1. CARB should audit the San Joaquin Valley Air District ERC system

There is precedent for an audit

In light of the documentation presented in this report—and in the context of severe and persistent air quality problems across the San Joaquin Valley region—CARB should conduct an audit of whether the ERCs in the bank are valid, or are instead facilitating the permitting and expansion of operations that would otherwise not be allowed. Our research has paved the way, but more resources and emissions-related expertise are necessary for a full audit.

An audit is necessary in light of the possibility that pollution from projects that relied on invalid credits for approval hasn't in actuality been offset—or that older credits in the bank are insufficient to counter the additive effects of new pollution.

In July 1994, under a cooperative agreement, CARB, EPA, and the District conducted a review of 110 District ERC banking actions. The preliminary draft of this review indicated that significant concerns with the District's banking transactions existed over 20 years ago. These concerns included a faster rate of banking than in other California air districts; a large percentage of credits based on pre-1988 reductions; and the District changing its rules to allow for the banking of pre-1983 credits.

Unfortunately, it wasn't possible to glean additional information from this joint review, nor to fully understand EPA and CARB's position on questions related to older credits, filing periods, and other concerns. The files provided in response to our records request (related to Case C on the VOC credits held by Chevron) included only five non-consecutive pages of a draft report; the page

numbers indicated there were many more pages that were not provided.

We subsequently submitted a public records request specifically for the final report on the joint review. In response, the District Public Records Request Coordinator stated that, “A search of the District’s databases has returned no records on file. It is suggested to contact CA Air Resources Board via CARB’s public records request.” A records request for the 1994 joint audit filed with CARB had the same result; the agency’s Public Records Act Coordinator stated that, “The search for responsive records is complete and no responsive documents were located by CARB staff.”

In 2005, CARB issued the “San Joaquin Valley Air Pollution Control District Program Review.” This report examined several critical issues, such as permitting, air monitoring, and compliance, but did not delve into the ERC banking program. However, CARB did cite an instance in which the District retroactively changed a permit requirement for an air monitoring system—even though that system was one of the reasons the company had received an ERC certificate—and concluded that the District needed to ensure that initial permit requirements are not weakened at later dates.

Equivalency should be questioned

CARB should include equivalency determinations in an audit given that many of the credits in the District’s ERC bank are potentially invalid. To date, the District appears to have demonstrated “equivalency” of its required offsets—issued under a “time of issuance” premise—to CARB’s satisfaction.

However, the only way to ensure that this is indeed the case is to audit the District’s equivalency reports, in particular with regard to the adequacy of discounting for invalid credits. Since a large proportion of the credits in the District’s ERC banks are likely invalid, the validity of the equivalency determinations that are based on those credits should also be examined.

In recent years, legal teams at Earthjustice and the Center for Biological Diversity have submitted detailed comments on several ERC permit applications. Unfortunately, the District responded to these comments merely by reiterating that all credits in the District’s ERC bank are valid and that the “equivalency” reporting to CARB (discussed above) ensures that the actual offsets meet what would have been required under the “time of use” premise in federal law.

Unfortunately, the equivalency reports that the District makes available to the public show only total numbers for federal New Source Review and District credits, with no indication of how those results were calculated. In addition, analyzing the underlying data would require considerable technical expertise.

If CARB were to determine that some of the credits in the District’s ERC bank are indeed invalid, or finds that the credits on which the equivalency reports are based are invalid, the District would have to reduce the volume of credits available to operators. Section 7.4.1.1 of District Rule 2201 requires that if the District fails to show equivalency with pollution offsets required by federal law, “the District shall retire additional creditable emission reductions that have not been used as offsets and have been banked or have been generated as a result of permitting actions...”

In turn, the District may have to deny some projects due to a lack of valid credits to support them. It is also possible that fewer ERCs would be available in the future, and existing valid credits would become more valuable.

At the same time, such shifts could encourage additional voluntary pollution reductions. Fewer available credits would give companies an even greater incentive to install and maintain the most effective emissions control technologies possible. Most significantly, ERC applicants would be forced to tailor projects—and the District to determine their approval—based on the limitations of operating in a region with severely compromised air quality and a persistent “extreme non-attainment” status for pollutants known to harm health.

More stringent air pollution controls and limits would also be consistent with California’s ambitious goals to improve air quality and combat climate change. Recently, the District assumed responsibility for the regional implementation of the state’s 2017 Greenhouse Gas Emission Standard for Crude Oil and Natural Gas Facilities, adopted by CARB to regulate and reduce methane from the industry.¹⁸ This commitment will require even greater oversight of these pollution sources, and should include review of the validity of the credits in the District’s CO₂e bank held by energy companies.

2. CARB should not allow ERCs to last forever

As detailed in the case studies for this report, many of the potentially invalid credits are decades old. This is an outcome of several factors, not least of which is the fact that the District’s ERC system does not include expiration dates in issued certificates. In addition, the impact of older credits on actual air quality conditions is severely limited because the District doesn’t discount the volume of emissions represented by older ERCs at the time they are used.

CARB should require the San Joaquin Valley Air District to discount older credits at the time of use, not just the time of issuance. In addition all ERCs issued across California should include expiration dates.

Other states have done so for their ERC programs, setting limits on how much time can pass between the reduction and when an operator claims it, and effectively limiting the period during which credits can be transferred among different parties.

These examples include major oil and gas states, such as:

- Texas, which limits credits to 60 months (five years) after the time of reductions that occurred after January 2001.¹⁹
- Pennsylvania, which limits credits to ten years from the time of reduction.²⁰
- Louisiana limits the use of credits to ten years from the date of emission reduction.²¹
- Colorado’s ERC program, which requires that credits expire after seven years from the date of certification.²²

¹ USEPA, “Health and environmental effects of particulate matter (PM), <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>; and “Health effects of ozone pollution,” <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>.

² USEPA, Fact Sheet, “Proposed Rule for the San Joaquin Valley, Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standards.” May 3, 2016.

³ San Joaquin Valley Air Pollution Control District, “About the District,” www.valleyair.org.

⁴ Jonathan London, Ganlin Huang, and Tara Zagofsky. *Land of Risk, Land of Opportunity: Cumulative Environmental Vulnerabilities in California’s San Joaquin Valley*. UC Davis Center for Regional Change, 2011.

⁵ Center for Biological Diversity press release, “Lawsuit seeks to safeguard Kern communities from flawed oil drilling amendment,” December 10, 2015, https://www.biologicaldiversity.org/news/press_releases/2015/oil-and-gas-12-10-2015.html.

⁶ ICF Incorporated and USEPA, Emission Reduction Banking Manual, September 1980.

⁷ CARB, “New Source Review-Emission Reduction Credit Offsets,” <https://www.arb.ca.gov/nsr/erco/erco.htm>; and “New Source Review Permitting Programs, www.arb.ca.gov/nsr/nsr.htm#background.

⁸ California Code, Health and Safety Code, Division 26, Chapter 6, Section 40709.5.

⁹ San Joaquin Valley Unified Air Pollution Control District, *Current District Rules and Regulations*, <http://www.valleyair.org/rules/1ruleslist.htm>.

¹⁰ Affected Pollutants subject to ERCs are those for which an ambient air quality standard has been established and the precursors to such pollutants, and which is regulated under the CAA or the California Health and Safety Code, including VOC, NO_x, SO_x, PM₁₀, and CO. In addition, greenhouse gas emissions (GHG) reductions that occurred on or after January 1, 2005 are subject to ERCs (Rule 2301, Sec. 4.5.1). GHGs are identified as CO₂, CH₄, N₂O, HFCs, PFCs and SF₆. Table 1 in Rule 2301 provides the conversion factors between GHGs and CO₂e.

¹¹ San Joaquin Valley Unified Air Pollution Control District, “Annual Offset Equivalency Demonstration,” Draft Staff Report, April 2016, http://www.valleyair.org/workshops/postings/2016/05-11-16_OEI/DRAFT-Staff-Report.pdf.

¹² San Joaquin Valley Unified Air Pollution Control District, “Annual Offset Equivalency Demonstration,” Draft Staff Report, April 2016, http://www.valleyair.org/workshops/postings/2016/05-11-16_OEI/DRAFT-Staff-Report.pdf.

¹³ Nadia Steinzor, *Permitted to Pollute*, Earthworks 2017, https://earthworks.org/publications/permitted_to_pollute/.

¹⁴ For ERC S-4678, the air district provided a different set of documents, none of which included information on the originating reduction. However, the ERC is for the Alon Bakersfield Refinery and the language in the certificate is for the same activities as the 1983 equipment shutdowns. In addition, an Authority to Construct document from January 2012 included in the S-4678 files states, “ERC certificate number S-3467-1 (or a certificate split from this certificate) shall be used to provide the required offsets.” Based on this, we requested records for S-3467 and received documents that are for the 1983 reductions.

¹⁵ An ERC Withdrawal and Reissue Application Review form in the files received from the air district indicated that this certificate was derived from S 3869-1, which Earthjustice had reviewed previously. Earthworks requested the files for S-3869 as well, in order to confirm the relationship.

¹⁶ In response to our request for files for ERC certificate S-4808-24, we received files related to S-4320-24. We therefore presume that S-4808-24 (for 257,426 MT/yr) was split from the earlier S-4320-24 (for 355,338 MT/yr).

¹⁷ Center for Biological Diversity press release, “Lawsuit seeks to safeguard Kern communities from flawed oil drilling amendment,” December 10, 2015, https://www.biologicaldiversity.org/news/press_releases/2015/oil-and-gas-12-10-2015.html.

¹⁸ San Joaquin Valley Air Pollution Control District, “Registration for State Regulation to Reduce Methane Emissions from Oil and Gas Operations,” <http://www.valleyair.org/busind/pto/ptoforms/oil-and-gas-registration.htm>.

¹⁹ Texas Administrative Code, §101.309, Emission Credit Banking and Trading.

²⁰ Pennsylvania State Code, Title 25, §127.206, ERC General Requirements.

²¹ Louisiana State Code, Title 33, Part III, §607(B), Determination of Creditable Emissions Reductions.

²² Colorado Department of Public Health and Environment, Regulation 3, Part A, Section V.