Appendix D:

15-Day Comment Letters

Comments received during the 15-day comment period,

February 3, 2017 – February 21, 2017

OG-F-1-CC

CITY OF CULVER CITY

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VICE MAYOR

COUNCIL MEMBERS
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February 17, 2017

Elizabeth Scheehle
Branch Chief, Oil and Gas and GHG Mitigation Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA, 95814

Subject: Revised Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

Dear Ms. Scheehle:

The City of Culver City supports reasonable environmental regulations aimed at enhancing air quality. We seek to improve air quality in Culver City and the surrounding areas, and we want to ensure that air quality and public health are protected during oil and gas drilling. As such, the City of Culver City strongly supports the proposed rule to regulate greenhouse gas emissions from oil and gas facilities in California. We would like to thank the California Air Resources Board staff for being a national leader in promoting clean air. We especially value the provisions that:

- Require a quarterly baseline inspection requirement (without a step-down).
- Specify the use of continuous ambient air quality monitoring along the fencelines of natural gas storage facilities.
- Prioritize natural gas capture over combustion requirements.

These policies will result in the detection of more leaks, better maintenance, cleaner air, and improved public health.

F-1-1

We urge you to hasten the timeframe for adopting and implementing the rule. In this draft, implementation is delayed at least a year from when it was initially proposed. Clean air cannot wait. We also urge you to create a detailed plan for the CARB and local air pollution districts to implement the new regulations, including periodic audits of newly regulated faciltes. With these improvements, CARB will ensure California remains a world leader in the protection of clean air and the reduction of greenhouse gas emissions.

F-1-2

If you have any questions, or wish to discuss this further, please contact Jesse Mays, Assistant to the City Manager, at (310) 253-6009.

Sincerely,

Jim B. Clarke
Mayor

cc: The Honorable Members of the City Council
John M. Nachbar, City Manager

OG-F-2-KA

KAIROS AEROSPACE

February 17, 2017

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95814

Kairos Aerospace Comments on the Modified Text for the Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

We at Kairos Aerospace commend the ARB on its commitment to curb methane emissions from the oil and gas industry. The proposed regulation is one of the strongest, with the broadest applicability, in the nation. We would, however, respectfully recommend a modification to the rule that would achieve similar methane reductions at a lower cost to the regulated industry. We focus our comments on LDAR for fugitive methane emissions.

The fugitive methane emissions detection technology landscape is highly dynamic, with innovation happening in real time. Innovation in technology invariably leads to better outcomes at lower costs. However, the current draft is prescriptive in terms of LDAR technology, sacrificing the opportunity for commercialization of new technologies that could both improve overall environmental outcomes and lower costs. The inflexible nature of the LDAR regulation also impacts different operators differently, as significant variations can exist in operators' facilities, emissions, and costs of control.

ARB should allow operators to seek approval to allow alternative compliance pathways, as long as the alternative is at least as effective in reducing methane emissions volume as quarterly OGI-based LDAR. ARB should also establish clear criteria by which the equivalence of alternative programs will be judged, and ensure that the approval process is transparent and open to public participation. Only by allowing space for new and innovative technologies can ARB ensure that it is achieving its goal of maximum environmental impact at minimal cost.

F-2-1

Many Options Exist, and More Are in Development

As ARB knows, there is already a wide range of proven technologies and implementations on the market, with different detection limits, frequencies, and underlying science. ARB has undertaken projects with a variety of instruments – identifying methane hot-spots, implementing a tiered methane observation system, using aerial surveys for Aliso Canyon-related monitoring. [1,2] ARB recently posted a research report, "Enhanced Inspection & Maintenance for GHG and VOCs at Upstream Facilities,"[3] that evaluates the effectiveness of six different instruments and finds the three remote sensing instruments (RMLD, IR camera, and Picarro Surveyor) to be similar in their

[1] "California Methane Monitoring for Climate Action and Public Safety," presented by Riley Duren. June 2016. https://www.arb.ca.gov/cc/oil-gas/Miller_2016-06-14%20-%20Duren_methane_hot_spots.pdf
[2] "Airborne Estimation of Surface Emissions," presented by Stephen Conley. June 2016. https://www.arb.ca.gov/cc/oil-gas/Conley_Presentation_ARB%20%281%29.pdf
[3] "Air Resources Board RFP No. 13-414: Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities – Final (Revised)," prepared by Sage ATC Environmental Consulting LLC for the California Air Resources Board. December 2016. https://www.arb.ca.gov/cc/oil-gas/sage_i&m_ghg_voc_dec2016.pdf

ability to detect emissions. ARB is also a part of the ITRC's Evaluation of Innovative Methane Detection Technologies team, which is working to evaluate and compare different technologies, and has participated in several workshops and conferences discussing ways to address fugitive methane emissions. These efforts indicate to us that ARB is aware of the plethora of options, and the ways they can be combined to yield better and more cost-effective results, yet the regulation itself does not reflect this understanding.

In addition to these existing options, there are several innovative technologies at different points along the spectrum from concept to commercialization. These options all have a different set of monitoring frequencies and technical capabilities. On one end of the spectrum there are technologies still in development, for example in ARPA-E's MONITOR program and EDF's Methane Detectors Challenge. On the other end, for example, there is Kairos Aerospace, which has patented and newly commercialized an aerial-based methane imaging system called LeakSurveyor that leads to greater methane reduction at a lower cost than the OGI required by the current draft regulation. Our system allows operators to conduct low-cost, high-frequency surveys of their fields to find and fix large emitters faster. We image methane in false color from fixed-wing aircraft, similar to NASA JPL's AVIRIS system, combined with simultaneous optical imagery, to produce georeferenced optical maps with methane plumes pinpointed and sized. Once we screen a large area and identify the emission sources, targeted ground crews follow up to identify and repair the specific component that is leaking. This approach results in a lower overall cost to operators, as compared to sending ground crews to every site. And more frequent surveys for large leaks result in a greater environmental impact than infrequent ground surveys.

It is, of course, critical that any alternative LDAR program achieves at least the same environmental impact as the LDAR program laid out in the regulation. Comparing different LDAR programs is possible through computer models, combined with real-world demonstrations.

Equivalent Environmental Impact is the Important Thing

At a basic level, the emission control effectiveness of any LDAR program is a function of both the ability of the technology used to detect leaks and the frequency of monitoring. An equivalent program may require more frequent monitoring, if its mass rate threshold for detecting leaks is higher, because higher mass emissions reductions from large leaks found earlier are offset to some degree by smaller leaks which go undetected. Indeed, this is reasoning put forth by the EPA in 2006 in a proposed amendment to allow OGI as an alternative work practice to Method 21,[4] and extends easily to a range of monitoring instruments. This reasoning is also used in a 2004 American Petroleum Institute report[5], which states:

> "Lower leak definitions for repair do not necessarily lead to better emissions control since, as the leak level is decreased, few additional leaking components are added to the repair group and these contribute very little to the overall mass emissions. The Smart LDAR

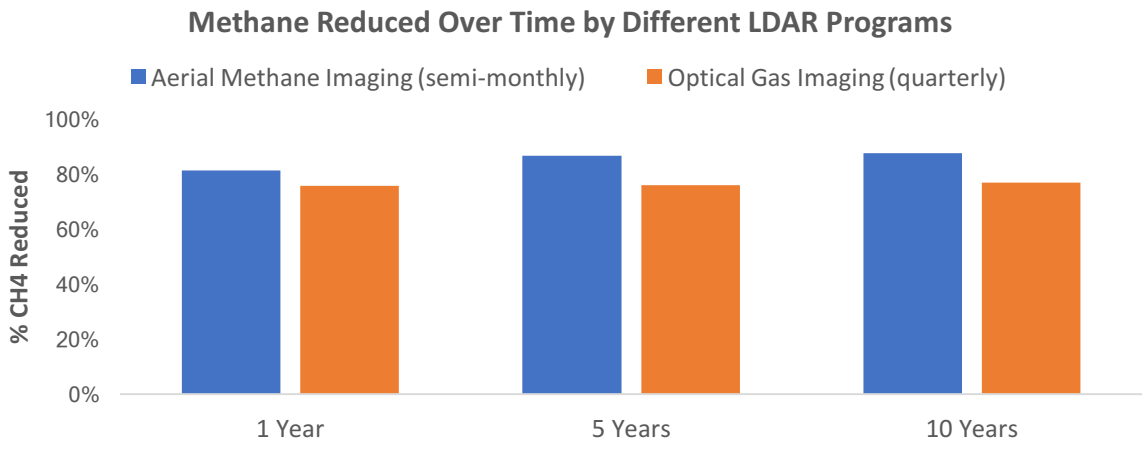
[4] EPA Alternative Work Practice to Detect Leaks from Equipment, 71 FR 17401 (April 6, 2006) (to be codified at 40 CFR 60).

[5] "Smart Leak Detection and Repair for Control of Fugitive Emissions," prepared by ICF International for American Petroleum Institute. June 2004.

> approach…focuses on identifying and repairing the highest leakers since these are the source of almost all the mass emissions. Equivalence is obtained by more quickly finding and repairing these large leaks, which more than offsets the emission rates from components with low ppmv readings that leak for longer periods. The use of optical imaging could provide a more cost effective approach to more quickly find the high leakers."

Using a computer model (along with laboratory testing and field validation of instruments) solves many of the real-world difficulties of comparing the equivalency of different technologies in the field over time. This approach was also supported by the EPA in its 2006 amendment mentioned above, and the API in its 2004 report, indicating broad stakeholder agreement on its usefulness and validity. It is therefore also the approach we at Kairos use to arrive at our emissions reduction estimates. We use an open-source model called the Fugitive Emissions Abatement Simulation Testbed (or FEAST).[6] This model simulates natural gas leakage over time under different LDAR programs. We used a power-law distribution[7] fitted to the 2011 Fort Worth Air Quality Survey[8] data to generate the leaks from the gas field. We then modeled the average reduction (relative to a null scenario) in methane emissions with quarterly Optical Gas Imaging surveys and semi-monthly Aerial Methane Imaging surveys (which in this case is Kairos Aerospace's LeakSurveyor technology with a minimum detection limit of 120 g/hr or 500 ppm-m).

We find that semi-monthly LeakSurveyor surveys result in 87% reduction of methane emitted and quarterly OGI surveys result in 76% reduction over a null scenario[9] over five years.



[6] FEAST Documentation: https://pangea.stanford.edu/researchgroups/eao/sites/default/files/FEASTDocumentation_0.pdf

[7] See Appendix B.

[8] City of Fort Worth Natural Gas Air Quality Study. Eastern Research Group et al. for the City of Fort Worth, 2011. URL: http://fortworthtexas.gov/uploadedFiles/Gas_Wells/AirQualityStudy_final.pdf

[9] The null scenario is modeled as operators randomly noticing and fixing leaks in the normal course of operations, with no explicit LDAR program.

Therefore, LeakSurveyor would be a more effective LDAR program than OGI, which is an approved technology in the current regulatory draft. **(**See Appendix A for more detail on LeakSurveyor's capabilities, and Appendix B for more detail on FEAST.) Incidentally, the LeakSurveyor program is also cheaper than the OGI program, despite the increased frequency of surveys, since each LeakSurveyor survey is an order of magnitude less expensive than a conventional OGI survey. LeakSurveyor also offers leak rate quantification, direct imaging and georeferenced results, and an auditable record of surveys and results.

The same FEAST model can be used to compare other technologies as well, by adding new modules to the program. Thus an operator can choose the most cost-effective LDAR program based on their own needs and constraints, and ARB can estimate whether the proposed alternative compliance program will reduce emissions from an operator at least as much as quarterly OGI, ultimately resulting in more efficient regulation.

Conclusion

In LDAR, the current ARB draft actually falls behind EPA's NSPS OOOOa regulations, where instead it should be an opportunity for ARB to lead the EPA. California is home to Silicon Valley innovation and a long-time leader in air quality regulation, yet these rules do not leave space for innovation. NSPS OOOOa allows an alternative compliance pathway for LDAR of new or modified well sites and compressor stations, but the lack of criteria for judging equivalence is unclear and has led to confusion from many operators, and the demonstration period is prohibitively long and costly. ARB's oil and gas regulation applies to both new and existing sources, making LDAR even more cost prohibitive to operators, yet does not include an alternative compliance pathway option.

F-2-2

We strongly urge the agency to adopt an alternative compliance pathway that is robust, minimally prescriptive, and specifically creates an entry point for demonstrated methane detecting solutions. Such an approach will help catalyze a race to the top in technology, reduce costs for the regulated community, and boost environmental outcomes.

We greatly appreciate the opportunity to be part of the dialogue on GHG standards in California, and look forward to working with ARB and industry toward our common goals. We are happy to answer questions or discuss anything in these comments in greater detail.

Steven Deiker, Chief Executive Officer
Kairos Aerospace
777 Cuesta Drive, Suite 202
Mountain View, CA 94040

KAIROS AEROSPACE

Appendix A: LeakSurveyor (Aerial Methane Imaging)

LeakSurveyor is a new methane detection service that combines an aerial methane detection instrument with a proprietary data analysis pipeline. Our goal is to provide customers with clear, actionable information about where, and how big, their methane emissions are. LeakSurveyor is designed to survey large areas frequently at an affordable cost – a single instrument can cover 30,000 acres in one day. Once an emission is detected aerially, the customer sends a directed ground crew to identify and repair the particular component that is leaking. This hybrid approach – frequent aerial surveys combined with targeted follow-up inspections – saves a company time and money, and saves more methane than sending ground crews to every site. This is because:

1) Sources are often remote and most are not emitting significant amounts of methane, so sending crews to each one wastes the time of engineers at a meaningful cost.
2) Finding a single large emission a day earlier can be more impactful than finding hundreds of small emissions, so time is best spent looking for the large emissions.
3) We can frequently survey unsafe- or difficult-to-monitor components that would otherwise rarely be surveyed, and recover gas that would otherwise go undetected by ground-based monitoring methods for long periods of time.

Ultimately, LeakSurveyor stops the large emitters that cause most of the environmental and economic damage earlier, for a greater cumulative impact.

Highly Specific Methane Imaging

The LeakSurveyor instrument consists of three parts: 1) an optical camera for visual verification of sites, 2) a GPS and inertial monitoring unit to record precise positions, and 3) a patented spectrometer that detects methane. The spectrometer is sensitive to infrared sunlight that reflects off the ground. When this light passes through a plume of methane, the methane absorbs certain frequencies and lets others pass through. The spectrometer identifies those absorption features, and associates them with a particular position on the ground. This makes our system highly specific for methane, as it is the only molecule that leaves this particular signature on the spectrum, and avoids signal confusion from other gases like propane. It is also specific to location; the resolution on the ground (~20 feet) is well-matched to most gas plumes. As a result, we produce direct images of plumes, overlaid on simultaneously captured optical imagery. After reviewing the specifications and capabilities of other categories of methane sensing technologies we believe LeakSurveyor belongs to a new class of instrument, which we have been calling “Aerial Methane Imagery.”

LeakSurveyor’s resolution allows us to distinguish between separate point sources of methane and differentiates us from air-sampling techniques. In the image below, for example, we separate the methane plume from natural gas production from the methane plume from the flooded rice field nearby, and would only report the former. What’s more, we distinguish between the location and concentration of separate emissions within a single site, such that the ground crew following up on the emissions can go directly to a specific area to identify and repair a specific component.

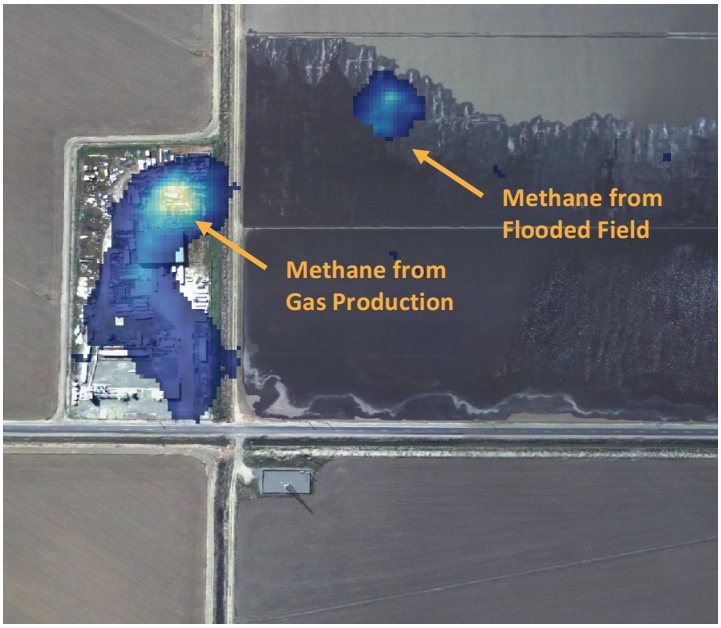


Figure 1: LeakSurveyor's direct point source methane imaging separates the gas production-related emission (on the left) from the nearby flooded field-related emission (on the right). This allows distinct attribution of methane between different sources.

Clear, Actionable, Prioritized Results

The image below is an example of the results we provide. Methane plumes, highlighted in blue, are overlaid on optical imagery of a survey area about a mile wide with ten separate well pads.

Figure 2: Sample LeakSurveyor false color image; blue areas represent methane plumes.

The minimum detection threshold for LeakSurveyor in controlled settings is 500 ppm-m. With a 5 mph wind, this corresponds to an emission rate of 10 Mscf/day (that is, 8 kg/hr, or 2 g/s.) Our conservative real-world detection limit is 2500 ppm-m, which corresponds to an emission rate of 50 Mscf/day. In the real world, LeakSurveyor detects a statistical fraction of emissions below 50 Mscf/day. As we continue to collect vast quantities of data – we have recently set up partnerships to do so with a number of operators, non-profits, and government agencies – we will continue to refine the "probability of detection" curve we have built that shows the probability of detecting emissions as a function of the emission rate and of external conditions like weather and terrain.

LeakSurveyor distinguishes between different sizes of methane emissions with a precision within ±25%; in Figure 4 above, areas of dark blue represent lower concentrations, ranging towards lighter areas which represent higher concentrations. Our ability to identify, over a wide area, the size of emissions allows prioritization of repair work to stop the biggest emissions fastest for greater impact on the environment, and improves on the quality of data on which academic research and policy decisions are currently based. Figure 3 below shows a controlled methane release where we simultaneously operated LeakSurveyor from an airplane flying at 3,000 ft., a FLIR GasFinder 320 IR camera pointed at the release valve from 50 ft. away, and a Method 21 analyzer held 20 ft. from the valve. The LeakSurveyor results show a clear relationship between the methane release size and our signal size. As with our minimum detection threshold, we continue to refine our quantification ability as we collect more LeakSurveyor data combined with ground truth measurements. We also continue to conduct calibration studies with controlled releases, often flying a controlled release at the same time as we are flying operators' fields.

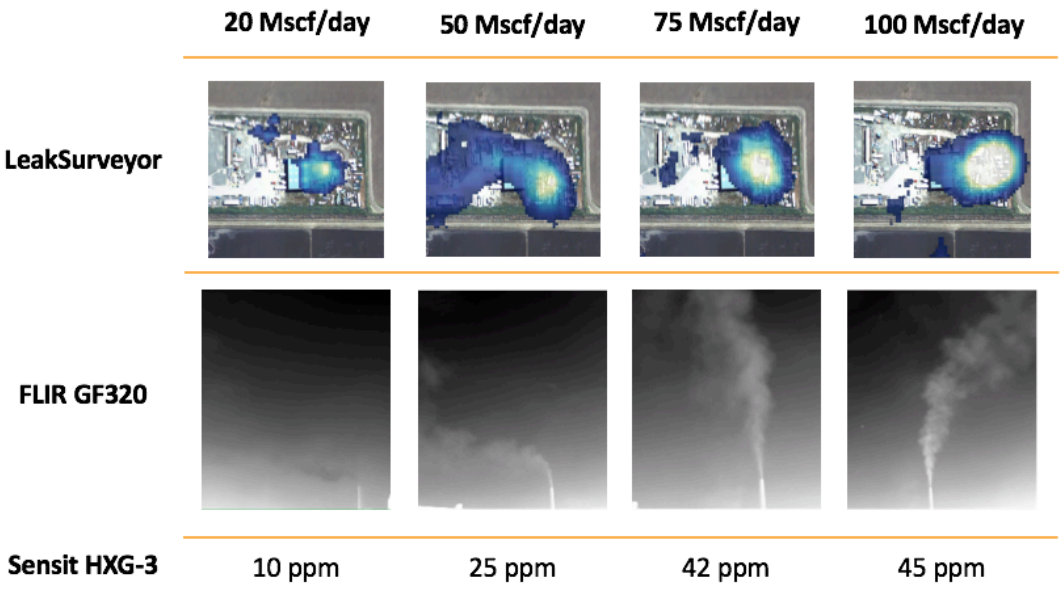


Figure 3: Side-by-side comparison of emissions monitoring technology results during a controlled methane release. LeakSurveyor is able to distinguish between different leak sizes.

KAIROS AEROSPACE

Faster, Cheaper, Safer

The LeakSurveyor instrument is easily mounted on light aircraft and flown at standard general aviation altitudes of 3,000 ft., making it orders of magnitude faster than a ground crew and able to access terrain that would be difficult or dangerous to reach by car. LeakSurveyor is also faster and safer than helicopters. It can fly longer and farther than commercially available drones, which rarely have battery lives of more than 30 minutes, limiting their flight range and increasing their cost. Drones are also subject to complex and shifting state-by-state regulatory issues.

Figure 4: LeakSurveyor covers orders of magnitude more area than a ground crew, allowing frequent revisits.

Plug and Play Service

We operate the pod as a service, so there is no training, calibration, or instrument maintenance or repairs needed on the part of our customers. We eliminate the possibility of operator error or variation, as all protocols, from pre-survey calibration to post-survey data quality assurance, are performed by highly trained Kairos engineers or automatically through our cloud-based data pipeline. Results are thus directly comparable from flight to flight. Each pod attaches to a plane with no tools, wiring, or modifications required (see image below), which means we do not need FAA approval.

Figure 5: Pod attaches to the wing strut of light aircraft with no tools, modifications, or wiring connections.

Unique Software Capability, Continuous Improvement

Our proprietary software and data analysis capabilities are unique in the market. Our modern "big data" analytics pipeline immediately, automatically, and uniformly processes the data we collect into usable form – whether that form is an individual report that integrates with existing infrastructure management software used by operators, or a mainstream tool like Google Earth. Our process reduces the possibility of user error in interpreting results, lowers compliance costs, and increases reporting accuracy. An additional benefit is that the accuracy and correctness of each new survey will be improved by the overall analysis of all the data we have ever collected, as results taken over time are used as a feedback loop to improve the LeakSurveyor service.

No Capital Expenditures on Equipment or Training

Because we operate LeakSurveyor as a service, there are no upfront expenditures on capital (e.g. instruments or trucks) or labor (e.g. training or hiring). This means that starting up an LDAR program can yield savings for a company immediately. It also gives companies flexibility in crafting an LDAR program that works for their particular needs. For example, a company that uses an IR camera for one area may want to use LeakSurveyor to monitor another hard-to-reach area. A company that has only enough labor capacity to conduct semiannual surveys can increase its monitoring frequency to quarterly or even monthly with LeakSurveyor.

Lower Cost Per Survey Than Alternatives

LeakSurveyor also reduces costs per survey because we have greatly reduced the need for on-the-ground surveyors, the most significant cost in a traditional program, whether an operator conducts his own surveys or hires a third party. As a quick back-of-the-envelope comparison, Carbon Limits[10] estimated that it costs $600 to hire a contractor to survey a single well site, whereas LeakSurveyor costs $100 per well site. Realistically, most of the operators we have spoken to report that an IR camera contractor costs more than $600 per well site, particularly as the companies still need to send in-house engineers to accompany the contractors on-site; anecdotally, the cost has also increased due to increased demand and a shortage of both OGI cameras and qualified contractors. We have also run cost analyses using assumptions from other sources, for various sizes of producer and for other monitoring options (i.e. owning an IR camera versus hiring a contractor, using a Method 21 analyzer instead of an OGI).

Simplification of Reporting and Recordkeeping

In addition to no upfront costs and low ongoing costs, our post-survey costs are lower as well – our software and secure data pipeline streamlines necessary activities like recordkeeping and reporting for compliance purposes, as well as more in-depth analysis. We generate automatic reports regarding data quality and completeness during each survey and for the entirety of the survey. All of our raw data and metadata is stored in the cloud indefinitely for recordkeeping and time-series analyses for operators. And our automated survey greatly reduces the time it takes to record component locations and IDs for any fugitive emissions detected.

[10] "Quantifying Cost-effectiveness of Systematic Leak Detection and Repair Programs Using Infrared Cameras," Carbon Limits SA. March 2014. URL: http://www.catf.us/resources/publications/files/Carbon_Limits_LDAR.pdf

Appendix B: FEAST, the Fugitive Emissions Abatement Simulation Testbed

For an in-depth description of the FEAST model, please see the documentation online at https://pangea.stanford.edu/researchgroups/eao/sites/default/files/FEASTDocumentation_0.pdf. This appendix is meant to serve as a basic summary of the model's structure and how we used it to model the efficacy of different LDAR programs.

As described in the documentation: "FEAST simulates the leakage from a natural gas field as a function of time under different LDAR programs. It defines an LDAR program as a technology used for leak detection, the implementation of the detection technology, and the leak repair process. Based on a plume simulation, FEAST applies detection criteria for several LDAR methods, identifies the leaks that will be detected under each LDAR program, and removes them from the set of leaks at the appropriate time. The total gas saved by the LDAR program is calculated as the time-integrated difference between the leakage in a null scenario and a scenario with the applied LDAR program. The null scenario represents the status quo: it allows a steady leakage rate through time as new leaks are produced and old leaks are repaired randomly without an explicit LDAR program."

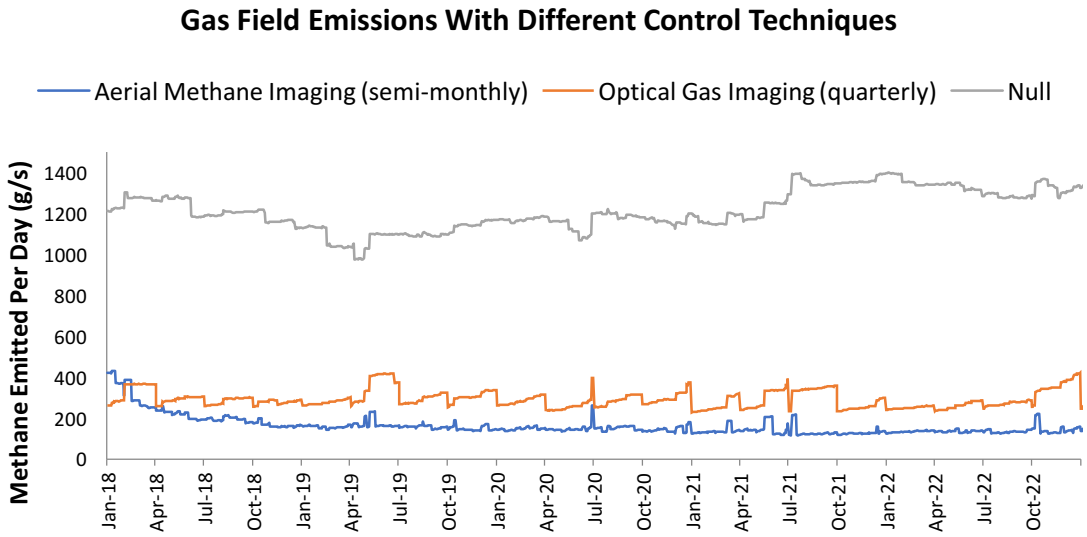
The input data for FEAST include field parameters (number of wells, number of components per well, average distance between wells), a dataset of leak rates, atmosphere data in order to simulate the gas plumes (measured wind speeds and directions), and LDAR parameters (detection criteria, time to find leaks).

Leak distribution: The FWAQS study sampled 375 well sites one time, which represents a relatively small sample size unlikely to capture the full range of extreme results. In order to account for super-emitters, we extended the FWAQS data with a power law distribution, which is usually used to model data whose frequency of an event varies as a power of some attribute of that event – in this case the event is a leak and the attribute is leak size. The power law distribution we used has an upper bound of 500 Mscf/day (meaning the simulation never generates a leak larger than that.) We chose -1.75 for the power, or exponent, in the power law formula $y = ax^k$, to match the national top-down estimates of petroleum-sector methane emissions. If the exponent is more negative, excessive numbers of tiny leaks are required to produce the methane from the top-down estimates. This results in many more leaks than wells, such that the typical well would have three to five leaks. This is out of sync with reality, as many wells and facilities are not leaking at all. If the exponent is less negative (closer to zero), then more of the methane comes from truly enormous emissions. We don't have enough data to support that, although it could still be true.

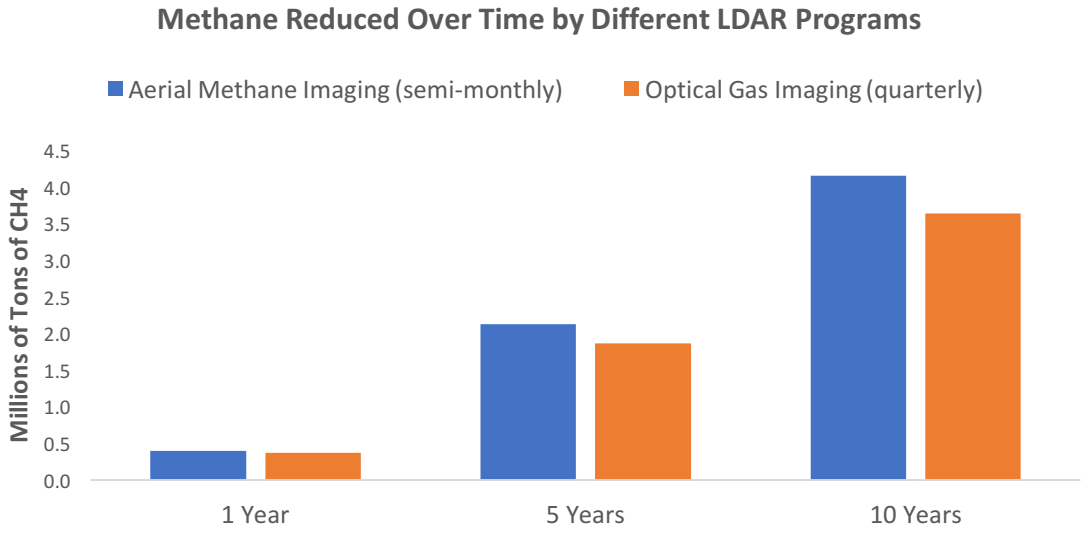
LeakSurveyor: We added a module for LeakSurveyor, which is an implementation of a method we have termed Aerial Methane Imaging. We formed our expectations for performance based on extensive calibration tests, both in a controlled setting – where a controlled methane release was gradually turned up while a LeakSurveyor plane flew back and forth overhead and an IR camera operator and a Method 21 instrument operator stood on the ground and recorded images and readings for comparison – and in the real world, where we collected results for an operator and then performed ground truth measurements to validate our field results. This real-

world performance was then added to the FEAST simulation with the consultation of one of the original authors of the code to ensure correct integration.

The chart below shows one simulation of the FEAST model over five years (labeled as January 2018-December 2022.) The blue line represents total emissions from the 1,100 wells in the natural gas field with a semi-monthly Aerial Methane Imaging program, which in this case is LeakSurveyor. The red line represents total emissions from the natural gas field with a quarterly OGI program. The grey line represents total emissions from the field in the null case, where leaks are randomly fixed in the normal course of operations. Over the time represented, the LeakSurveyor program reduces methane from the null scenario by 87%, and OGI reduces methane by 76%.



The chart below shows the cumulative volume of methane reduced over time relative to the null scenario.



OG-F-3-CIPA

California Independent Petroleum Association
1001 K Street, 6th Floor
Sacramento, CA 95814
Phone: (916) 447-1177
Fax: (916) 447-1144

Comments of the California Independent Petroleum Association
on Attachment 1 – Proposed Regulatory Order for the
Proposed Greenhouse Gas Emission
Standards for Crude Oil and Natural Gas Facilities

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, CA 95814

February 21, 2017

Via electronic submittal to: https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=oilandgas2016&comm_period=1

The California Independent Petroleum Association (CIPA) appreciates the efforts staff has made to understand the technical and policy issues surrounding this rulemaking. CIPA submits the following comments for your consideration.

The mission of CIPA is to promote greater understanding and awareness of the unique nature of California's independent oil and natural gas producer and the market place in which he or she operates; highlight the economic contributions made by California independents to local, state and national economies; foster the efficient utilization of California's petroleum resources; promote a balanced approach to resource development and environmental protection and improve business conditions for members of our industry.

CIPA has been working diligently with its members to provide technically-sound, constructive feedback on the proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas (Regulation). The following represents our continuing effort to provide targeted input in an attempt to improve implementation of the regulation consistent with our members' interests and the overarching goals of the Air Resources Board (ARB).

CIPA understands the goals of the Regulation, but believes that providing operator flexibility will allow the GHG reductions sought by ARB to be achieved, but at a much lower cost than an overly specific regulation. F-3-1

Implementation Issues

CIPA would support flexibility in implementation of the rule that also achieves ARB's compliance goals. Therefore, there are a few clarifications that ARB can provide within either the Final Statement of Reason, the adopting Resolution or in the ARB/Air District Memorandum of Agreement (MOA).

1. CIPA requests clarity that "petroleum waste product", is indeed not a direct byproduct of production or separator operation, but rather some other non-production fluid from equipment such as waste hydraulic fluid. F-3-2
2. CIPA requests clarification that the first year reporting is not due until July *2019*, and that it would be for all of 2018 but not any of 2017. F-3-3
3. CIPA request clarification of Section 95669(o)(5) that if all leaks are fixed within the timeframes provided within the rule that "shall not constitute a violation…in this subarticle", and that the reference to the 4th quarter is limited to the number of leaks in any given year. F-3-4
4. The stakeholder process, timing and uniformity of the ARB/District MOA process is still unclear to CIPA. We would request that prior to the final rule adoption, that these MOAs be made public with adequate time for stakeholder review and comment. F-3-5
5. CIPA requests clarity on the new LDAR exemption in Section 95669(b)(12)— "Components found on steam injection wells or water flood wells." The term "water flood wells" is not clearly defined as both water injection wells and oil production wells that are part of a water flood project could be considered "water flood wells". Is the intent for this exemption to be for water injection wells, which include water disposal wells? F-3-6
6. ARB has clarified what is meant by "per day" in parts of the rule, but in some of the various calculations of annual emissions and in some reporting forms it is still undefined. CIPA suggests that for clarity and consistency it should be made clear that what is meant is the total annual throughput for the prior calendar year divided by 365 days. F-3-7

Conclusion

This rulemaking process has been extensive. CIPA understands the state's desire to reduce methane and GHG emissions, but points out that this "direct command and control" regulation is in addition to the carbon price signal and incentive to reduce emissions that comes from the Cap-and-Trade Regulation. These duplicating regulations add cost and inefficiency to the market policy that is the cornerstone of California's GHG reduction efforts.

We hope to keep the lines of communication open on these very important issues as this rule goes from adoption to implementation. Please reach out to CIPA should you have any questions or would like to discuss further.

Sincerely,

/s/

Rock Zierman
Chief Executive Officer
California Independent Petroleum Association

0G-F-4-EDF1

February 21, 2017

Elizabeth Scheehle, Chief
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Joseph Fischer
Air Resources Engineer
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1001 "I" St. Sacramento, CA, 95814

VIA Electronic Mail

Re: Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities Modified Text and Availability of Additional Documents and/or Information

Dear Ms. Scheehle and Mr. Fischer:

Thank you for accepting these comments submitted by Environmental Defense Fund ("EDF") on the February 3, 2017 proposal to regulate greenhouse gas emissions from oil and gas facilities. This proposal responds to the Air Resources Board ("ARB") direction to the Executive Officer to consider whether any additional conforming modifications were necessary to the June 1, 2016 proposal. EDF is a national membership organization with over two million members residing throughout the United States, nearly 70,000 of which live and work in California and who are deeply concerned about the pollution emitted from oil and natural gas sources.

EDF supports the modifications to the June 1, 2016 proposal reflected in the current version of the proposed rule.[1] In particular, we strongly support the quarterly inspection requirement in Section 95669(g). As our prior comments demonstrated, frequent, if not continuous, inspections of oil and gas facilities for leaks is essential to ensuring maximum reductions of harmful natural gas emissions.[2]

I. Quarterly Inspections Are Highly Cost Effective, As a Recent ICF Analysis Demonstrates

F-4-1

[1] Attachment 1:Proposed 15-Day Modifications, available at https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasatt1.pdf.
[2] See Feb. 19, 2016 group comments submitted by CATF and May 15, 2015 EDF comments.

CARB's revised cost estimates demonstrate that quarterly Method 21 inspections are highly cost effective. CARB estimates the cost of its proposal to be $23 per Metric Ton of Carbon Dioxide Equivalent reduced (assuming a 20 year global warming potential and savings from recovered gas).[3] CARB's analysis includes costs associated with inspecting idle wells, well casing vents, and compressors as well as traditional "components" such as valves and flanges, per the scope of the proposed requirement.

EDF commissioned ICF International to conduct an analysis of the cost effectiveness of conducting leak surveys. Appendix 1 contains a detailed description of the model methodology, inputs, and results. This analysis supports the proposed requirement in Section 95669. The ICF analysis evaluates the costs and benefits of leak surveys at various frequencies and multiple types of facilities, specifically onshore production, gathering and boosting stations, gas processing plants, gas transmission compressor stations, and gas storage facilities. ICF developed a Monte Carlo-based simulation model to analyze the dynamics of various leak survey programs and evaluate the effectiveness of such programs using multiple variables including the frequency of surveys, the value of recovered gas, and the number of third-party contractors conducting the surveys. The ICF analysis did not include costs associated with inspecting components at idle wells or well casing vents. However, like the CARB analysis, ICF also included information on stochastic leaks (or "super-emitters" in its model).

F-4-1 cont.

Per the ICF model the average cost effectiveness of conducting quarterly inspections is:

- Production facilities: $8.58 MT CO2e avoided
- Processing facilities: $11.13 MT CO2e avoided
- Gathering and Boosting facilities: $4.51 MT CO2e avoided
- Transmission: $3.59 MT CO2e avoided.

These numbers reflect the use of two third-party contractors, assume a price of $3 for natural gas, and a global warming potential of 72 over a 20-year time-frame. ICF calculated emissions avoided as the difference between the emissions at the beginning of the first survey and the emissions at the end of each subsequent survey over a three-year period. ICF's analysis demonstrates the reasonableness of ARB's cost effectiveness determination for the LDAR provision.

II. Quarterly Inspections Are Necessary to Reduce Methane and Air Toxics, as Demonstrated by Recent Field Studies

Frequent inspections of oil and gas facilities have important benefits: (1) they reduce the waste of a valuable product; (2) enhance safety; (3) protect the climate from potent greenhouse gas emissions; and (4) protect human health from harmful air toxics and smog-altering pollution.

F-4-2

A recent field study conducted by Sage Consulting LP (Sage) demonstrate that in addition

[3] Attachment 2, Revised Cost Estimates for the https://www.arb.ca.gov/regact/2016/oilandgas2016/oilgasatt2.pdf

to being significant sources of methane, oil and gas facilities release harmful air toxics such as benzene and toluene.[4] Sage collected data from 160 components at 39 natural gas production sites between January 20 and August 14, 2015.[5] In addition to methane, benzene, toluene, xylenes and ethylbenzene (BTEX) repeatedly were detected in at least 10% of the samples.[6] Indeed, benzene was detected in 46% of the samples and toluene in 63% of the samples.[7] This data further underscores the importance of frequent leak inspections coupled with expeditious repairs.

F-4-2 cont.

III. Recent Data Supports the Declining Leak Thresholds in Section 95669

Data collected during the Sage field study and prior experience across California's Air Pollution Control Districts supports the declining leak thresholds contained in Section 95669(i). The proposed rule requires operators repair leaks of 10,000 ppmv in the first year of rule implementation (2018). This minimum leak threshold declines to 1,000 ppmv as of January 1, 2020. As documented in the Sage field study- there are ample leaks throughout the system above 1,000 ppmv and below 10,000 ppmv. In the study, leaks were found across the system - and the sampling report documents that many more were found which were not recorded in the results. Furthermore, some Air Districts have already been incorporating leak thresholds of 1,000 ppm and below at oil and gas facilities, and Method 21 equipment sensitivity yields highly accurate results below 1,000 ppmv.

F-4-3

We commend CARB on a well-supported proposal to reduce methane, volatile organic compounds and air toxics from onshore and offshore oil and gas facilities.

Thank you for your consideration of these comments.

Sincerely,

Timothy O'Connor
Director and Senior Attorney
Environmental Defense Fund

Elizabeth Paranhos
Attorney and Oil and Gas Consultant
Delone Law Inc.

Hillary Hull
Senior Research Analyst
Environmental Defense Fund

[4] Sage ATC Consulting LLC, Air Resources Board RFP No. 13-414: Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities – Final (Revised).
[5] Sage ATC Consulting LLC, Air Resources Board RFP No. 13-414: Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities – Final (Revised), at 1-2.
[6] *Id*. at 2-9
[7] *Id*. at Section 2 Appendix D: Descriptive Statistics for Measured Concentrations and Calculated Emissions Rates for Components in Gas Service.

Economic Analysis of Method 21

December 2016

Prepared for
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Acronyms and Abbreviations

Acronym / Abbreviation	Stands For
CH_4	Methane
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
EDF	Environmental Defense Fund
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program
GRI	Gas Research Institute
GWP	Global Warming Potential (72)[1]
LDAR	Leak Detection and Repair
Mcf	Thousand Cubic Feet
NSPS	New Source Performance Standards promulgated under the Federal Clean Air Act
PRV	Pressure Relief Valve
scf	Standard Cubic Feet

[1] Climate Change 2007 - The Physical Science Basis Contribution of Working Group I to the Fourth Assessment Report of the IPCC (ISBN 978 0521 88009-1 Hardback; 978 0521 70596-7 Paperback) . Table TS.2 Retrieved from: http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4_wg1_full_report.pdf

1. Executive Summary

Leaks of natural gas, also referred to as fugitives, significantly contribute towards the total methane emissions from the oil and gas industry. Leaks occur randomly across all segments of the industry. An effective option to mitigate methane emissions from leaks is to periodically conduct surveys to identify and fix leaks. There is a tradeoff between costs for various frequencies of leak surveys and the resulting reduction in methane emissions. The analyses summarized in this report evaluate the costs and benefits of multiple scenarios in conducting leak surveys and repairs at various frequencies in five segments of the oil and gas industry – onshore production, gathering and boosting stations, gas processing plants, gas transmission compressor stations, and gas storage facilities.

Much of the discussion involving leak detection and repair is based on the average cost and emission factors at a site level. However, such static factors do not reflect the dynamics of leak surveys and associated reduction in emissions. Leak survey and repair programs when conducted on a periodic basis result in the reduction of leaks and prevent some small leaks from turning into larger leaks over time. Fewer leaks require less time to survey and reduce repair costs over time. A static average value based approach does not capture this changing leak frequency and leak magnitude over time. It also does not effectively account for the fact that a few large leaks disproportionately influence the benefits of conducting leak survey and repair programs. These large leaks, referred to as super-emitters, have been observed in real world data on methane emissions from oil and gas facilities.

ICF developed a Monte Carlo-based simulation model to analyze the dynamics of leak survey programs and to evaluate the effectiveness of such programs using multiple variables, such as the frequency of surveys. The model simulates facility characteristics, such as the types and counts of equipment, the number of leaks at a facility, and the size of each leak. These facility characteristics drive the time required to conduct the survey, which in turn influences the costs to conduct a survey. Similarly, the size of the leaks influences both the costs for repair and replacement as well as the amount of reduction achieved through each survey. The data for the model was obtained from several field studies that provide the raw data to develop statistical distributions. The model output includes a statistical distribution of various metrics, including emissions before each survey, emissions reduction after each survey, total costs, and the value of gas saved (if applicable).

In this analysis, the simulation model was run at three levels of leak survey frequency – annual, semi-annual, and quarterly. The value of gas recovered was evaluated at different levels - $0/Mcf, $3/Mcf, and $4/Mcf. For the onshore production and gathering and boosting segments only the $3/Mcf and $4/Mcf gas prices were evaluated. The onshore production segment directly accrues the benefit of reducing emissions as it owns the natural gas. The same applies to gathering systems owned or operated by producers. Natural gas processors, gas transmission pipeline operators, and gas storage operators do not own the gas and are provided a service fee. In the case of natural gas processors the service fee varies depending on the contract with the gas producers. In the case of natural gas transmission and storage the service fee is determined through rate cases. Hence, from the operator perspective the value of gas recovered is minimal (processors) to none (transmission and storage).

However, the value of gas emissions reduced is a benefit to the shipper and to the society as a whole. Therefore, to account for both of these perspectives the model was run with a scenario with no recovery of gas value ($0/Mcf gas price) and two other gas prices at $3/Mcf and $4/Mcf. The dollar per Mcf of emissions avoided for each segment and scenario is provided in Table 1 and Table 2. The emissions avoided are defined as the difference between the emissions at the beginning of the first survey and the emissions at the end of each subsequent leak survey after fixing of the leaks. Table 1 shows the cost effectiveness of implementing a Method 21 leak survey program in production, transmission, processing, storage and gathering and boosting with gas prices of $3/Mcf.

Table 1: Average Three Year Cost-Effectiveness Results from Individual Facilities ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Industry Segment	Production[2]	Transmission	Processing	Storage	Gathering and Boosting
Gas Recovery Price	$3/Mcf	$3/Mcf	$3/Mcf	$3/Mcf	$3/Mcf
Number of Contractor Employees	2	2	2	2	2
Annual Survey	$2.82 (684 Mcf)	-$0.44 (10.1 MMscf)	$8.39 (12.2 MMscf)	-$0.86 (14.9 MMscf)	$0.25 (6.1 MMscf)
Semi-annual Survey	$5.47 (1,259 Mcf)	$2.06 (20.4 MMscf)	$8.43 (23.8 MMscf)	$2.00 (34 MMscf)	$2.66 (12 MMscf)
Quarterly Survey	$8.58 (1,761 Mcf)	$3.59 (27 MMscf)	$11.13 (31 MMscf)	$3.35 (47.7 MMscf)	$4.51 (15.8 MMscf)

Table 2 shows the cost effectiveness of implementing a Method 21 leak survey program in transmission, processing, and storage with a gas prices of $0/Mcf.

Table 2: Average Three Year Cost-Effectiveness Results from Individual Facilities ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Industry Segment	Transmission	Processing	Storage
Gas Recovery Price	$0/Mcf	$0/Mcf	$0/Mcf
Number of Contractor Employees	2	2	2
Annual Survey	$4.88 (10.1 MMscf)	$13.12 (12.2 MMscf)	$6.02 (14.9 MMscf)
Semi-annual Survey	$3.60 (20.4 MMscf)	$9.82 (23.8 MMscf)	$4.00 (34 MMscf)

[2] Individual production facilities have fewer components and fewer emissions than other facilities, but there are more production facilities than processing, compressor stations, and storage facilities, making the cumulative impact of production emissions significant.

Quarterly Survey	$4.21 (27 MMscf)	$11.69 (31 MMscf)	$4.21 (47.7 MMscf)

2. Introduction

2.1. Goals and Approach of the Study

This report evaluates the costs and emission reductions that can be achieved by using Method 21 to survey oil and gas facilities for leaks and subsequently repairing and replacing equipment to address any leaks found. Currently, most studies that evaluate Leak Detection and Repair (LDAR) programs use an average value of variables, such as emissions, reductions, costs, time taken to conduct survey, and do not take into account the variation in these variables depending on the characteristics of the facilities, such as the size of facility, types of equipment at the facility, and number of leakers. They also do not directly account for larger emitters or from super-emitters. A more representative method to evaluate LDAR's performance is the use of a stochastic modeling approach. This approach allows for the analysis of multiple scenarios with varying conditions unlike the average value approach. The stochastic model gives a range of cost effectiveness for facilities of varying sizes and conditions. This approach gives a better understanding of how an LDAR program can vary across oil and gas facilities of different sizes.

2.2. Objective of the Stochastic LDAR Analysis

The stochastic modeling approach to determine the cost-effectiveness of LDAR at oil and gas facilities consists of developing facility models that replicate real world conditions and capture variations in facility size and characteristics. A Monte Carlo simulation was used to analyze facility emissions, reductions, and costs. The Monte Carlo simulation was used to compare various facilities by including inter-relationships between different factors, such as leak frequency and time required to conduct an LDAR survey.

The advantages of using the Monte Carlo simulation for this analysis is that it represents emission rates and activity data obtained from multiple real world studies using statistical distributions. The model therefore is able to replicate real world emissions and capture variations in facility size and characteristics. The model then outputs the cost effectiveness across a wide range of facility types with varying emissions and leak frequency, giving a more representative understanding of emissions.

2.3. Limitation of Analysis

While the stochastic model has many benefits, the method does present a few limitations. The model results are driven by the data inputs and therefore are only as good as the applicability of these inputs for a specific facility. The representativeness of results at the national, state, company, or facility level are limited by how well the data collected from limited geographic regions and used in this study characterizes these levels of detail. Additionally, the costs to repair or replace equipment can vary depending on location and complexity of the leak. This study uses the data on repair costs from the

Natural Gas STAR published documents and expert judgement where no data was available. Since data on costs associated with leak magnitudes per component was not available, the determination of whether a leak needs a repair or replacement is based on expert judgment. Lastly, there is limited time series data available on the impact of different LDAR frequencies on the reductions in leak frequencies from subsequent surveys. This study used limited data available from Jonah Energy LLC.[3]

3. Approach and Methodology

3.1. Overview of Methodology

Each industry segment utilizes a model that relies on segment specific information from field studies and research papers. While differences exist between the various segment specific models, each one follows the same sequence of analysis, as discussed below:

Step 1 – First, the model defines a driving factor that defines the size of the facility. The driving factor is then used to establish the number of components of each kind associated with a facility of that size. This driving factor varies by industry segment. Production uses the number of wells at a wellpad facility to drive component counts. Processing, transmission and storage each use the number of compressors per facility to drive component counts. Gathering and Boosting use the number of compressors and the number of dehydrators to drive component counts. ICF used data from published field studies to establish a standard discrete distribution for each of the driving factors.

Step 2 – Next, the model determined the count of associated components using the driving factors. The following components were evaluated as a part of the analysis: valves, connections, pressure relief valves, compressor pressure relief valves, open-ended lines, starter open-ended lines, pressure regulators, and orifice meters. Emissions from all eight sources were evaluated for the production segment, while other segment models focused on valves, connections, pressure relief valves, open-ended lines and orifice meters. Processing also included pressure regulators in the analysis.

In production, the component count was calculated using the number of wells at a wellpad defined in Step 1. The component count follows a uniform distribution between the minimum and maximum number of components identified at facilities with the same number of wells as the number of wells defined in Step 1. As an example, if a facility was defined with 1 well at the wellpad according to Step 1, then the number of valves is determined following a uniform distribution between 6 and 228 based on the data for sites with 1 well, but if facility was defined with 3 wells at a wellpad according to Step 1, then the number of valves is determined following a uniform distribution between 66 and 733 again based on the data for sites with 3 wells.

[3] Jonah Energy LLC. WCCA Spring Meeting. May 8,2015

In processing, transmission, and storage, the component counts were calculated using the following equation:

$$C_i = \frac{C_{s,i}}{D_s} D$$

Where:

C_i= Component count i (e.g. valves or connectors) for the modeled facility.

$C_{s,i}$ = Average component count i (e.g. valves or connectors) from the data source.

D_s = Average number of compressors per facility as defined in Step 1 from the data source.

D = Number of compressors at an individual facility as defined in Step 1. This value was randomly selected using the Monte Carlo simulation based on the distribution for the dataset. For instance, in processing, D was defined using the distribution of compressors at a facility in Subpart W.

In gathering and boosting the component count was calculated using the same principle as in transmission, but also included an additional driving factor. Due to the fact that there are few data sources about gathering and boosting, the number of components per compressor was assumed to be similar to transmission stations with the main difference being dehydrators. An additional factor was added to account for this variance as displayed in the following equation:

$$C_i = \frac{C_{s,i}}{D_{s,1}} D_1 + D_2 * A$$

Where:

C_i= Component count i (e.g. valves or connectors) for the modeled facility.

$C_{s,i}$ = Average component count i (e.g. valves or connectors) from the data source.

$D_{s,1}$ = Average Number of compressors per facility as defined in Step 1 from the data source.

D_1 = Number of compressors at an individual facility as defined in Step 1. This value was randomly selected using the Monte Carlo simulation based on the distribution for the dataset.

D_2 = Number of dehydrators per facility as defined in Step 1. This value was randomly selected using the Monte Carlo simulation based on the distribution for the dataset.

A = Activity factor for the number of components per dehydrators as defined in production from GRI.

Step 3 – The survey time at each facility and associated costs for surveying was based on component counts identified in Step 2. The time required to survey a facility was calculated by multiplying the

average time to survey one unit of a component type by the number of components of that type at the facility. Table 3 lists the average time that was assumed to survey one component based on ICF's expert judgement and field experience.

Table 3: Time to Survey Equipment in All Segments

Component Type	Estimated Time to Survey in Seconds for Production Facilities	Estimated Time to Survey in Seconds for all Other Segments
Valve	10	10
Connection	30	30
Pressure Relief Valve	90	90
Compressor Pressure Relief Valve	90	NA
Open-Ended Line	30	30
Starter Open Ended Line	30	NA
Pressure Regulators	15	NA (15 for Processing)
Orifice Meters	120	120

The total time to survey was multiplied by the hourly wage of the contractors. In addition, a per diem and lodging cost for the portion of the day the survey took place was also added into the survey costs. The model assumes all inspections are performed by contractors rather than in-house.

Step 4 – Next, the model randomly selects the percentage of leaking components. This was done by varying the leak frequency between the minimum and maximum leak frequency as identified at a facility by the published data source. As an example, valves in the processing data source leaked between 5.2% and 10.7% of the time at the various sites in the field study. Therefore, valves in processing were assumed to leak anywhere from 5.2% to 10.7% of the time following a uniform distribution. Each industry segment used the same methodology for determining leaking components as processing, with production varying slightly.

After the first survey in the model, leaks were repaired or components replaced. In the real world new leaks develop over time. However, periodic leak detection and repair programs ensure that the number (or frequency) of leaks go down over time. Data from companies has shown that both the number of leaking components at a facility and the emissions per leak have decreased between surveys. The model tries to account for both of these declines using data presented by Jonah Energy from their survey results. Jonah Energy conducted monthly surveys from 2010 to May 2015 (partial data available

for 2015).[4] In 2010 and in 2014 there were 2,959 and 1,330 leaks respectively. The results from the Jonah study are shown in Figure 1 below.

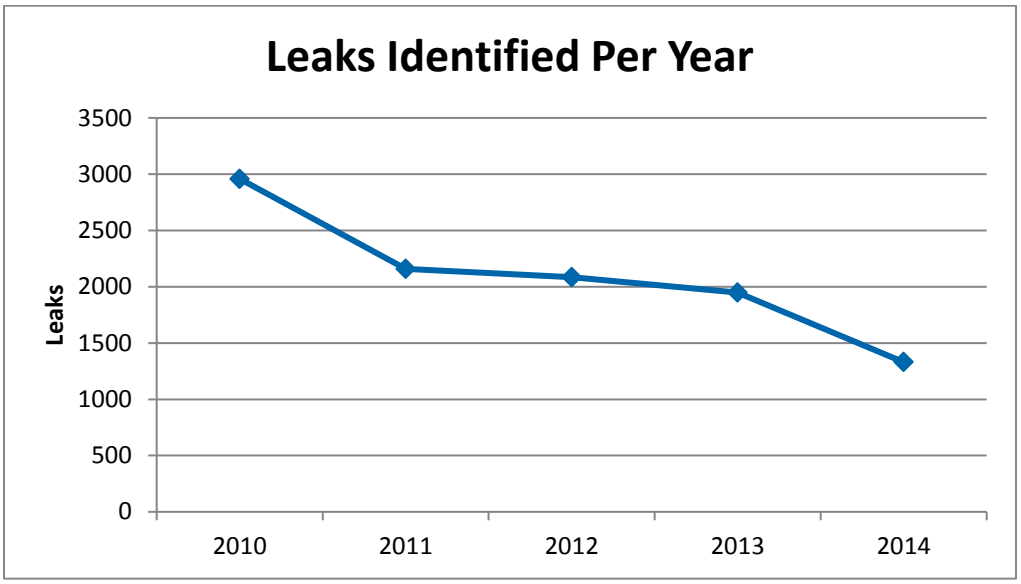

Figure 1: Number of Leaks identified by Jonah at sites[5]

The Jonah data does not provide information on whether the number of sites visited changed over the years. To overcome this data gap, ICF normalized the data and instead analyzed the number of leaks per survey. The number of leaks identified per Jonah's survey changed from 0.90 to 0.45 from 2010 to 2014 or a 50% reduction.

As Jonah data was from monthly surveys, annual, semi-annual, and quarterly surveys were assumed to follow a similar trend to Jonah's data. Annual, semi-annual and quarterly surveys were assumed to follow a similar trend between surveys with a steeper decline in leaks in the first year and slower declines in leaks after. To replicate the reduction in leak frequency, this model sequentially truncated the leak frequency distribution right tail with each successive leak survey. This analysis assumed that the leak frequency would get capped at the 60th percentile of the leak frequency distribution for a quarterly leak survey at the end of the 12th survey or year three of the analysis. Similarly, the leak frequency distribution is capped at 70th percentile for the semi-annual case and 80th percentile for the annual case.

Step 5 – The leak frequency determined in Step 4 was multiplied by the total count of components of each type at a facility as defined in Step 2 to estimate the number of components that are leaking. Each individual leaking component was then randomly assigned leak rates according to the emissions distribution for that source.

[4] Jonah Energy LLC. WCCA Spring Meeting. May 8,2015
[5] Jonah Energy LLC WCCA Spring Meeting Presentation

In addition to the reduction in leak frequency over successive leak surveys and maintenance practices, emissions per leak also decreases with increased surveying. This is because small leaks do not develop into larger leaks as frequently or because of additional awareness by operators on best practices in preventing leaks. Through Jonah's experience, the value of gas saved decreased from $117.44 per leak to $86.41 per leak from 2010 to 2014 or a decrease of 25%. Emission reductions per leak were accounted for in the model by capping the leak rate distribution on the right tail, similar to the leak frequency approach. The full cap was assumed to occur at the end of the sixth survey, regardless of the frequency of surveys. For example, in the annual survey cycle, after six surveys or six years, the leak rate was capped at the 85th percentile of the leak rate distribution, or stated differently, the right tail was truncated at the 85th percentile. Similarly, for the semi-annual case the leak rate distribution was capped at the 80th percentile, and in the quarterly case it is capped at the 75th percentile. The emission truncations were calibrated based on the overall emission reductions achieved by Jonah. This ensured that the combination of the leak frequency and the emissions per leak achieved emission reductions that aligned with Jonah's data.

Step 6 – Next, the model determined if each leak had to be repaired or replaced and then assigned costs accordingly. For valves, connections, pressure relief valves, compressor pressure relief valves, open-ended lines, starter open-ended lines, pressure regulators, and orifice meters the threshold for replacement was determined by using the average of the leak rate distribution of the leaking component type. As an example, if the randomly assigned leak rate for a particular valve in Step 5 was larger than the average valve leak rate as determined from the leak rate distribution for that component type, then the valve was replaced, otherwise it was repaired. If this randomly selected leak rate was half or less than half of the average leak rate then the cost was assumed to be half of the average repair costs. If this randomly selected leak rate was between half the average and the average leak rate, then the repair cost used was the average repair cost. Finally, if the leak rate was between the average and two times the average leak rate, then the average replacement cost was halved, otherwise it was the full replacement cost.

Step 7 – As companies address leaks through replacement and maintenance, they achieve emission reductions. In the model, replacing components were allocated 100% emission reductions, while maintenance components were allocated less than 100% emission reductions as some components still leak slightly after a repair. Valves, connections, open ended lines were allocated 95% reductions, PRVs 98%, and pressure regulators and orifice meters were allocated 100% of the reductions after maintenance. These emission reductions are outlined in the table below.

Table 4: Component Emission Reduction Percentage for Maintenance and Replacements

Component	Percentage Emission Reduction for Maintenance	Percentage Emission Replacement/Overhaul
Valve	95%	100%

Connection	95%	100%
Pressure Relief Valve	98%	100%
Compressor Pressure Relief Valve	98%	100%
Open-Ended Line	95%	100%
Starter Open Ended Line	95%	100%
Pressure Regulators	100%	100%
Orifice Meters	100%	100%

Step 8 – The simulation was run for 10,000 iterations with each iteration representing a unique and random combination of facility characteristics including the count and type of equipment and component, the number of leakers for each component type, and the leak rate of each leaking component. The model then calculated the cost effectiveness for emissions referred to in this analysis as the $/Mcf avoided. The $/Mcf avoided metric is the ratio of the total cost to conduct an LDAR survey (less any value of gas recovered) and the difference in Mcf of emissions between the emissions at the end of the survey level to the level of uncontrolled emissions during the first year that surveys begin. The total cost of conducting an LDAR survey includes the cost of surveying, travel and lodging for the survey team, repair and maintenance costs, and the gas value saved by implementing repairs.

Steps 1 through 8 can be seen in Figure 2.

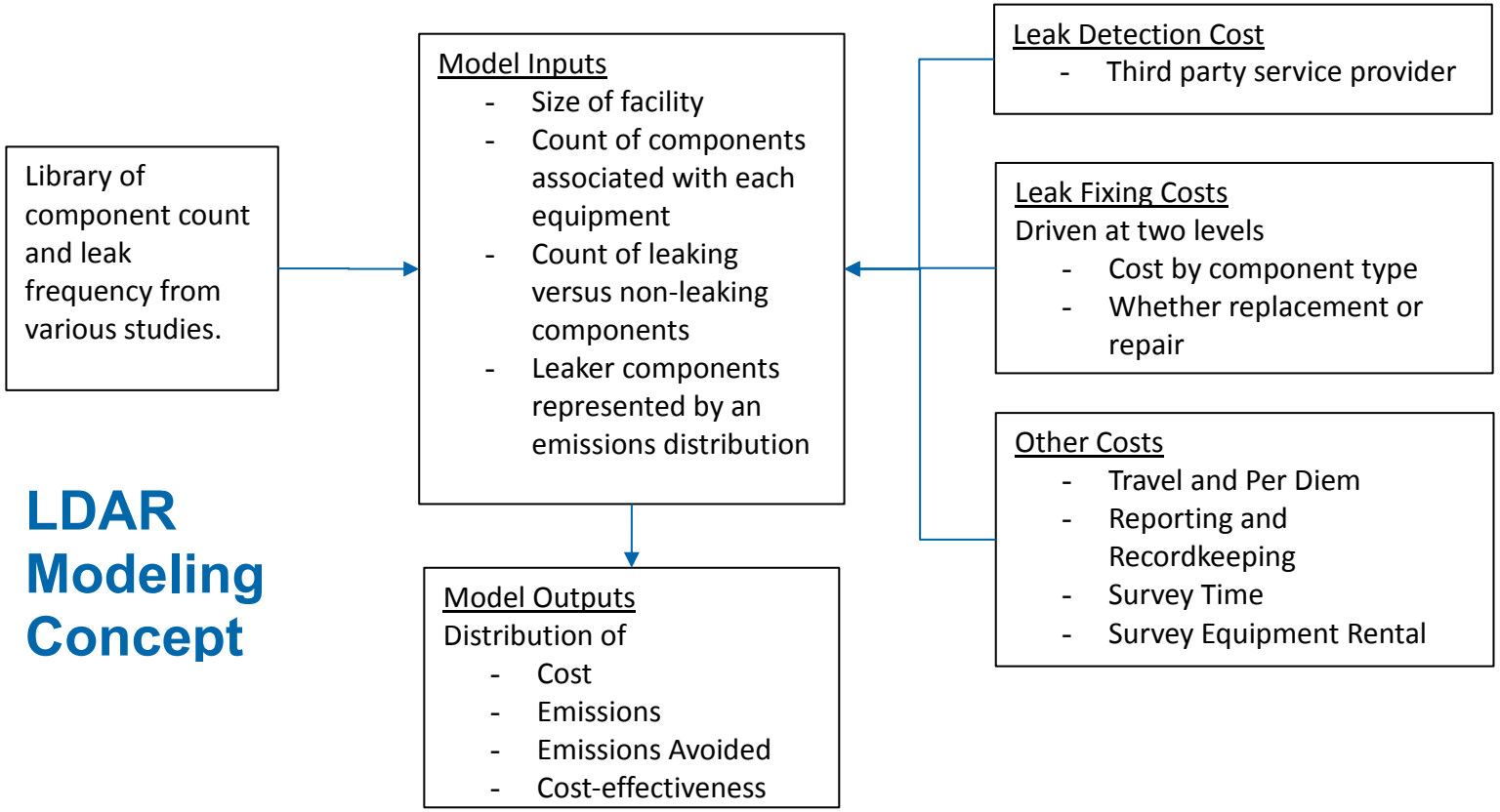

Figure 2: Schematic of LDAR Modeling Concept

3.2. All Segments Assumptions

In each of the models (Production, Processing, Transmission, Storage and Gathering and Boosting), there were constant inputs independent of the industry segment. Survey equipment costs displayed in Table 5 and the contractors billing rate ($60 per hour) were constant variables across all industry segments based on ICF expert judgement, field experience and vendor research. These assumptions drive the labor and equipment costs for surveying.

Table 5: Survey Equipment Costs in All Segments

Component	Default Costs
Toxic Vapor Analyzer (TVA)/Organic Vapor Analyzer (OVA)	$15,000
Vehicle (4x4 Truck)	$22,000

3.3. Production Data Sources

In production, eight component types were represented in the model to calculate the cost effectiveness of implementing Method 21 as an LDAR program. Each component was modeled using reports and data from site visits and measurement studies at wellpads in production. The resources used are as follows:

- *City of Fort Worth Natural Gas Air Quality Study*[6]*:* This study was utilized to determine the emission distributions for valves, connections, pressure relief valves, open-ended lines and pressure regulators. This source was also used to determine the number of components at a site for valves and connectors. Lastly, this study provided the distribution of wells at a wellpad that was used to drive the component counts at a facility.
- *Methane Emissions from the Natural Gas Industry EPA/ GRI*[7]*:* This study was utilized to determine the emission distributions on compressor pressure relief valves, starter open-ended lines and orifice meters.

3.4. Transmission, Storage, and Gathering and Boosting Data Sources

Five component types were represented in the model to calculate the cost effectiveness of implementing an LDAR program in transmission, storage and gathering and boosting. Each component was modeled using reports and data from site visits and measurement studies at compressor stations. These sources included the following:

[6] http://fortworthtexas.gov/gaswells/air-quality-study/final/

[7] Gas Research Institute. *Methane Emissions from the Natural Gas Industry*. June 1996

- Two EDF methane emission studies were utilized to determine the emissions distributions for valves, connections, and open-ended lines.
    - *Methane Emissions from Leak and Loss Audits of Natural Gas Compressor Stations and Storage Facilities*[8]
    - *Methane Emissions from the Natural Gas Transmission and Storage System in the United States*[9]
- *Clearstone Phase 1 Study:*[10] This study was utilized to determine the emissions distributions for pressure relief valves and orifice meters. Additionally, data from this study was used to determine the leak frequencies for pressure relief valves, open-ended lines, and orifice meters.
- *Methane Emissions from the Natural Gas Industry EPA/ GRI*[11]*:* This study was utilized for equipment counts per compressor, for valves, connections, pressure relief valves, and open-ended lines.
- *New Source Performance Standards*[12]*:* This regulation was utilized to provide leak frequencies for valves and connections.

3.5. Processing Data Sources

In processing, six component types were represented in the model to calculate the cost effectiveness of implementing an LDAR program. Each component was modeled using a report and data from site visits and measurement studies at processing facilities.

- *Clearstone Phase 1 Study:*[13] This study was used to model emission distributions, leak frequency and component counts at processing facilities.

[8] http://pubs.acs.org/doi/abs/10.1021/es506163m
[9] http://pubs.acs.org/doi/abs/10.1021/acs.est.5b01669
[10] Clearstone Engineering LTD. "Identification and Evaluation of Opportunities to Reduce Methane Losses at Four Gas Processing Plants" retrieved from: https://www.epa.gov/sites/production/files/2016-08/documents/four_plants.pdf
[11] Gas Research Institute. *Methane Emissions from the Natural Gas Industry*. June 1996
[12] S40 CFR Part 60 standards of Performance for New Stationary Sources. http://www.ecfr.gov/cgi-bin/text-idx?SID=d4fff6638508368c7aca1992302d12fa&mc=true&node=pt40.7.60&rgn=div5
[13] "Identification and Evaluation of Opportunities to Reduce Methane Losses at Four Gas Processing Plants"

4. Analytical Results

4.1. Average Facility Size

Statistical distributions of facility sizes were fitted from raw data collected in production, transmission, processing, storage and gathering and boosting. This data was used to represent the range of variation within an industry segment, but the median facility size for each of these industry segments is portrayed below:

Table 6 Median Facility Size

	Production	Transmission	Processing	Storage	Gathering and Boosting
Wells	3	NA	NA	NA	NA
Compressors	NA	4	7	6	2
Dehydrators	NA	NA	NA	NA	0.5
Valve	190	663	3,293	3,411	335
Connection	1,416	3,022	16,520	10,172	1,519
Pressure Relief Valve	3	14	77	121	8
Compressor Pressure Relief Valve	>0	NA	NA	NA	NA
Open-Ended Line	33	50	324	645	25
Starter Open Ended Line	>0	NA	NA	NA	NA
Pressure Regulators	1	NA	34	NA	NA
Orifice Meters	2	9	34	12	2

4.2. All Segments Results

Model runs were conducted for five industry segments (Production, Transmission, Processing, Storage and Gathering and Boosting) as outlined in Section 2. The value of gas and the number of contractor employees necessary to complete a survey were varied during the model runs for each industry segment, yielding the results displayed in Sections 4.3 to 4.7. The three scenarios include parameter combinations of the value of gas between $3/Mcf and $4/Mcf, and the number of contractor employees necessary to complete a Method 21 survey between 1 and 2. As contractors may utilize one or two personnel to complete a survey, the labor costs were adjusted based on the number of employees conducting a survey, with all other assumptions remaining constant. Additionally, Transmission, Processing, and Storage also completed two model runs where they assumed no value for the gas saved (i.e. $0/Mcf).

Four model runs were conducted that utilized a specified gas price and a specified number of contractor employees. These model runs include annual surveying, semi-annual surveying, and quarterly surveying. The cost of annual surveying is less than semi-annual surveying which is less than quarterly surveying. The emission reductions per year are inversely correlated with costs with quarterly achieving higher emission reductions than semi-annual which are higher than annual. Surveying efficiencies (i.e. time to survey, emission volume truncation and leak frequency truncation) are achieved over multiple surveys.

The results are based on the modeled assumption that the survey and repairs were completed at the end of the survey period. Annual surveys were conducted at the end of the year, semi-annual surveys in the middle and end of a year and the quarterly surveys every three months starting three months after the starting period. The emissions avoided in the first period are zero, as no repairs were completed until after the survey. This means that annual surveying did not achieve emission reductions until after the first survey; therefore, over the three year time period the model evaluates, annual surveying conducted three surveys but only the second and third time period achieved avoided emissions. Semi-annual illustrates six surveys, but repairs were conducted after the first one allowing five surveys to achieve avoided emissions. Quarterly illustrates twelve surveys, with eleven that have avoided emissions.

4.3. Production

In production, three different scenarios were modeled to evaluate how emissions could change over time. Table 7 below displays the average cost effectiveness over a three year cycle. Each scenario is displayed yearly in Section 4.7.A.1.

Table 7: Production Scenario Average Three Year Cost-Effectiveness Results ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Case Number	1	2	3
Gas Price	$3/Mcf	$4/Mcf	$3/Mcf
Number of Contractor Employees	2	2	1
Annual Survey	$2.82 (684 Mscf)	$0.58 (684 Mscf)	$0.06 (684 Mscf)
Semi-annual Survey	$5.47 (1,259 Mscf)	$4.58 (1,259 Mscf)	$3.14 (1,259 Mscf)
Quarterly Survey	$8.58 (1,761 Mscf)	$8.15 (1,761 Mscf)	$5.73 (1,761 Mscf)

The emissions avoided due to implementing Method 21 surveying were estimated by the model. Table 8 below displays the percent of emissions avoided in the third year by implementing Method 21 surveying at a facility. The emissions avoided account for the difference in emissions in year three compared with the emissions in the base case. The emissions avoided percentages account for emissions avoided from fugitives from the following sources: valves, connections, pressure relief valves, compressor pressure relief valves, open-ended lines, starter open-ended lines, pressure regulators, and orifice meters. This percentage is not indicative of the total emission reduction opportunities at a facility.

Table 8: Year Three Emissions Avoided Compared with Baseline Emissions

Case Number	1 ,2, and 3
Annual Survey	50%
Semi-annual Survey	66%
Quarterly Survey	78%

4.4. Transmission

The Transmission segment is by law structured such that the operator does not own the gas and only collects a service fee for the volume of gas being moved through its pipelines. Therefore, any emissions avoided do not provide any direct monetary value to the operator. This suggests using no recovery for the value of gas saved (or emissions avoided). On the other hand, at an economy level it can be argued that some entity who owns the gas (typically the producer) will benefit from any recovery of gas. For example, if the transmission operator is regulated then the costs to comply with the regulation can be passed on to the entity that owns the gas. Hence, the owner of the gas pays additional fees to cover for the LDAR program and gets the value of gas saved. This suggests the use of full value of gas price in the analysis. This study did not try to resolve this issue, but rather ran the model with no recovery and recovery at full gas price as scenarios, thus providing a range of costs associated with conducting an LDAR program in this segment. In transmission, five different scenarios were modeled to evaluate how emissions could change over time. Table 9 below displays the results for the average cost effectiveness of the first three years. Each scenario is displayed yearly in Section 4.7.A.2.

Table 9: Transmission Scenario Average Three Year Cost-Effectiveness Results ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Case Number	1	2	3	4	5
Gas Recovery Price	$3/Mcf	$4/Mcf	$3/Mcf	$0/Mcf	$0/Mcf
Number of Contractor Employees	2	2	1	2	1
Annual Survey	-$0.44 (10.1 MMscf)	-$2.21 (10.1 MMscf)	-$0.93 (10.1 MMscf)	$4.88 (10.1 MMscf)	$4.38 (10.1 MMscf)
Semi-annual Survey	$2.06 (20.4 MMscf)	$1.55 (20.4 MMscf)	$1.68 (20.4 MMscf)	$3.60 (20.4 MMscf)	$3.22 (20.4 MMscf)
Quarterly Survey	$3.59 (27 MMscf)	$3.38 (27 MMscf)	$3.10 (27 MMscf)	$4.21 (27 MMscf)	$3.73 (27 MMscf)

The emissions avoided due to implementing Method 21 surveying were estimated by the model. Table 10 below displays the percent of emissions avoided in the third year by implementing Method 21 surveying at a facility. The emissions avoided account for the difference in emissions in year three compared with the emissions in the base case. The emissions avoided percentages account for emissions avoided from fugitives from the following sources: valves, connections, pressure relief valves, open-ended lines and orifice meters. This percentage is not indicative of the total emission reduction opportunities at a facility.

Table 10: Year Three Emissions Avoided Compared with Baseline Emissions

Case Number	1 ,2, and 3
Annual Survey	63%
Semi-annual Survey	85%
Quarterly Survey	90%

4.5. Processing

The gas processing segment by contractual arrangements collects a service fee on the volume of gas processed. In some instances, the processing plant may be able to increase service fee because of increased throughput due to gas saved. However, this is a fraction of the total value of gas saved. Therefore, similar to the transmission segment this study analyzed scenarios with and without value of gas saved being included. In processing, five different scenarios were modeled to evaluate how emissions could change over time. Table 11 below displays the results for the average cost effectiveness of the first three years. Each scenario is displayed yearly in 4.7.A.3.

Table 11: Processing Scenario Average Three Year Cost-Effectiveness Results ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Case Number	1	2	3	4	5
Gas Recovery Price	$3/Mcf	$4/Mcf	$3/Mcf	$0/Mcf	$0/Mcf
Number of Contractor Employees	2	2	1	2	1
Annual Survey	$8.39 (12.2 MMscf)	$6.81 (12.2 MMscf)	$6.49 (12.2 MMscf)	$13.12 (12.2 MMscf)	$11.23 (12.2 MMscf)
Semi-annual Survey	$8.43 (23.8 MMscf)	$7.97 (23.8 MMscf)	$6.93 (23.8 MMscf)	$9.82 (23.8 MMscf)	$8.31 (23.8 MMscf)
Quarterly Survey	$11.13 (31 MMscf)	$10.95 (31 MMscf)	$9.16 (31 MMscf)	$11.69 (31 MMscf)	$9.72 (31 MMscf)

The emissions avoided due to implementing Method 21 surveying were estimated by the model. Table 12 below displays the percent of emissions avoided in the third year by implementing Method 21 surveying at a facility. The emissions avoided account for the difference in emissions in year three compared with the emissions in the base case. The emissions avoided percentages account for emissions avoided from fugitives from the following sources: valves, connections, pressure relief valves, open-ended lines, orifice meters, and pressure regulators. This percentage is not indicative of the total emission reduction opportunities at a facility.

Table 12: Year Three Emissions Avoided Compared with Baseline Emissions

Case Number	1 ,2, and 3
Annual Survey	66%
Semi-annual Survey	87%
Quarterly Survey	92%

4.6. Storage

Similar to transmission, storage operators can only collect service fee. Therefore, similar to the transmission segment multiple scenarios were evaluated with and without the value gas recovered included in the analysis. In storage, five different scenarios were modeled to evaluate how emissions could change over time. Table 13 below displays the results for the average cost effectiveness of the first three years. Each scenario is displayed yearly in 4.7.A.4.

Table 13: Storage Scenario Average Three Year Cost-Effectiveness Results ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Case Number	1	2	3	4	5
Gas Recovery Price	$3/Mcf	$4/Mcf	$3/Mcf	$0/Mcf	$0/Mcf
Number of Contractor Employees	2	2	1	2	1
Annual Survey	-$0.86 (14.9 MMscf)	-$3.16 (14.9 MMscf)	-$1.83 (14.9 MMscf)	$6.02 (14.9 MMscf)	$5.06 (14.9 MMscf)
Semi-annual Survey	$2.00 (34 MMscf)	$1.34 (34 MMscf)	$1.32 (34 MMscf)	$4.00 (34 MMscf)	$3.31 (34 MMscf)
Quarterly Survey	$3.35 (47.7 MMscf)	$3.06 (47.7 MMscf)	$2.50 (47.7 MMscf)	$4.21 (47.7 MMscf)	$3.36 (47.7 MMscf)

The emissions avoided due to implementing Method 21 surveying were estimated by the model. Table 14 below displays the percent of emissions avoided in the third year by implementing Method 21 surveying at a facility. The emissions avoided account for the difference in emissions in year three compared with the emissions in the base case. The emissions avoided percentages account for emissions avoided from fugitives from the following sources: valves, connections, pressure relief valves, open-ended lines and orifice meters. This percentage is not indicative of the total emission reduction opportunities at a facility.

Table 14: Year Three Emissions Avoided Compared with Baseline Emissions

Case Number	1 ,2, and 3
Annual Survey	54%
Semi-annual Survey	77%
Quarterly Survey	84%

4.7. Gathering and Boosting

In gathering and boosting, three different scenarios were modeled to evaluate how emissions could change over time. Table 15 below displays the results for the average cost effectiveness of the first three years. Each scenario is displayed yearly in A.5.

Table 15: Gathering and Boosting Scenario Average Three Year Cost-Effectiveness Results ($/Metric Tonnes CO_2e Avoided) with Total Emissions Avoided over the First Three Years (MMcf) in Parentheses

Case Number	1	2	3
Gas Price	$3/Mcf	$4/Mcf	$3/Mcf
Number of Contractor Employees	2	2	1
Annual Survey	$0.25 (6.1 MMscf)	-$1.40 (6.1 MMscf)	-$0.18 (6.1 MMscf)
Semi-annual Survey	$2.66 (12 MMscf)	$2.17 (12 MMscf)	$2.32 (12 MMscf)
Quarterly Survey	$4.51 (15.8 MMscf)	$4.31 (15.8 MMscf)	$4.07 (15.8 MMscf)

The emissions avoided due to implementing Method 21 surveying were estimated by the model. Table 16 below displays the percent of emissions avoided in the third year by implementing Method 21 surveying at a facility. The emissions avoided account for the difference in emissions in year three compared with the emissions in the base case.

Table 16: Year Three Emissions Avoided Compared with Baseline Emissions

Case Number	1 ,2, and 3
Annual Survey	64%
Semi-annual Survey	86%
Quarterly Survey	91%

Appendix A. Detailed Results

For the Production and Gathering and Boosting segments listed below, three cases of performing Method 21 for an LDAR survey are presented. For the Transmission, Processing, and Storage segments, five cases of performing Method 21 for an LDAR survey are presented. Each case varies the gas price and the number of contractor employees utilized to perform the survey. Each case represents a different economic impact to enlist an LDAR program for a median sized facility. For each case, the figures below show the cost effectiveness of the LDAR program based on a median emissions reduction volume at the end of the third year. The results are displayed based on the frequency of testing, either annually, semiannually, or quarterly. Additionally, the price per metric tonne CO_2e avoided for each case is presented, also on a frequency of testing basis.

A.1. Production

A.1.1. Case 1 - $3/Mcf Gas Value and Two Contractors

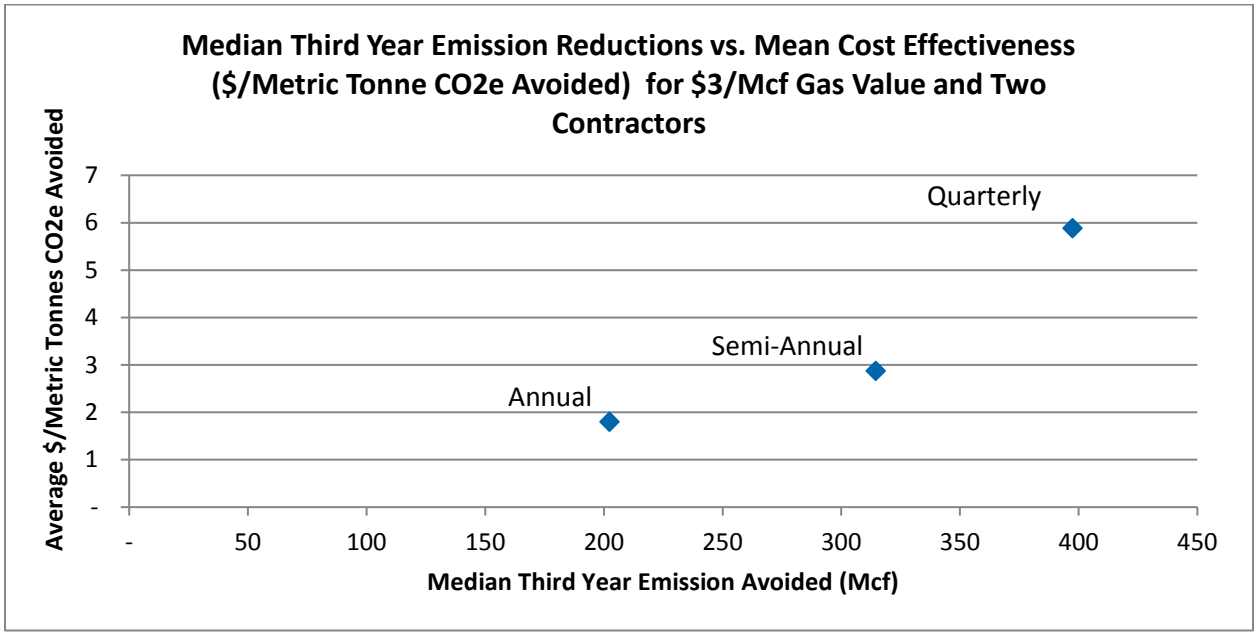

Figure 3: Production Case 1 Cost Effectiveness

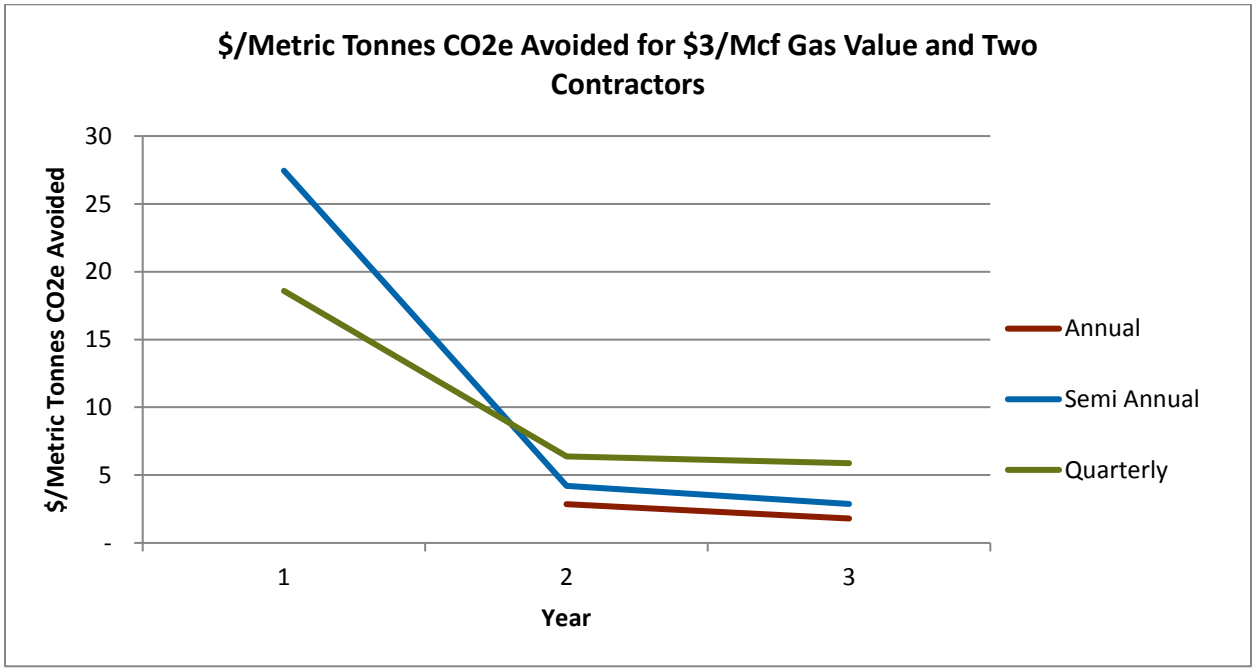

Figure 4: Production Case 1 CO_2e Avoided

A.1.2. Case 2 - $4/Mcf Gas Value and Two Contractors

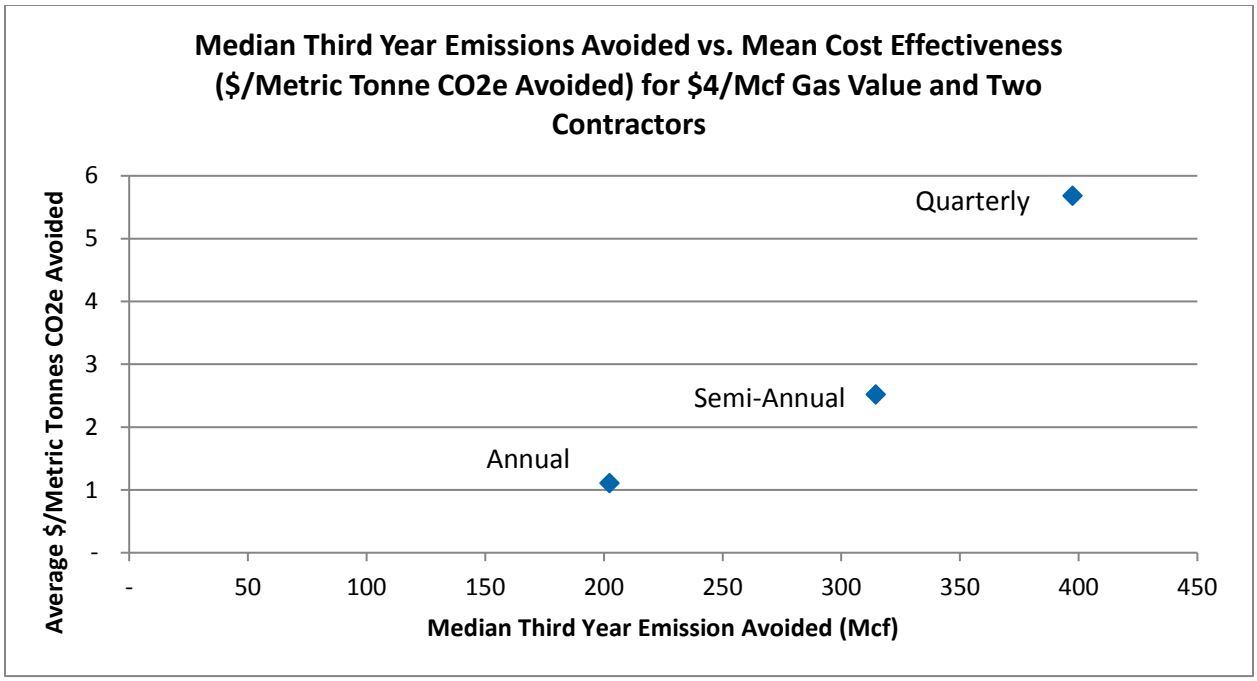

Figure 5: Production Case 2 Cost Effectiveness

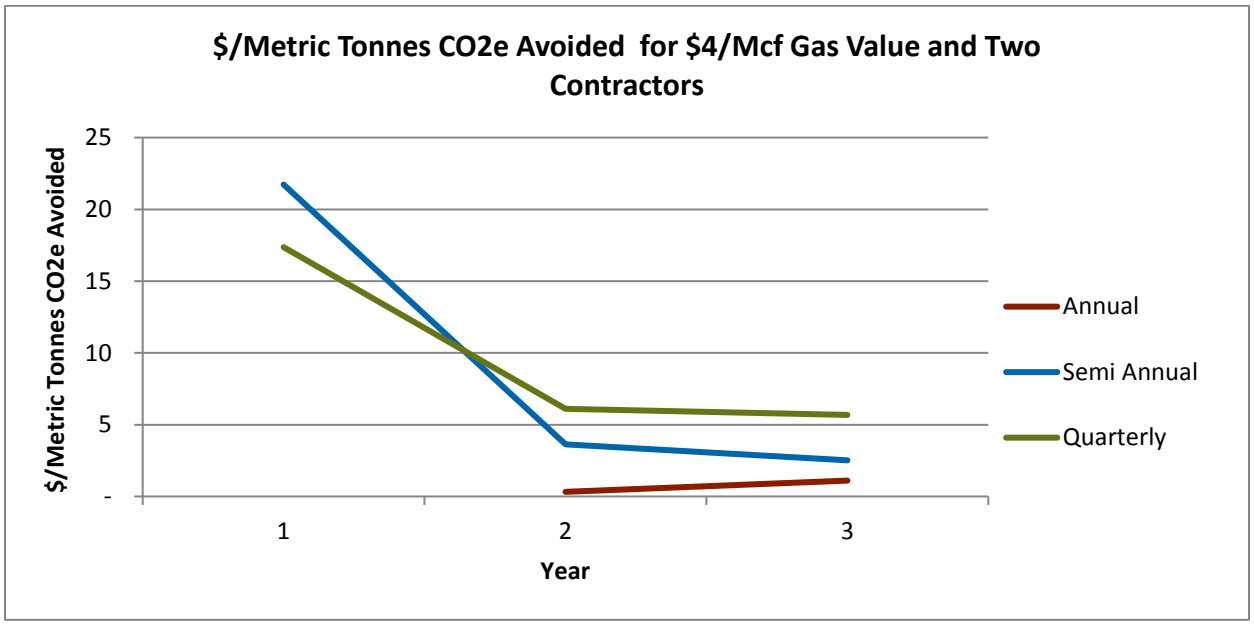

Figure 6: Production Case 2 CO_2e Avoided

A.1.3. Case 3 - $3/Mcf Gas Value and One Contractor

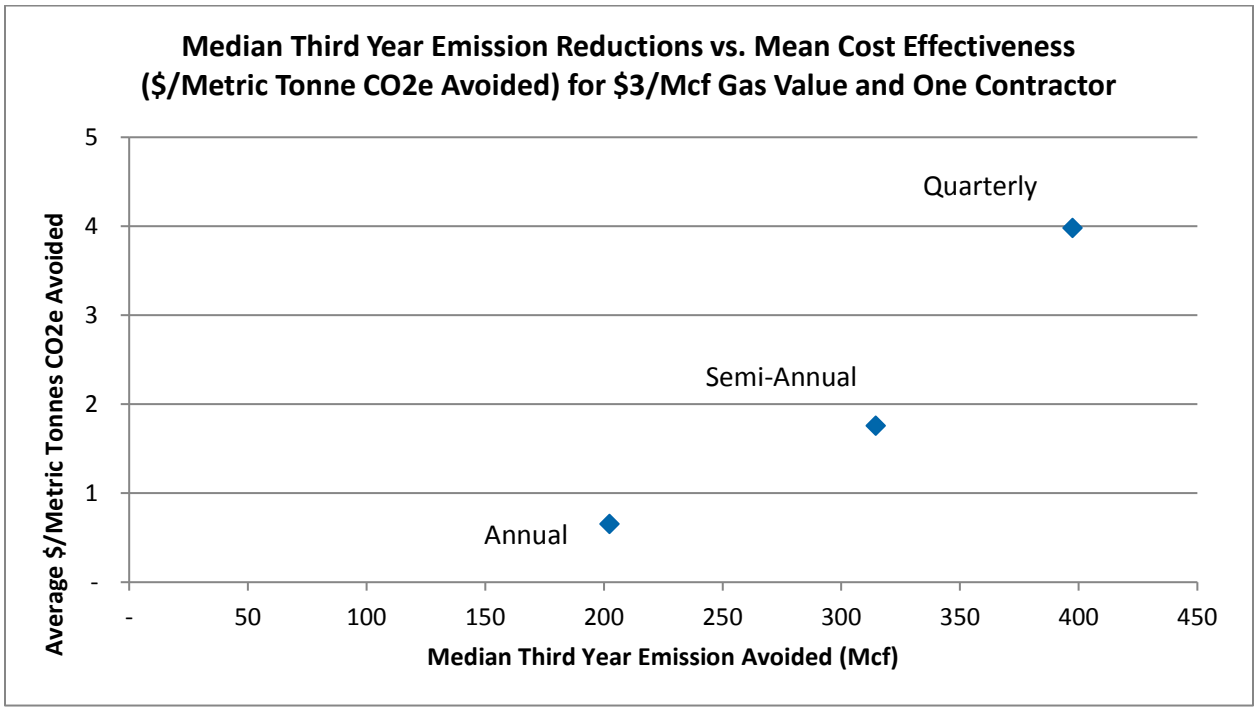

Figure 7: Production Case 3 Cost Effectiveness

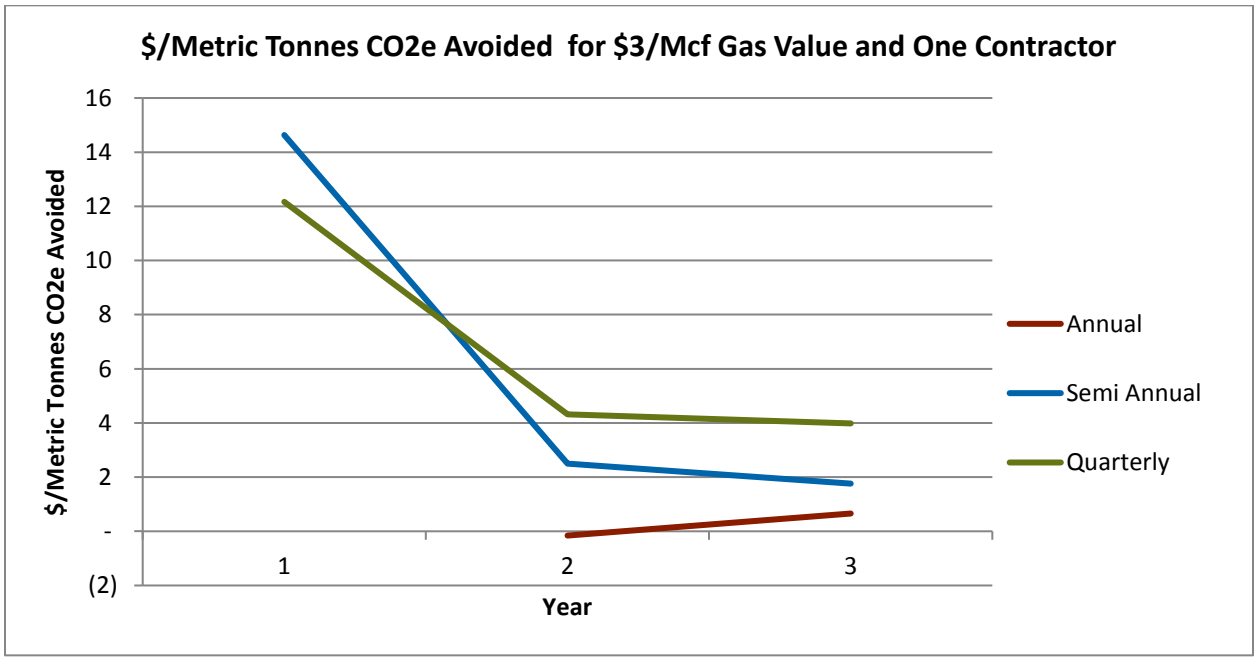

Figure 8: Production Case 3 CO_2e Avoided

A.2. Transmission

A.2.1. Case 1 - $3/Mcf Gas Value and Two Contractors

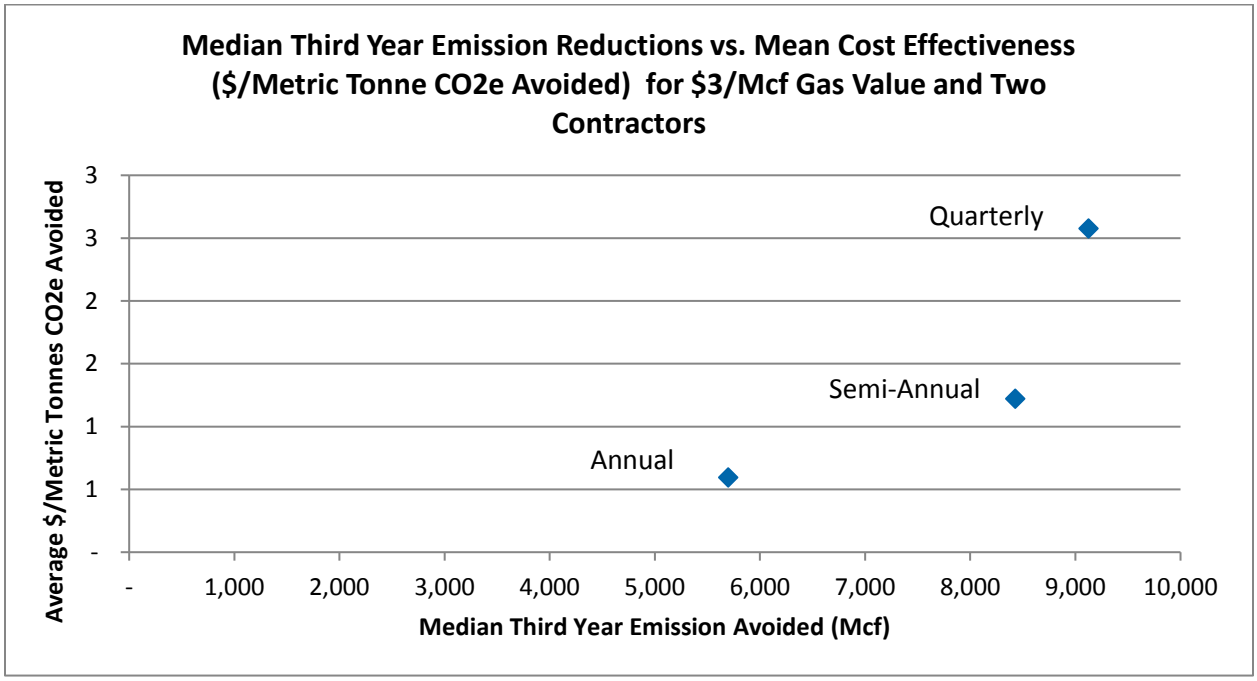

Figure 9: Transmission Case 1 Cost Effectiveness

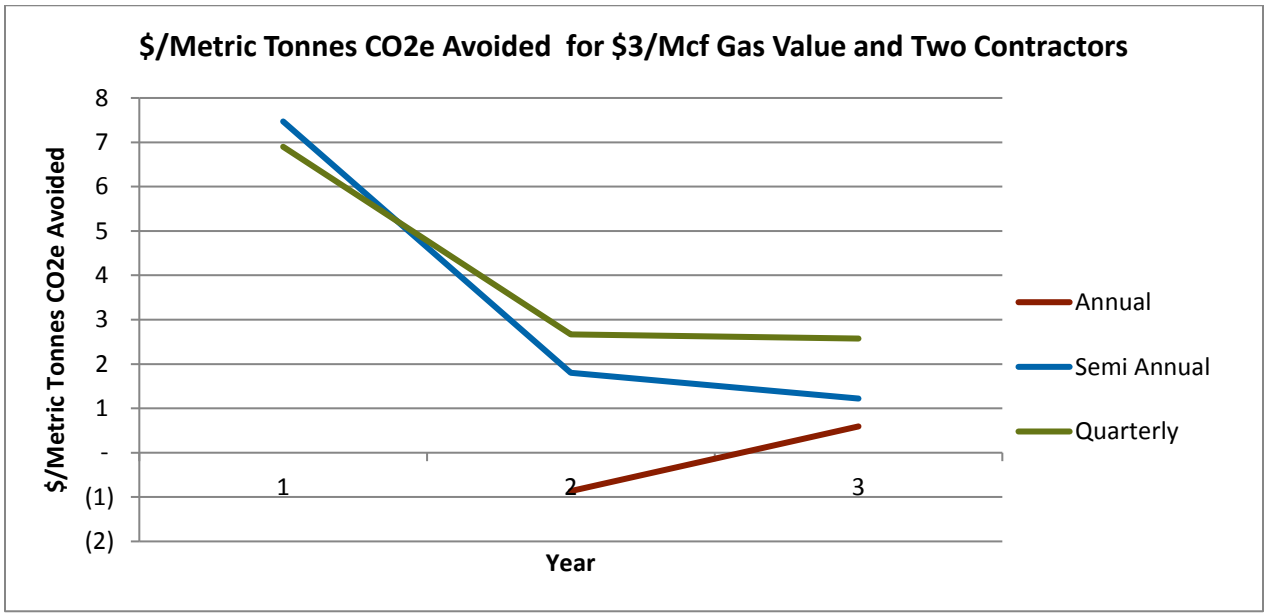

Figure 10: Transmission Case 1 CO_2e Avoided

A.2.2. Case 2 - $4/Mcf Gas Value and Two Contractors

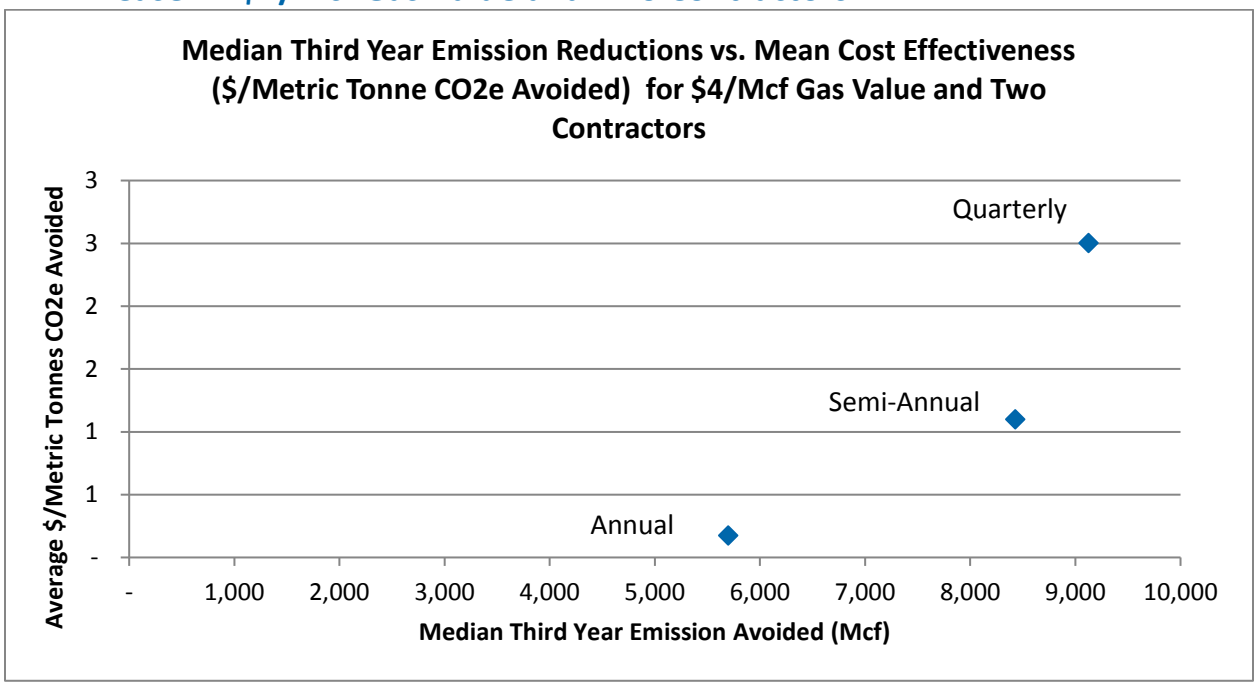

Figure 11: Transmission Case 2 Cost Effectiveness

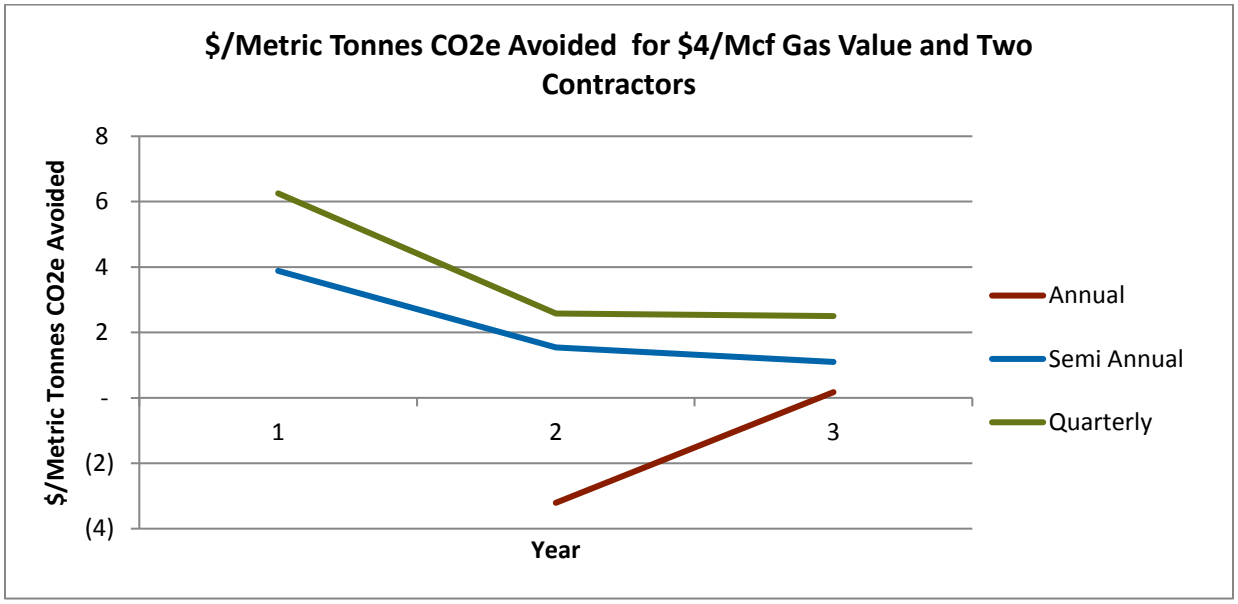

Figure 12: Transmission Case 2 CO_2e Avoided

A.2.3. Case 3 - $3/Mcf Gas Value and One Contractor

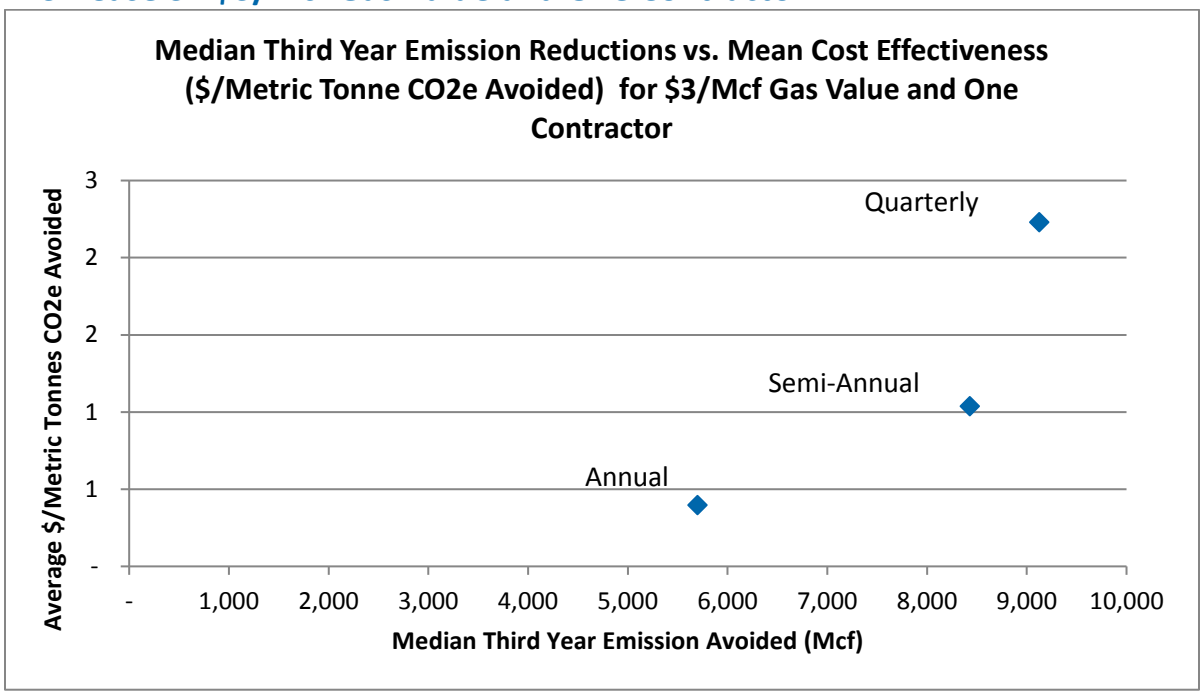

Figure 13: Transmission Case 3 Cost Effectiveness

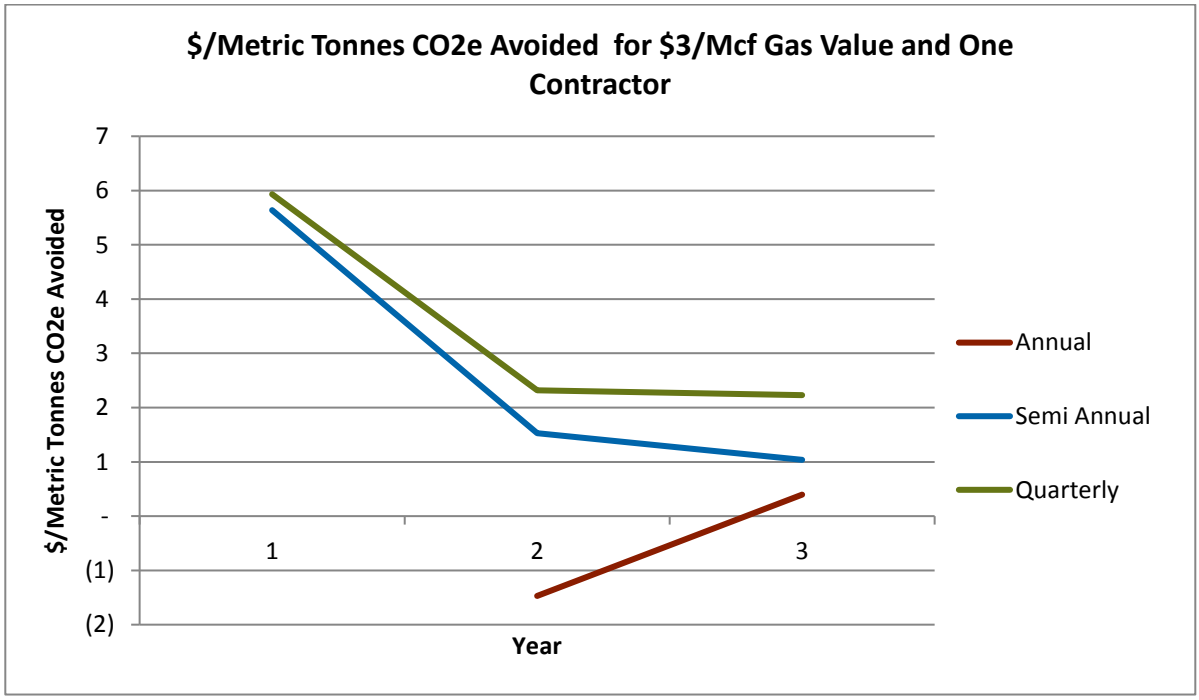

Figure 14: Transmission Case 3 CO_2e Avoided

A.2.4. Case 4 - $0/Mcf Gas Value and Two Contractors

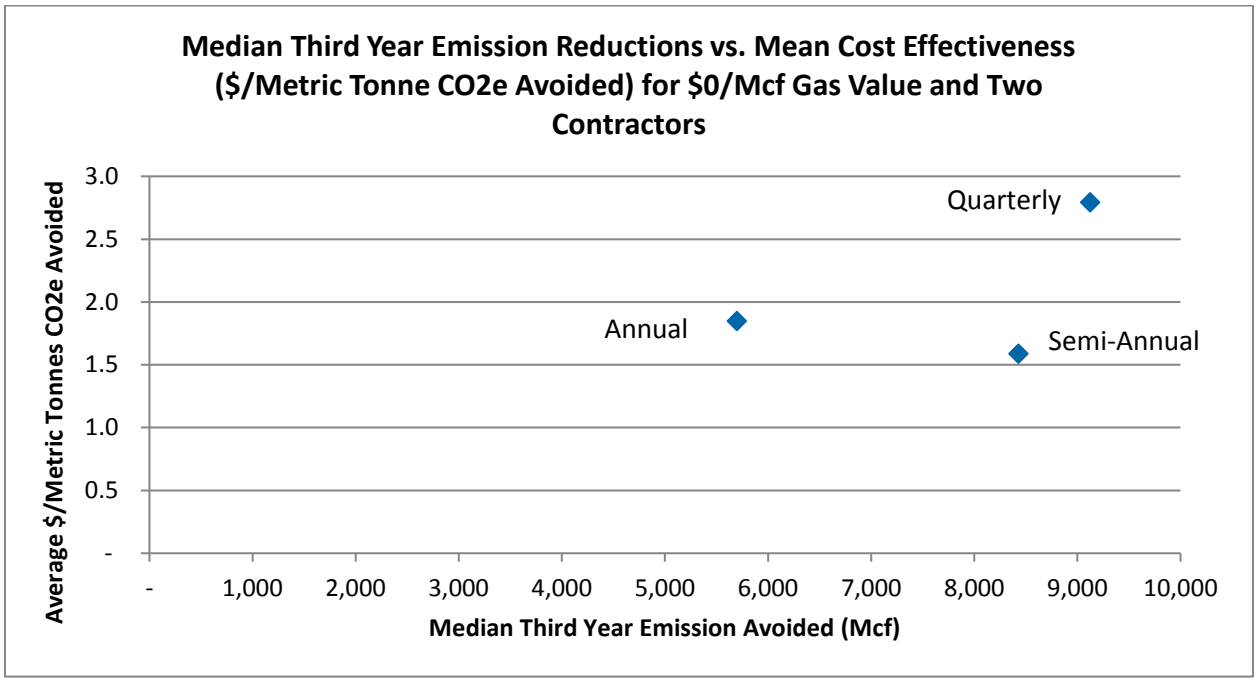

Figure 15: Transmission Case 4 Cost Effectiveness

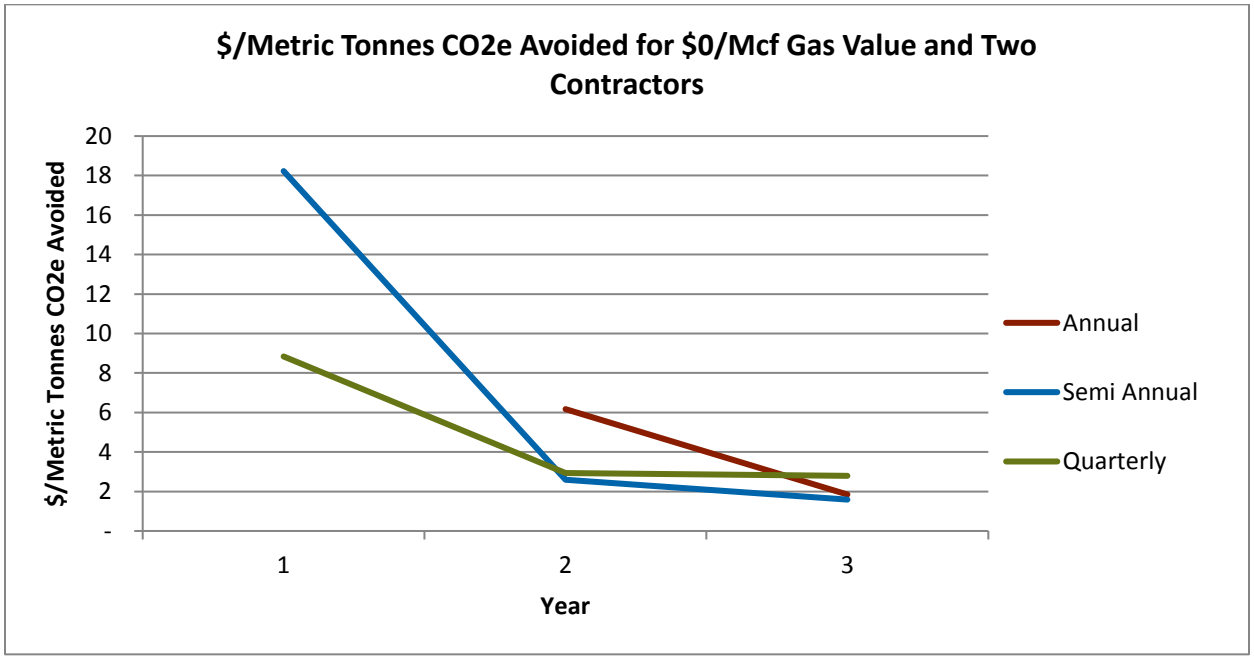

Figure 16: Transmission Case 4 CO_2e Avoided

A.2.5. Case 5 - $0/Mcf Gas Value and One Contractor

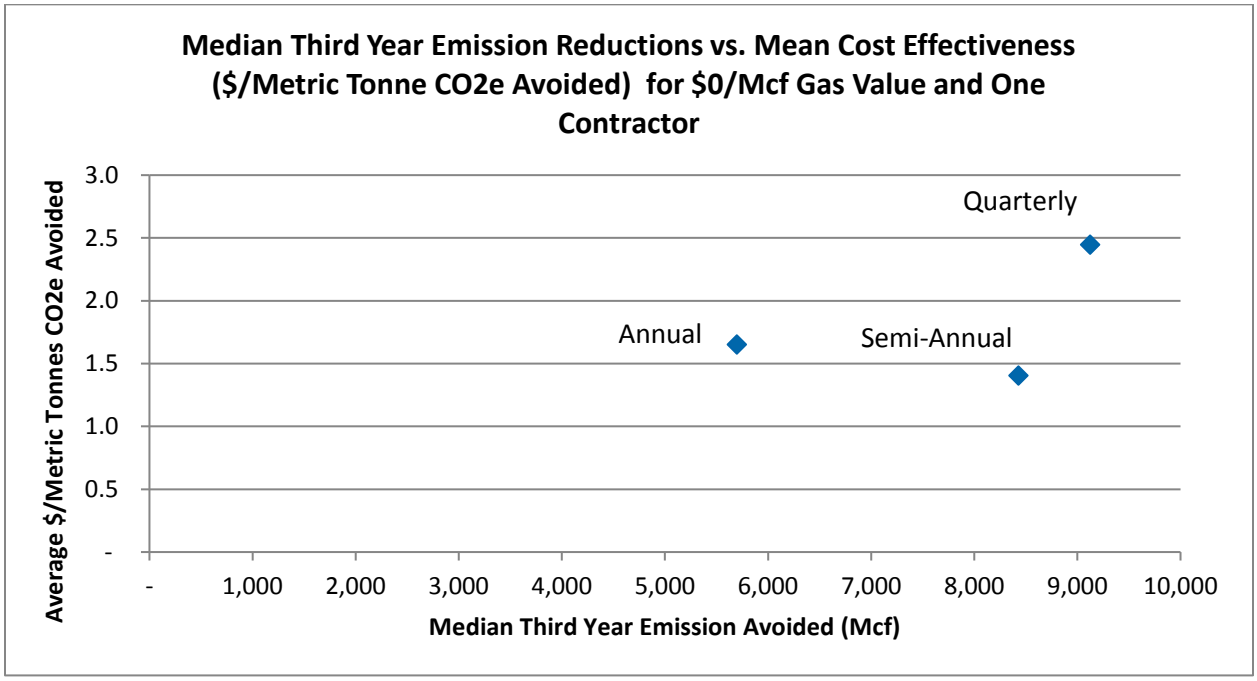

Figure 17: Transmission Case 5 Cost Effectiveness

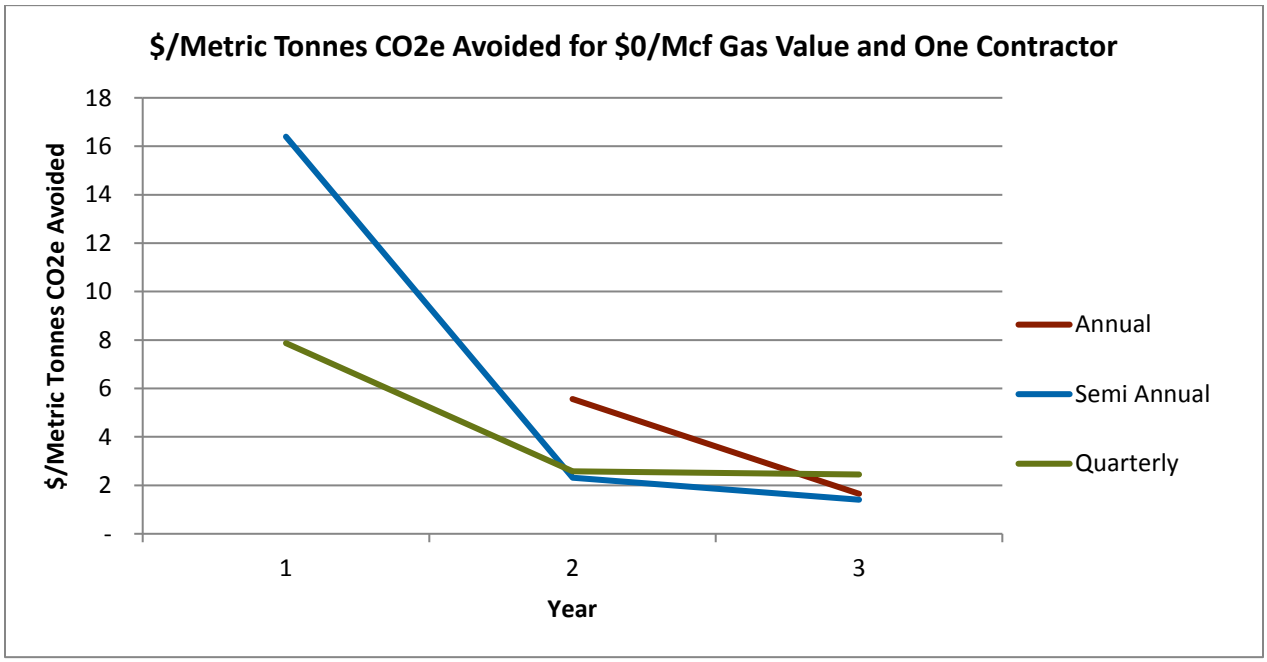

Figure 18: Transmission Case 5 CO_2e Avoided

A.3. Processing

A.3.1. Case 1 - $3/Mcf Gas Value and Two Contractors

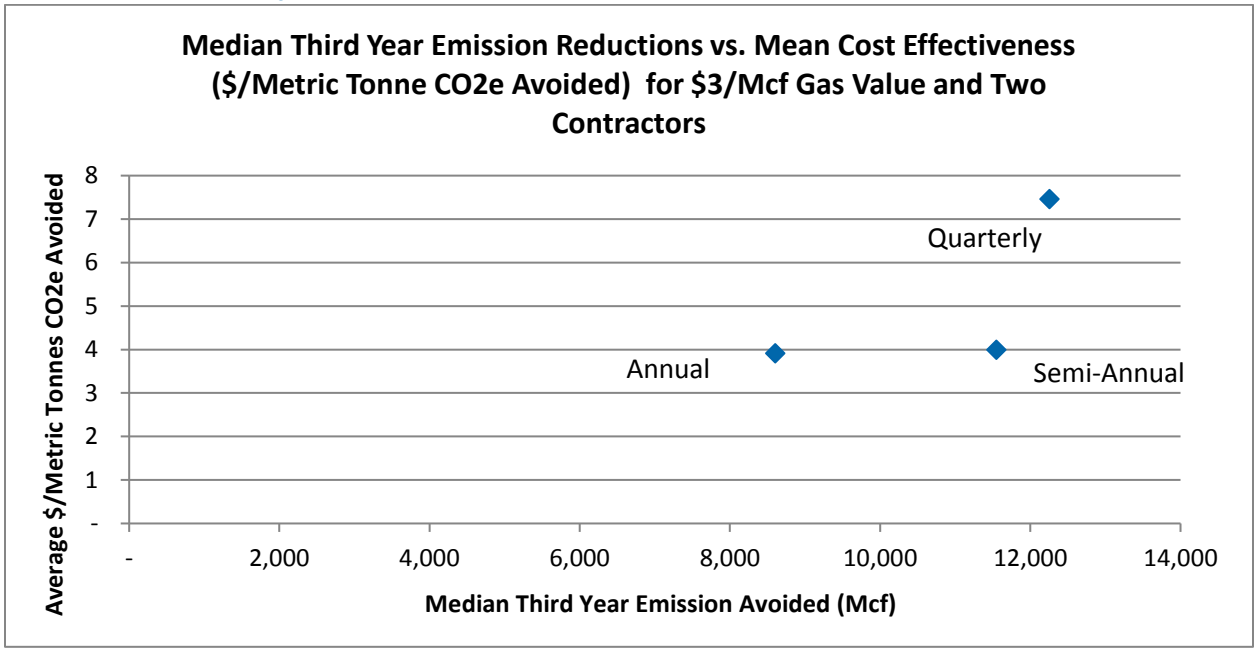

Figure 19: Processing Case 1 Cost Effectiveness

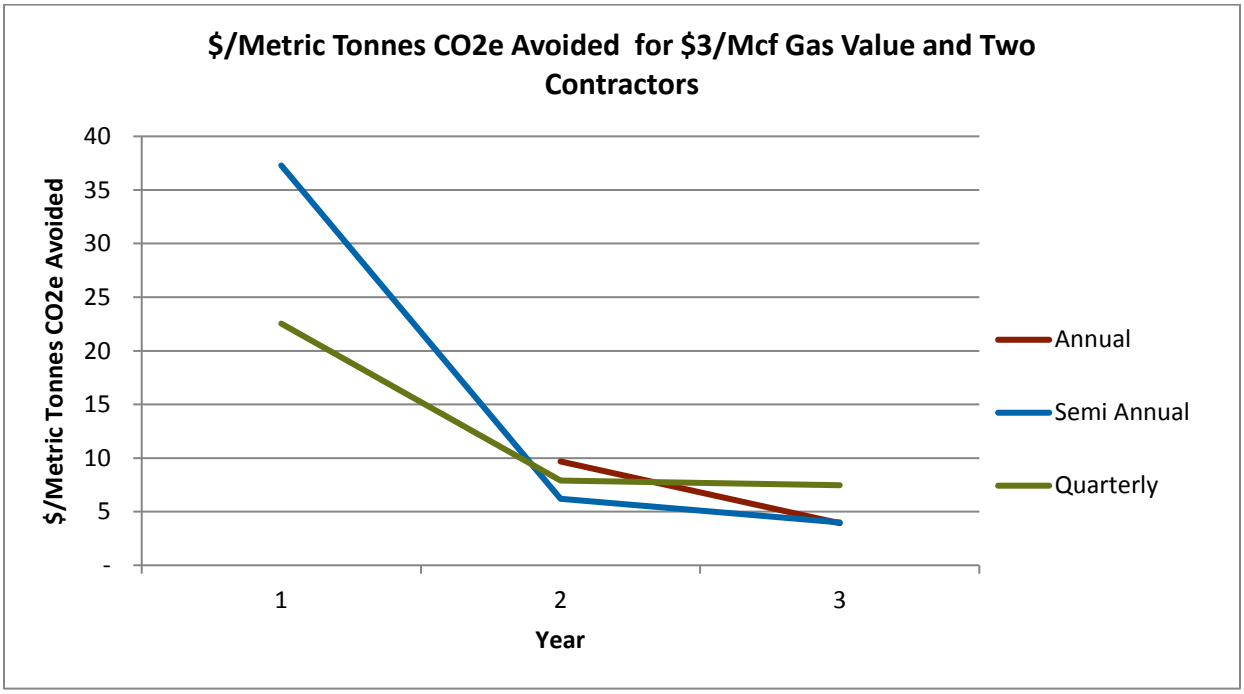

Figure 20: Processing Case 1 CO_2e Avoided

A.3.2. Case 2 - $4/Mcf Gas Value and Two Contractors

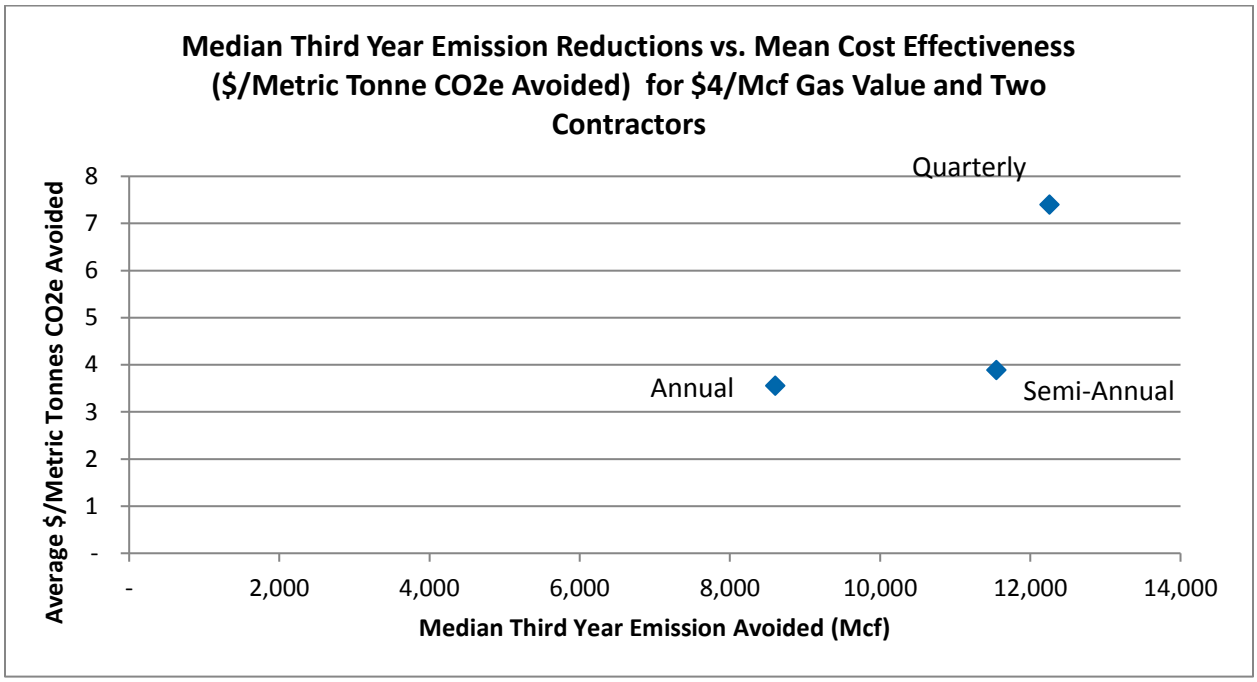

Figure 21: Processing Case 2 Cost Effectiveness

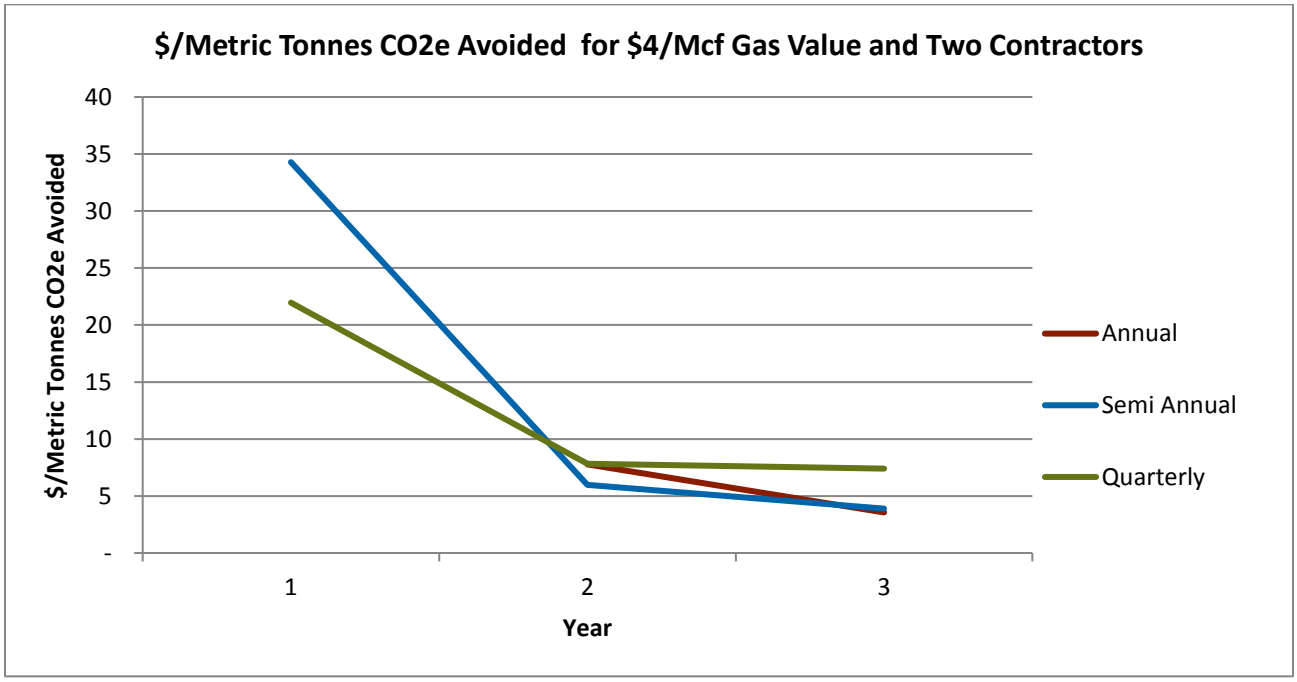

Figure 22: Processing Case 2 CO_2e Avoided

A.3.3. Case 3 - $3/Mcf Gas Value and One Contractor

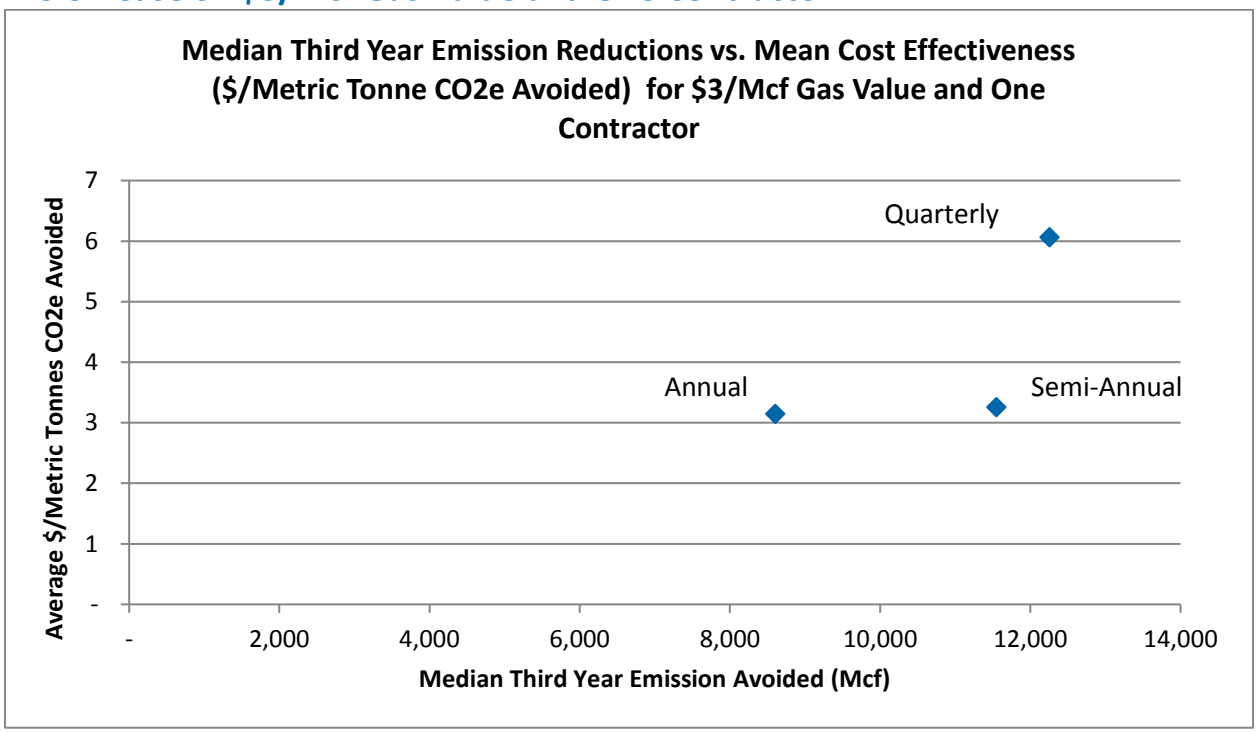

Figure 23: Processing Case 3 Cost Effectiveness

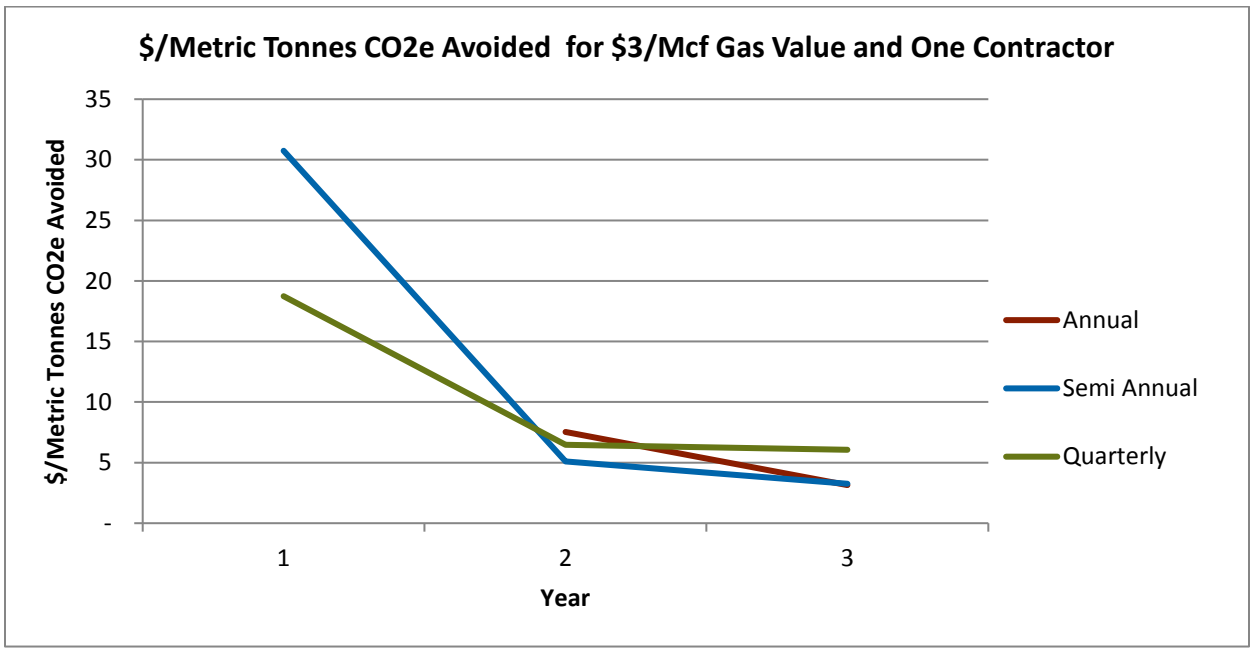

Figure 24: Processing Case 3 CO_2e Avoided

A.3.4. Case 4 - $0/Mcf Gas Value and Two Contractors

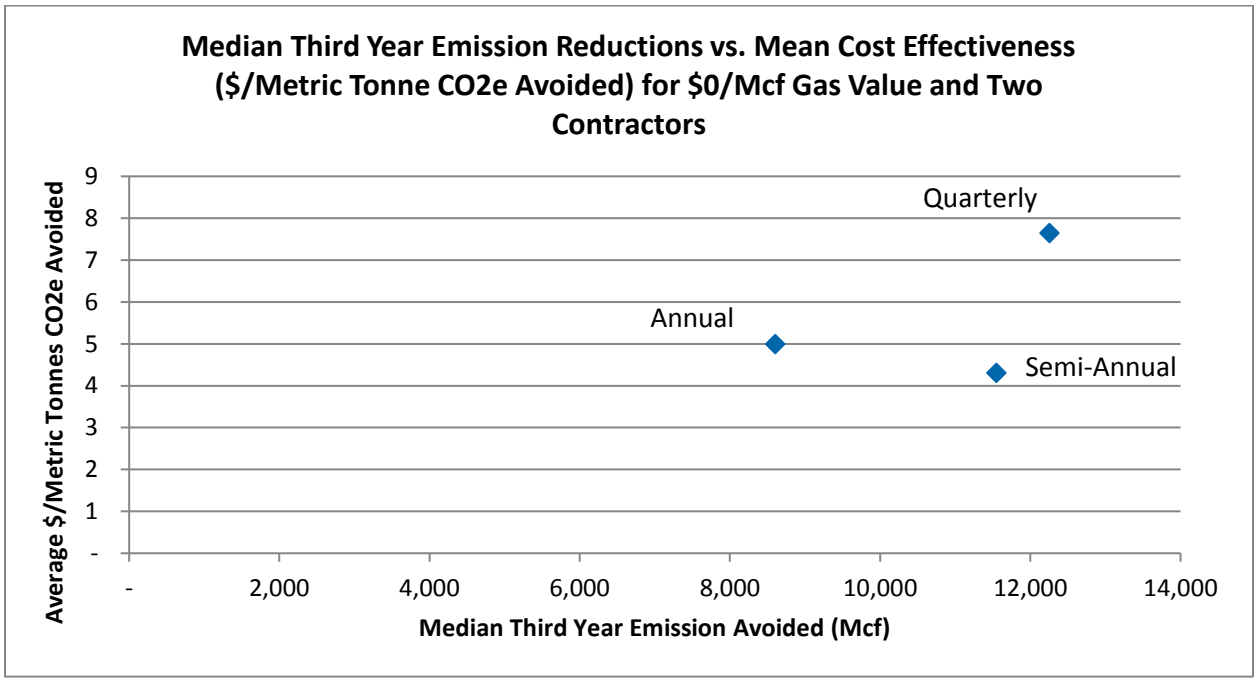

Figure 25: Processing Case 4 Cost Effectiveness

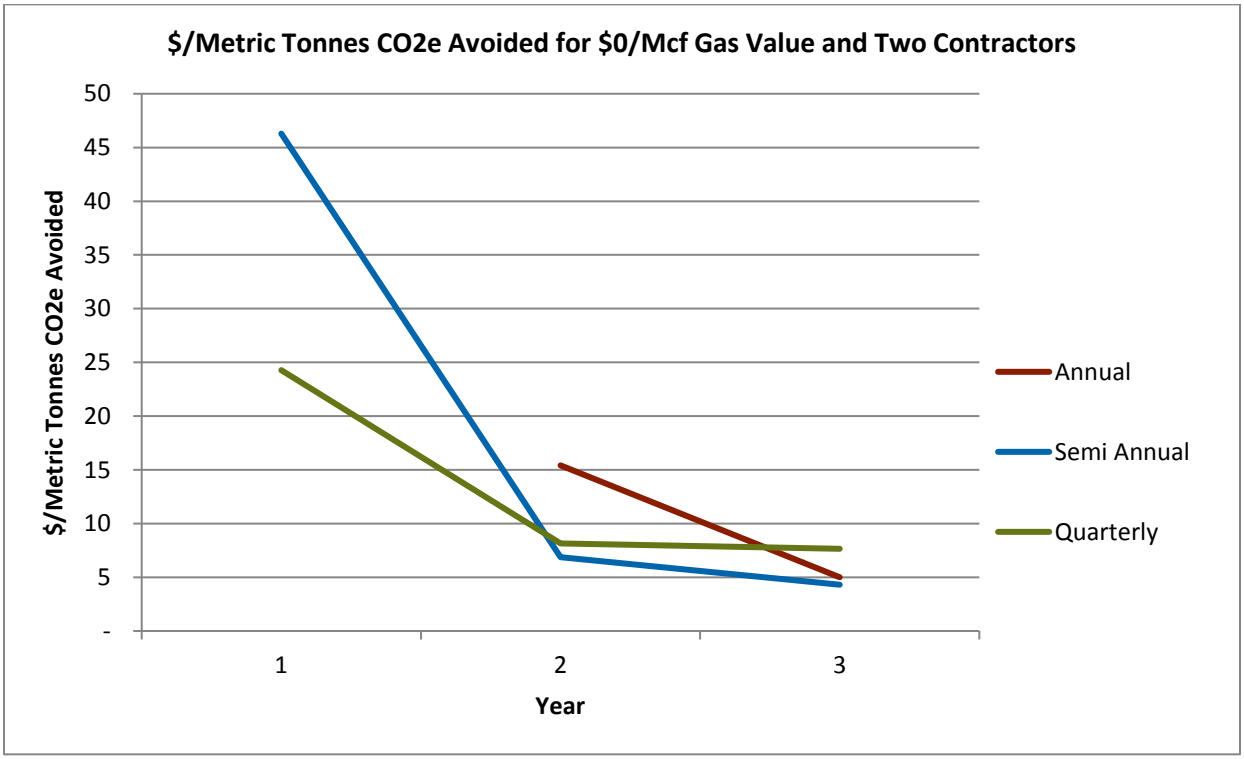

Figure 26: Processing Case 4 CO_2e Avoided

A.3.5. Case 5 - $0/Mcf Gas Value and One Contractor

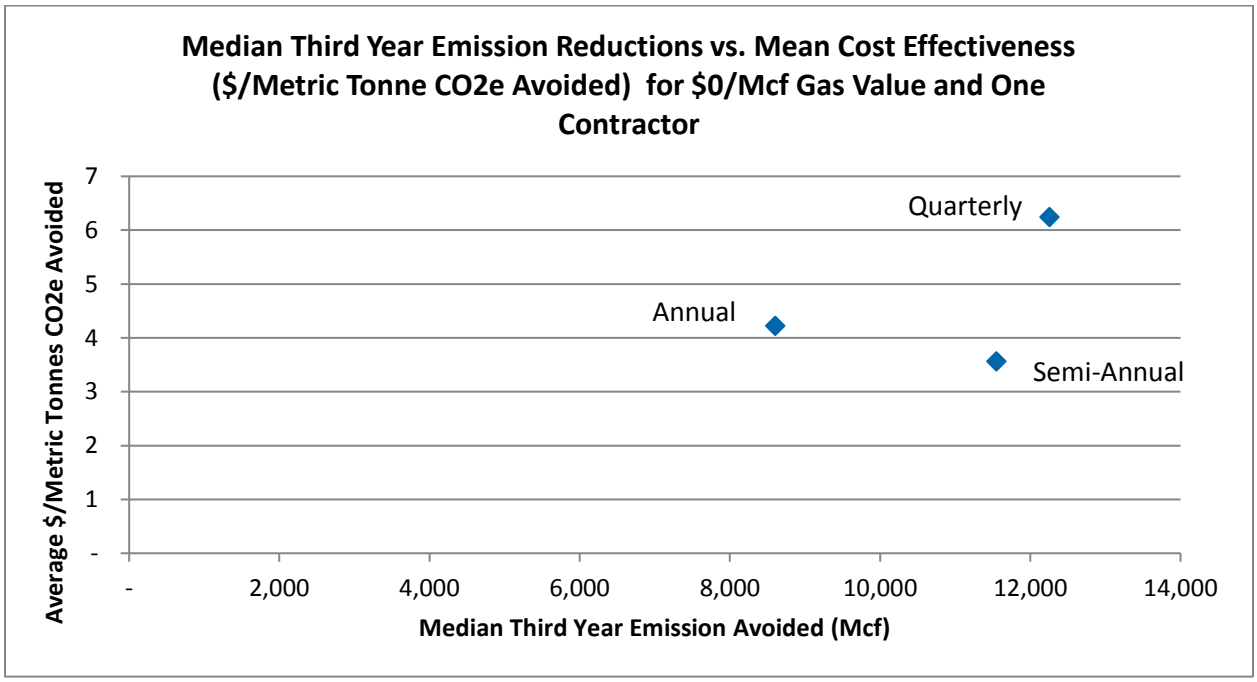

Figure 27: Processing Case 5 Cost Effectiveness

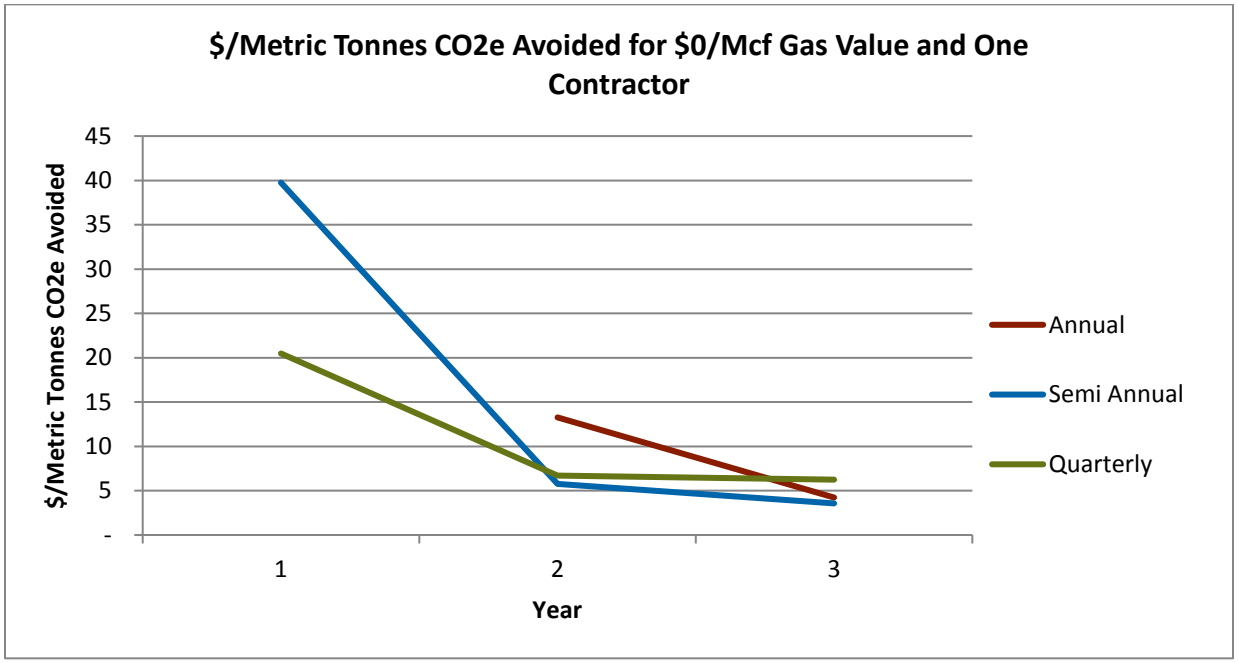

Figure 28: Processing Case 5 CO_2e Avoided

A.4. Storage

A.4.1. Case 1 - $3/Mcf Gas Value and Two Contractors

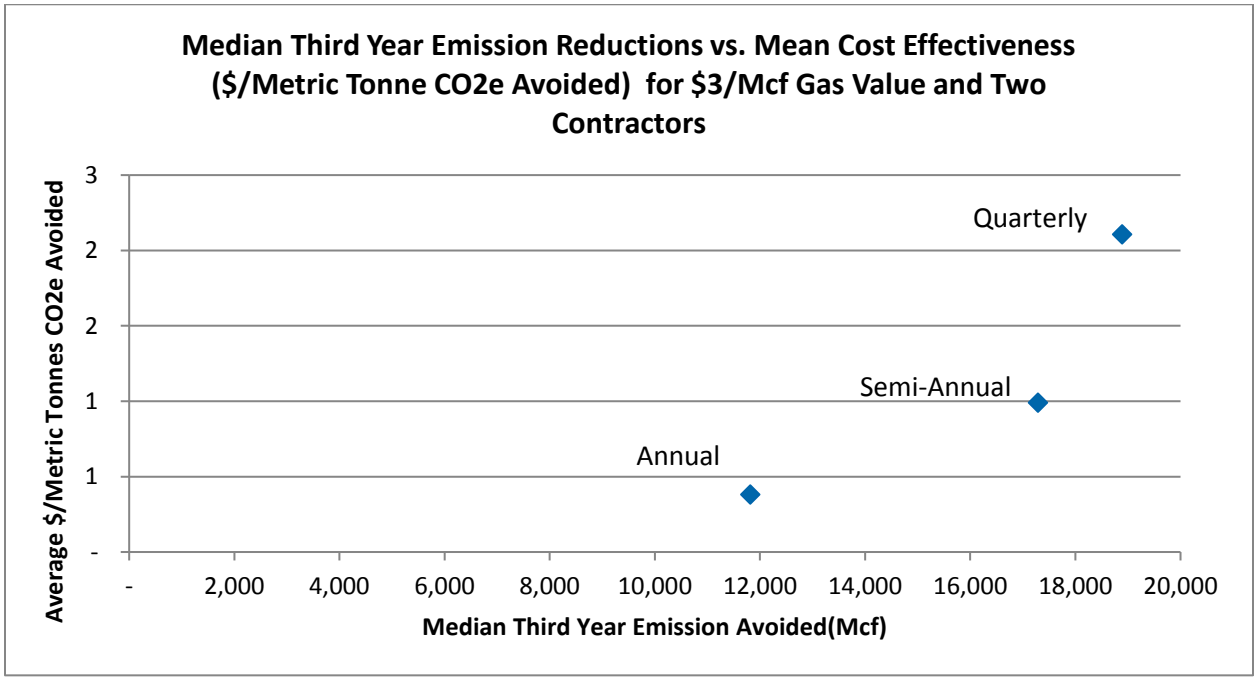

Figure 29: Storage Case 1 Cost Effectiveness

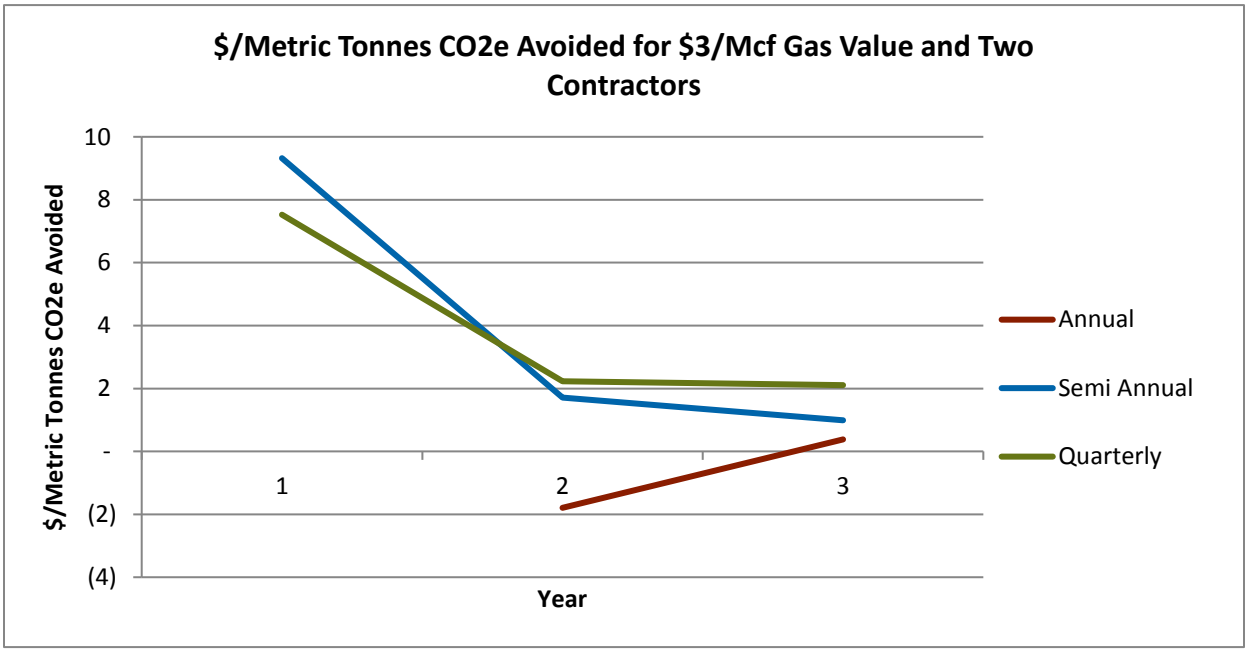

Figure 30: Storage Case 1 CO_2e Avoided

A.4.2. Case 2 - $4/Mcf Gas Value and Two Contractors

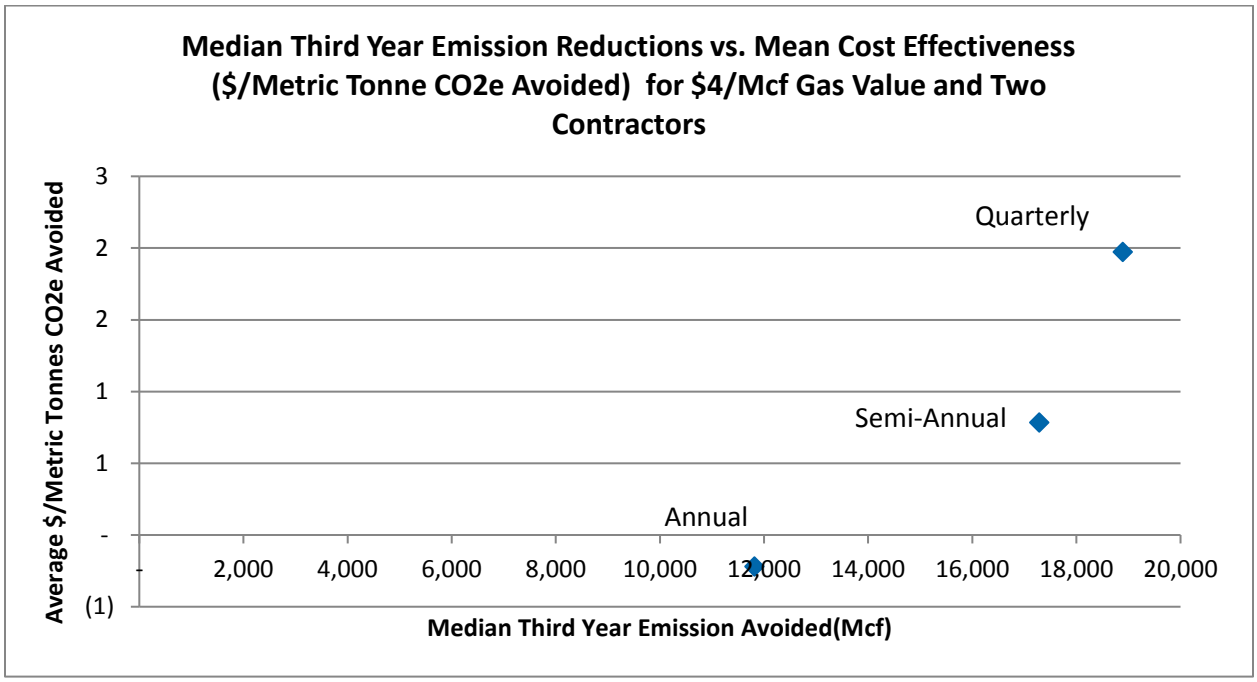

Figure 31: Storage Case 2 Cost Effectiveness

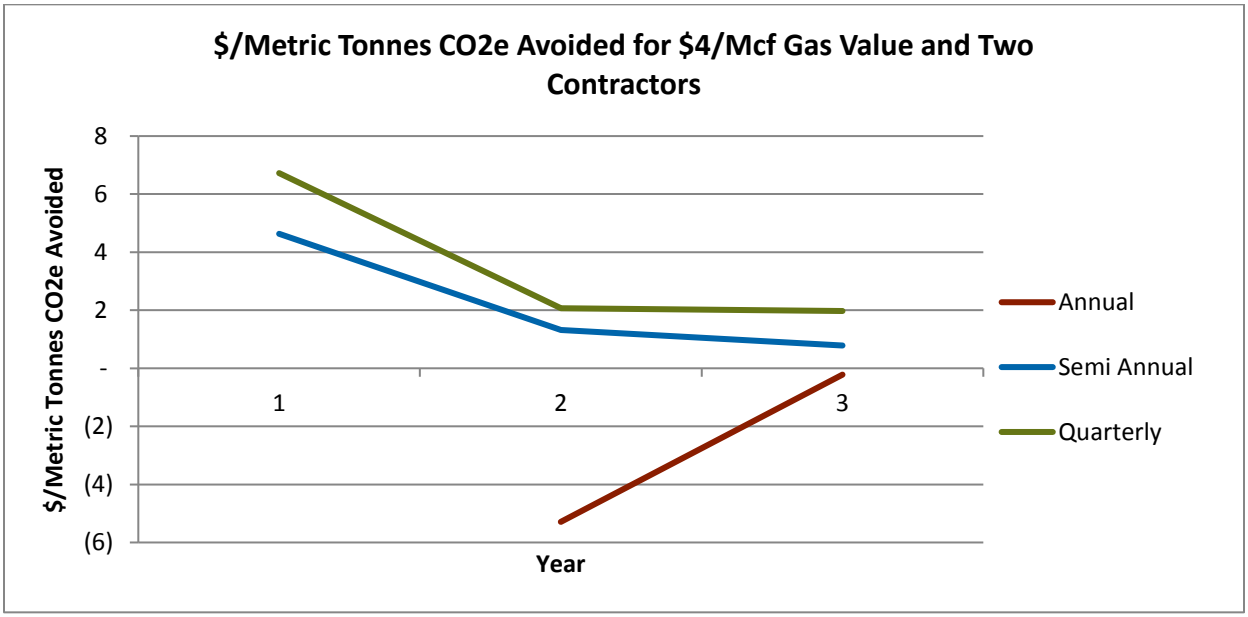

Figure 32: Storage Case 2 CO_2e Avoided

A.4.3. Case 3 - $3/Mcf Gas Value and One Contractor

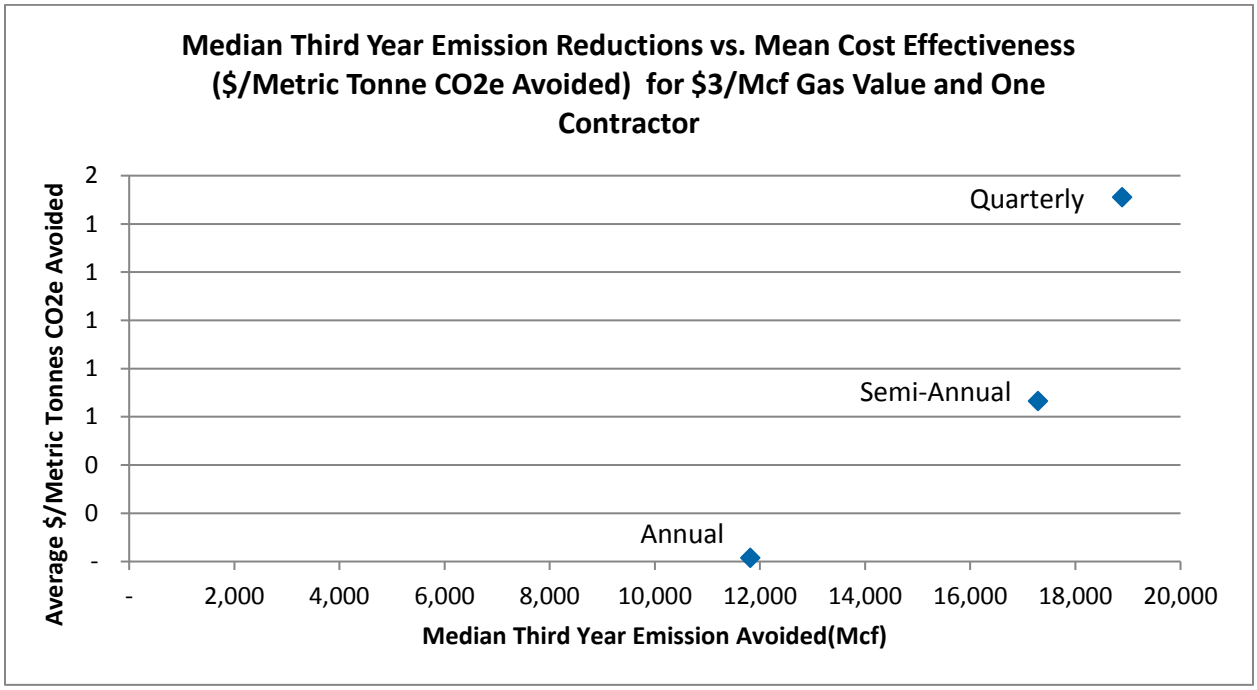

Figure 33: Storage Case 3 Cost Effectiveness

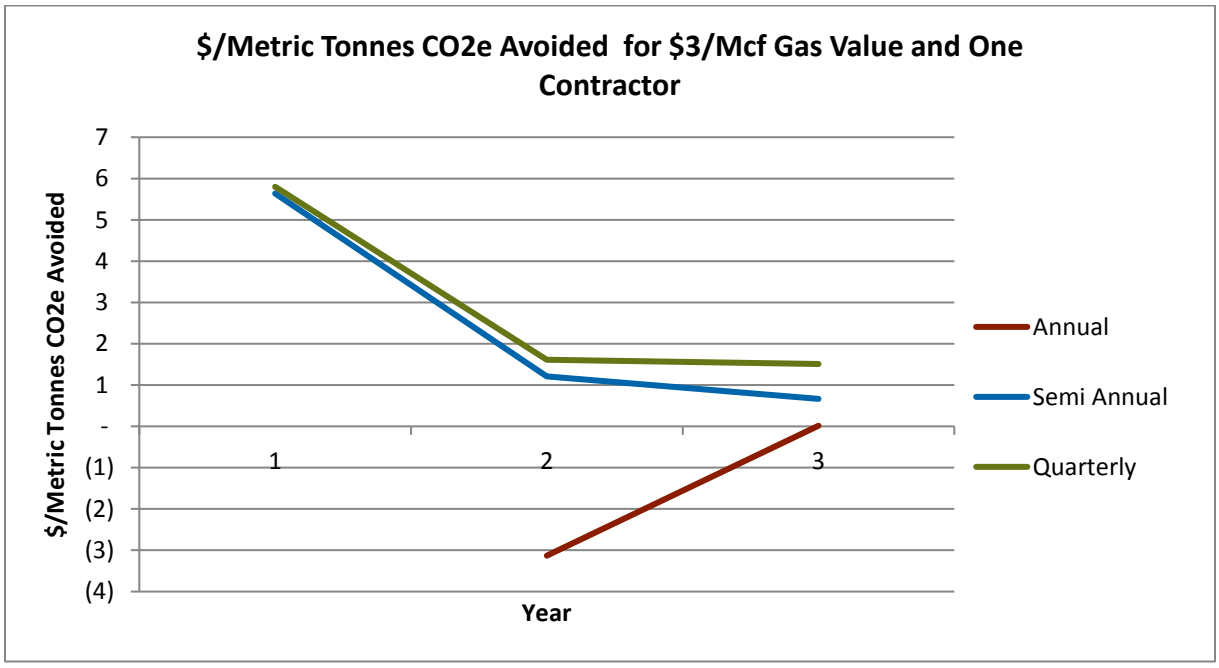

Figure 34: Storage Case 3 CO_2e Avoided

A.4.4. Case 4 - $0/Mcf Gas Value and Two Contractors

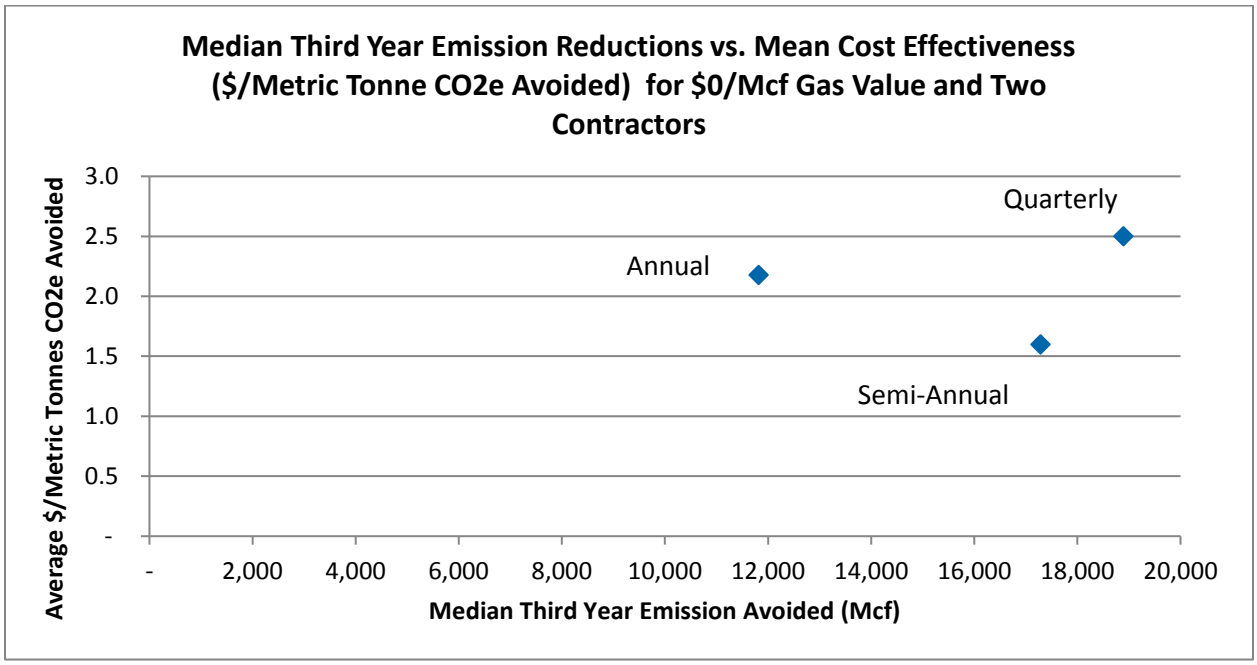

Figure 35: Storage Case 4 Cost Effectiveness

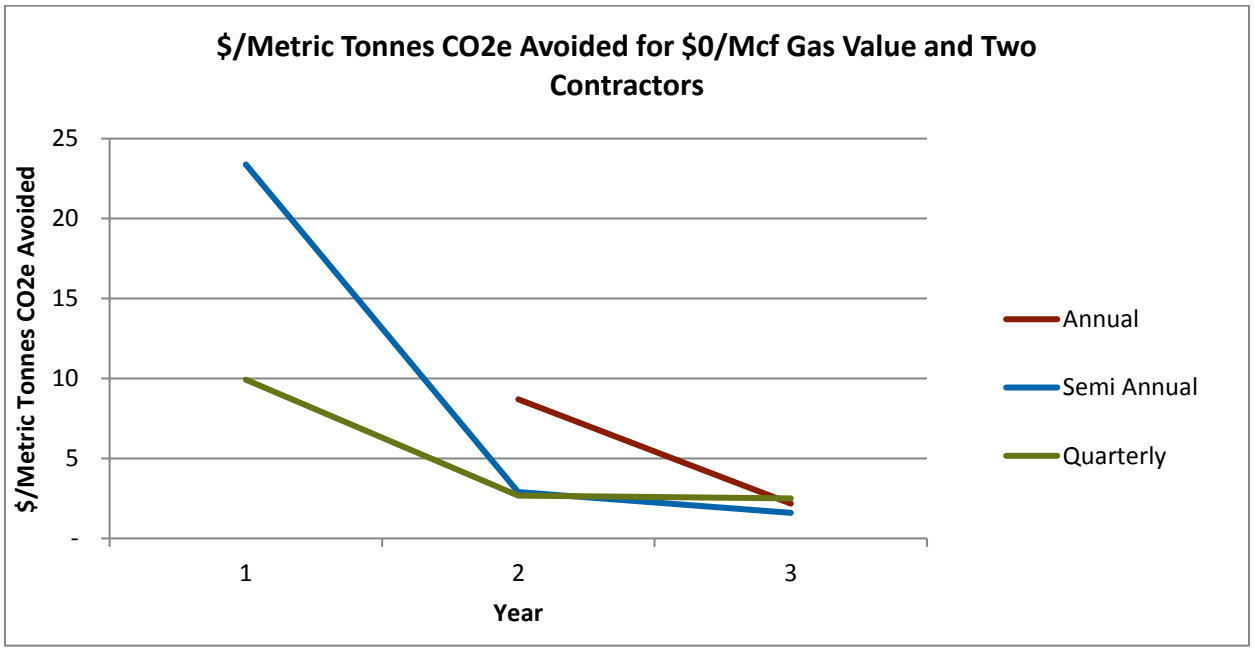

Figure 36: Storage Case 4 CO_2e Avoided

A.4.5. Case 5 - $0/Mcf Gas Value and One Contractor

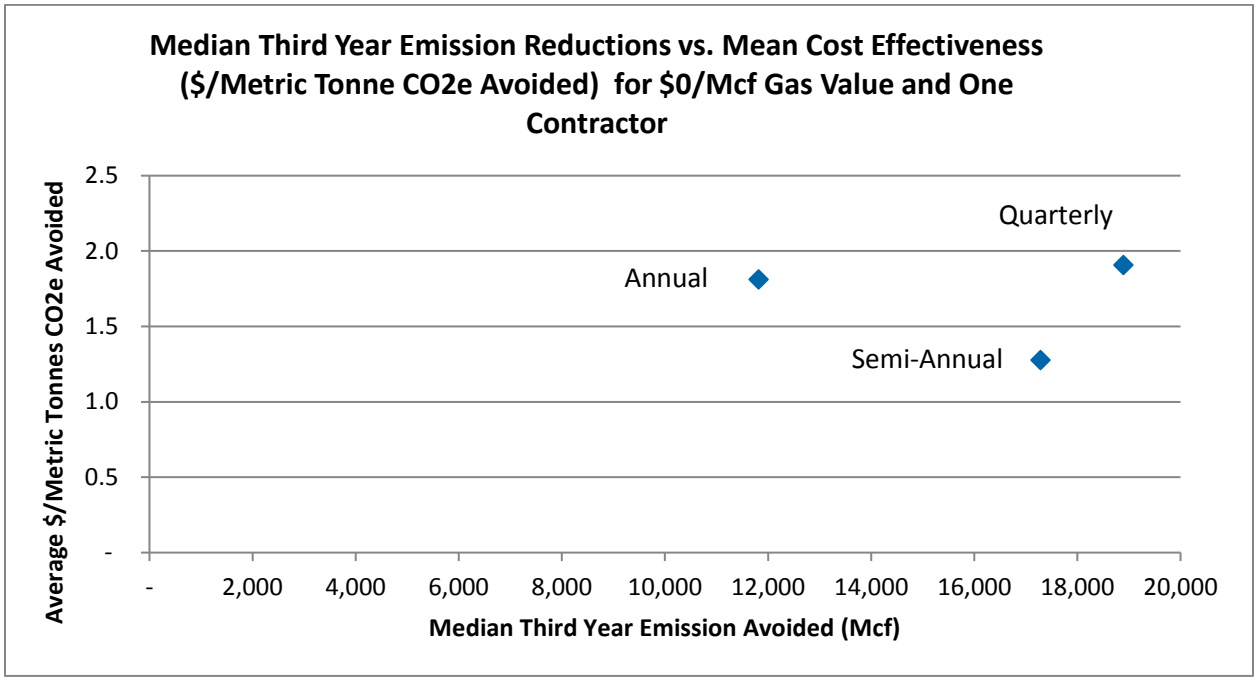

Figure 37: Storage Case 5 Cost Effectiveness

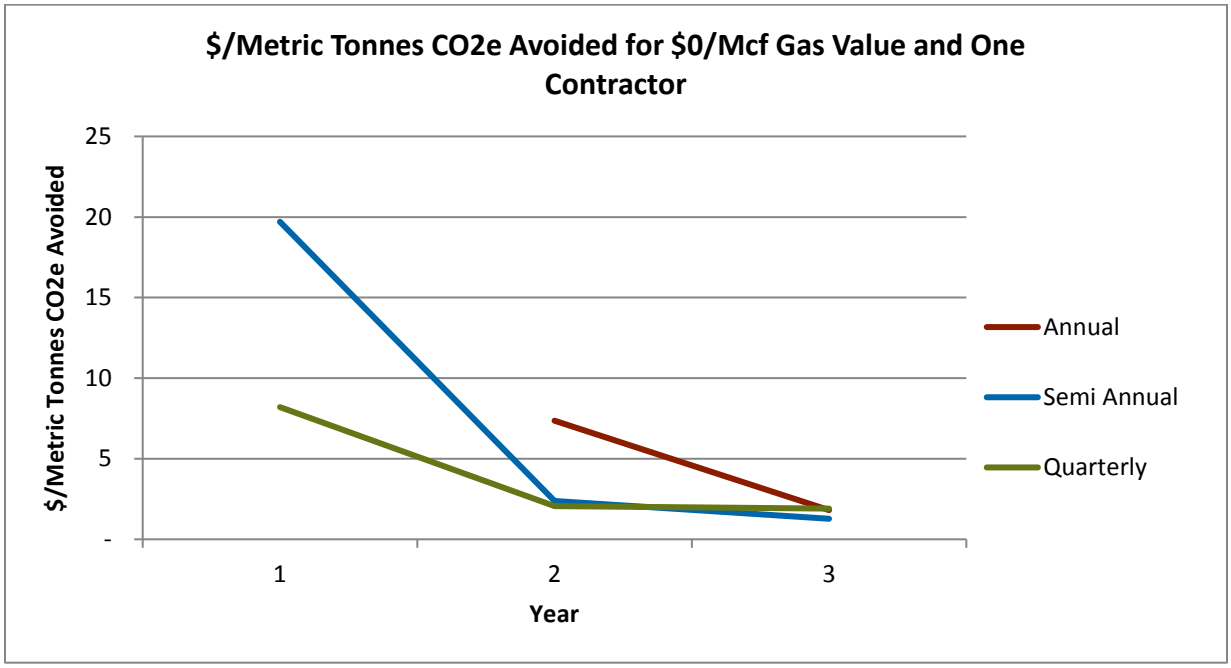

Figure 38: Storage Case 5 CO_2e Avoided

A.5. Gathering and Boosting

A.5.1. Case 1 - $3/Mcf Gas Value and Two Contractors

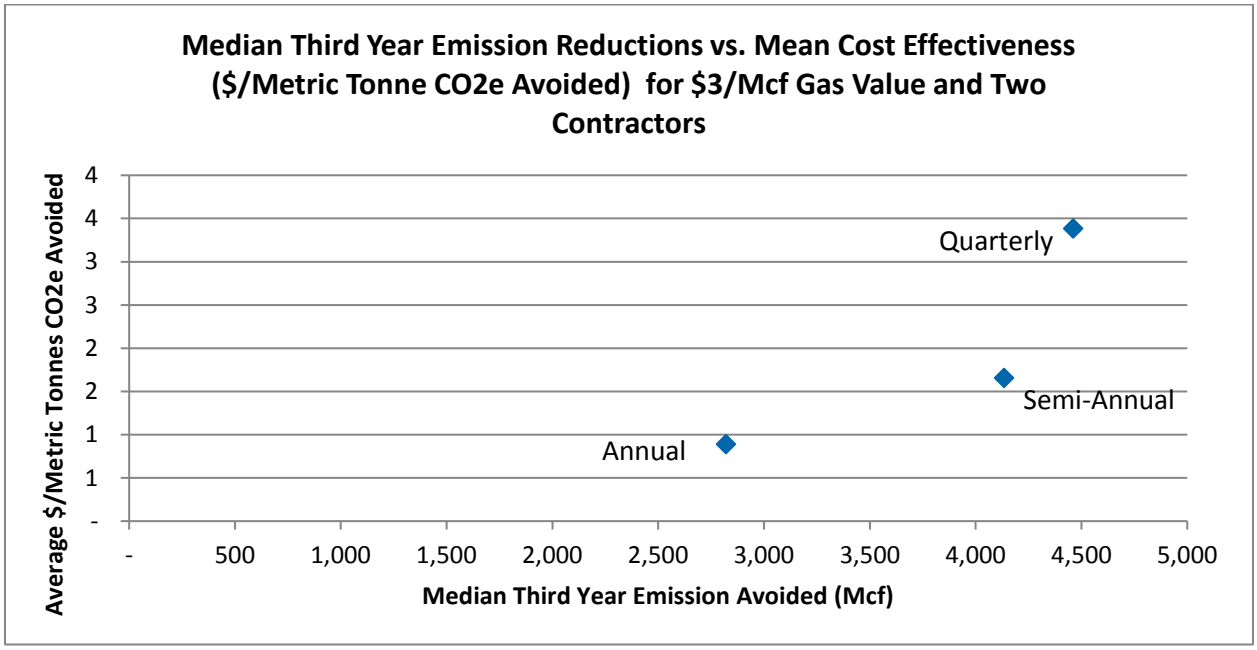

Figure 39: Gathering and Boosting Case 1 Cost Effectiveness

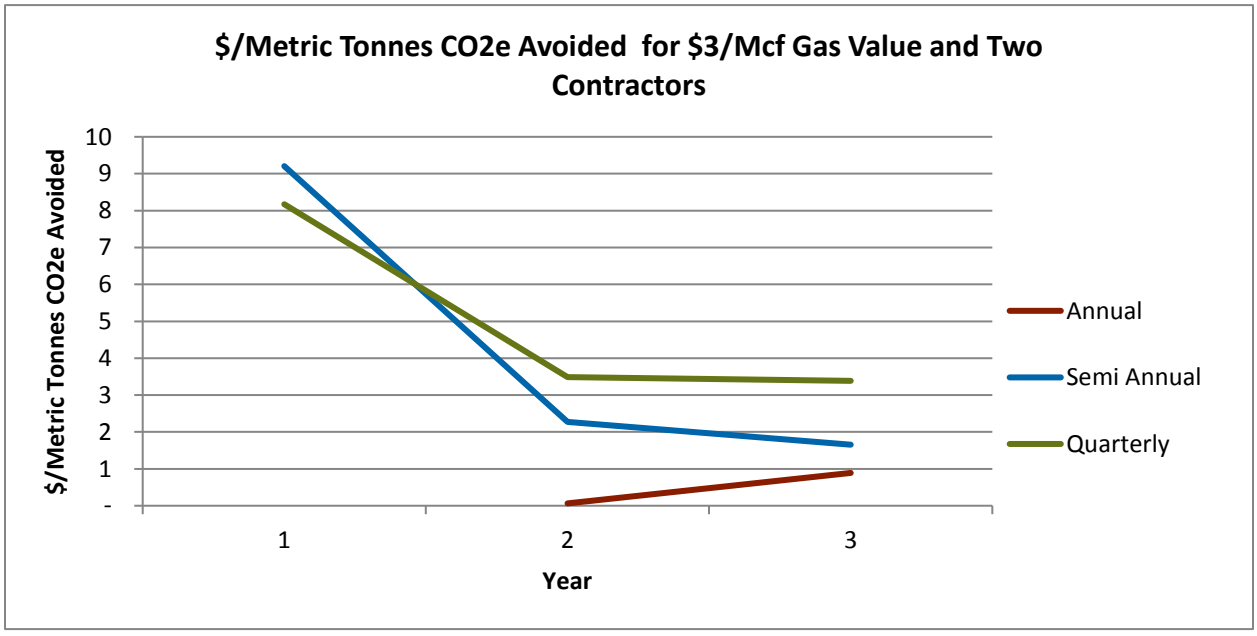

Figure 40: Gathering and Boosting Case 1 CO_2e Avoided

A.5.2. Case 2 - $4/Mcf Gas Value and Two Contractors

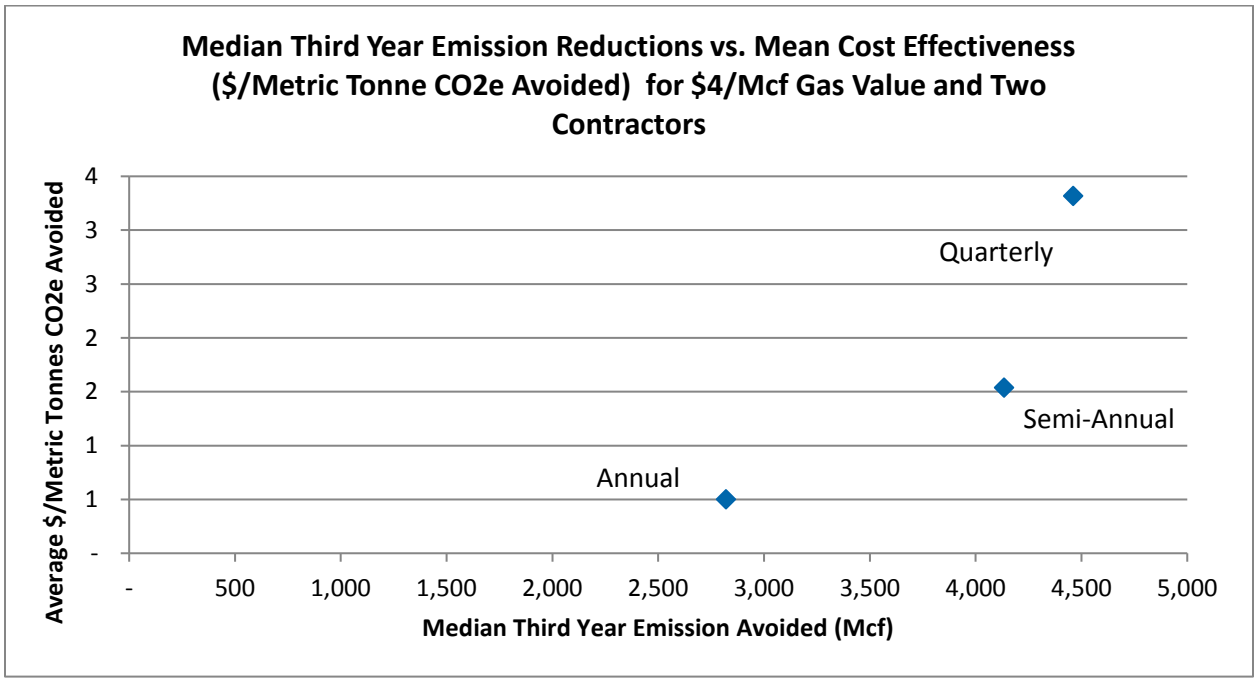

Figure 41: Gathering and Boosting Case 2 Cost Effectiveness

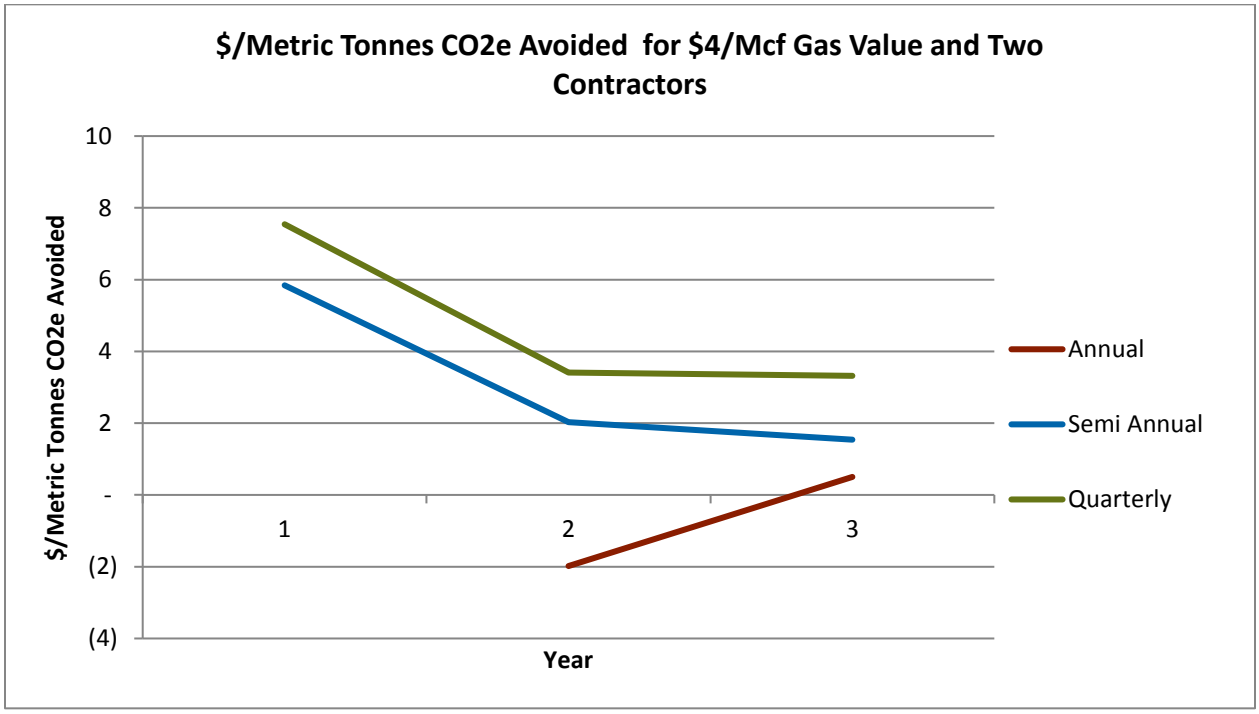

Figure 42: Gathering and Boosting Case 2 CO_2e Avoided

A.5.3. Case 3 - $3/Mcf Gas Value and One Contractor

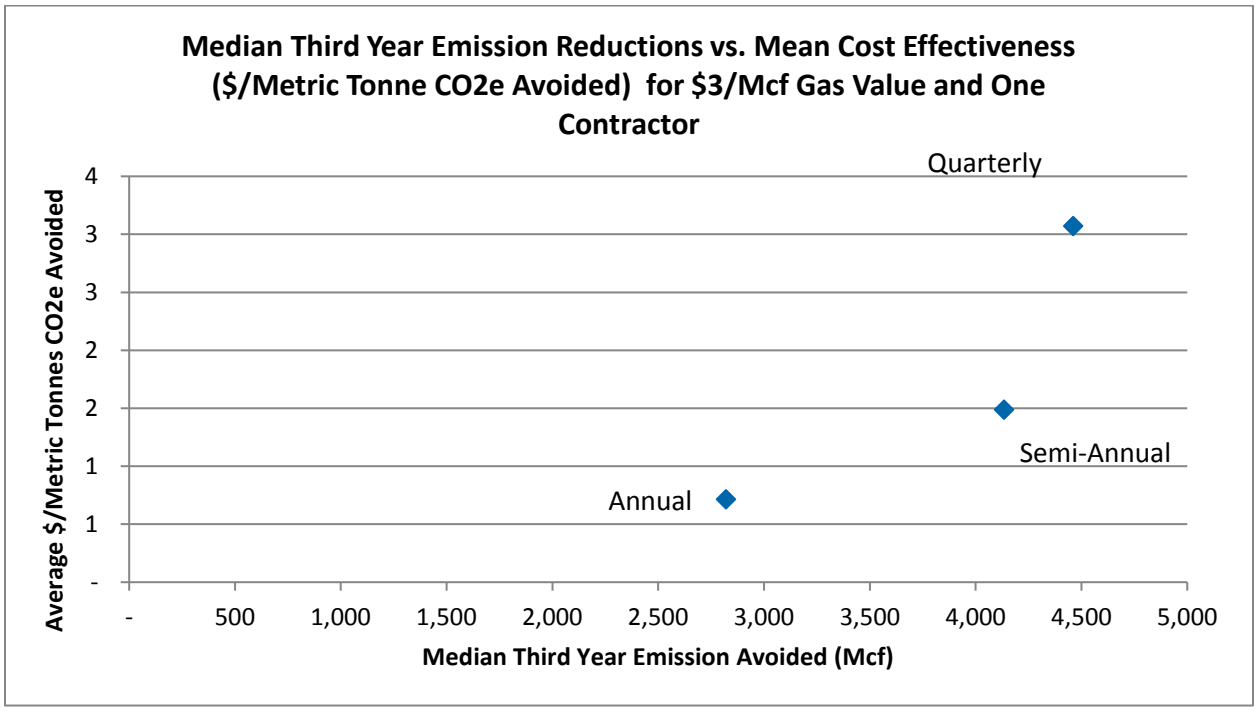

Figure 43: Gathering and Boosting Case 3 Cost Effectiveness

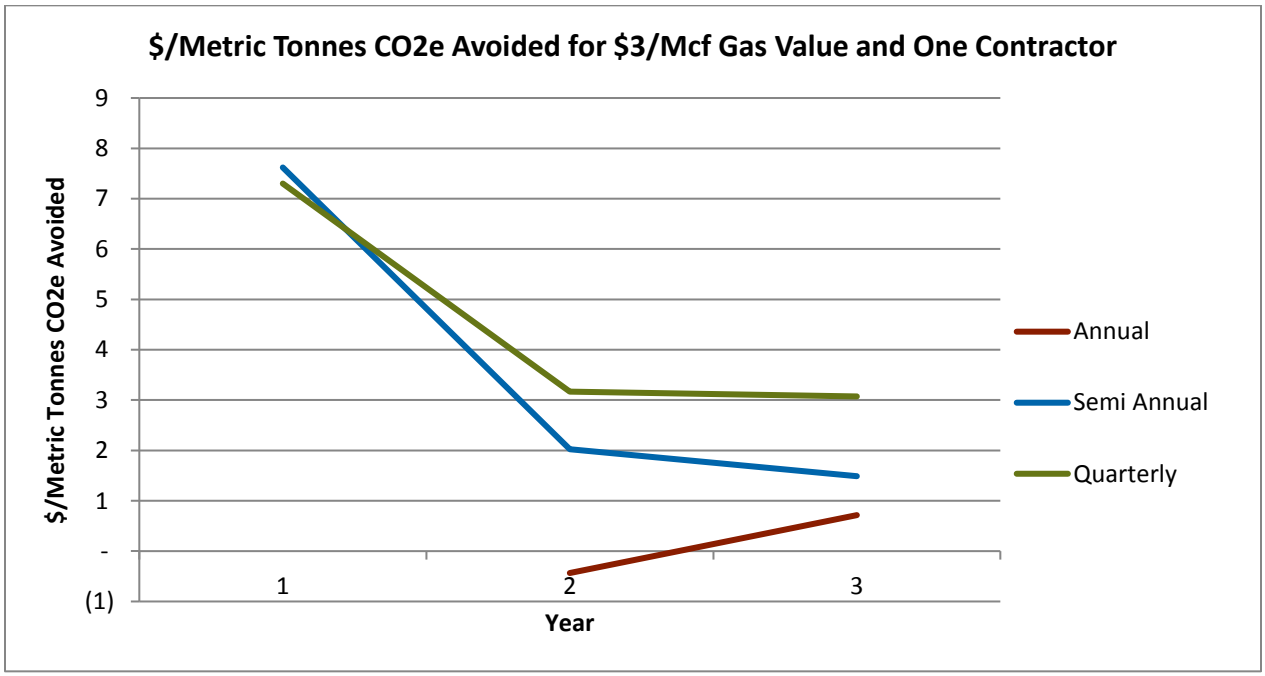

Figure 44: Gathering and Boosting Case 3 CO2e Avoided

OG-F-5-UCS

COMMENTS FROM OVER 5,482 CANIFORNIANS IN SUPPORT OF
THE CALIFORNIA AIR RESOURCES BOARD'S OIL AND GAS METHANE RULE

February 21, 2017

Elizabeth Scheehle, Chief
Oil and Gas and Greenhouse Gas Mitigation Branch
California Air Resources Board
1001 "I" St. Sacramento, CA, 95814

Subject: I strongly support California finalizing America's strongest methane rules

Dear Ms. Scheehle,

Thank you for releasing a strong, final draft of methane regulations. I'm writing today to urge you to continue this crucial leadership by finalizing the strongest methane rules for oil and gas production in the country.

Smart policies that reduce methane and other harmful oil and gas pollutants are exactly what California needs. Once finalized and fully implemented, these standards will require oil and gas companies to find and fix leaky equipment. In doing so, they will not only help position California as a leader on climate change during a critical time for our country, they will also help improve health outcomes for Californians, especially those with asthma. And they will unleash new business opportunities across the state in leak detection and repair. F-5-1

This is the right step for California, and for the country as a whole. Please finalize these standards as soon as possible.

Thank you,

1. A Blanc, Forestville 95436-9813
2. A J Averett, La Mesa 91942-5838
3. A L, San Francisco 94112-4329
4. A Miller, Santa Monica 90404-2542
5. A Schwartz, Sebastopol 95472-2877
6. A Vs, San Diego 92103-5716
7. Aaron Gomez-Logan, Chico 95926-3807
8. Aaron Kirschenbaum, Lafayette 94549-2921
9. Aaron Sachs, Oakland 94605-2138
10. Aaron Senegal, Richmond 94804-4934
11. Aaron Shaw, Los Angeles 90039-2114
12. Aaron Zhang, San Diego 92129-2285
13. Abby Bateman, San Diego 92106-1518
14. Abigail Bates, Los Angeles 90034-6424
15. Abigail Wald, Los Angeles 90046-1924
16. Achilles Aiken, Whittier 90601-2102
17. Adam Bernstein, Los Angeles 90012-2581
18. Adam Gockel, Irvine 92618-0116
19. Adam Kaplan, Laguna Beach 92651-1845
20. Adam Nunez, Anaheim 92807-2236
21. Adam Weiss, Van Nuys 91406-5817
22. Adele Gamble, Santa Rosa 95403-7928
23. Adele O'Neill, Stockton 95207-1701
24. Adeleadele Casdencasden, Calabasas 91302-3600
25. Adrian Frazier, Menifee 92585-8891
26. Adrianne Borgia, Oakland 94609-1014

27. Adrianne Misdorp, Durban 4510
28. Adrienne Kovasi, Redding 96003-3452
29. Adrienne Lozoya, Portola Hills 92679-1229
30. Adrienne Muller, Ojai 93023-9303
31. Adrienne Simmons, Redding 96003-3452
32. Ahmed Ortiz, Sacramento 95818-2129
33. Aida Brenneis, Berkeley 94708-2126
34. Aidan Humrich, Rohnert Park 94928-3939
35. Aileen Smith, Temple City 91780-2556
36. Aimee Morein, Lomita 90717-3087
37. Aimee Morein, Long Beach 90813-2912
38. Aimee Pfohl, Davis 95616-0413
39. Aixa Fielder, Los Angeles 90016-1515
40. Aixa Fielder, Los Angeles 90028-5764
41. Akiko Tamano, San Diego 92129-3574
42. al m, azusa 91702
43. Al Novak & Andrea Graff, San Francisco 94131
44. Alaeddin Hakam, Berkeley 94707-2437
45. Alan Blackwell, San Diego 92130-3196
46. Alan Blumberg, Santa Cruz 95060-4214
47. Alan Cunningham, Carmel Valley 93924-9532
48. Alan Duran, Sacramento 95831-4423
49. Alan Klein, Citrus Heights 95621
50. Alan Liechty, Los Altos 94024-4909
51. alan mackillop, San Diego 92122-2602
52. Alan McDonald, Mt Baldy 91759-0562
53. Alan Nahum, La Jolla 92037-3013
54. Alan Rabinowitz, San Francisco 94114-1113
55. Alan Shindel, Berkeley 94702-1621
56. Alan Solomon, Palm Desert 92261-2195
57. Alan Yamamoto, Newhall 91321-2247
58. Alana Reynolds, Avila Beach 93424-0568
59. Albert Close, Hesperia 92345-2742
60. Albert Levy, Emeryville 94608-1649
61. Albert Robles, Napa 94558-5220
62. Alberto Acosta, Burbank 91505-3939
63. Alberto Arenas, Buena Park 90620-3534
64. Alberto Martinez, Sebastopol 95472-4568
65. Alec Taratula, Alhambra 91801-2079
66. Alejo Fabian, San Juan Capistrano 92675-1218
67. Alena Jorgensen, Temple City 91780-2235
68. Alessandra Molina, Los Angeles 90041-3347
69. alessandra richardson-beatty, san francisco 94114
70. Alessia Cowee, Chico 95973-0366
71. Alethea MacKinnon, Oakhurst 93644-9513
72. Alette Brooks, San Jose 95120-5526
73. Alette Brooks, San Jose 95160-0331
74. Alex Banh, San Jose 95148-2807
75. Alex Cole, Santa Barbara 93101-4942
76. Alex D, Valencia 91355-0961
77. Alex Dickson, Laguna Hills 92656-3160
78. Alex Faydo, Hemet 92545-7044
79. Alex Olmedo, Fullerton 92833-2747
80. Alex Pinigis, Berkeley 94703-1492
81. Alex Ruiz, Marina Del Rey 90292-6145
82. Alex Sheafe, Thousand Oaks 91361-5206
83. Alex Silverio, San Jose 95130-1251
84. Alexa Blatz, Marina Del Rey 90292-5322
85. Alexander Li, Camarillo 93012-7746
86. Alexander Yeung, Clovis 93619-3720
87. Alexandra Hopkins, La Crescenta 91214-3820
88. Alexandra Kinander, Encinitas 92024-1205
89. Alexandra Montijo, San Jose 95122-3639
90. Alexandra Simpson, Corona Del Mar 92625
91. Alexandra Weinberg, Burbank 91502-2401
92. Alexandre Kaluzhski, San Diego 92128-4276
93. Alexey Korzuchin, Dublin 94568-1050
94. Alexis Cohen, Sausalito 94965-1357
95. Alfa Santos, San Diego 92112-4998
96. Alfred Cellier, Rancho Palos Verdes 90275-6418
97. Alfred Long, Torrance 90503-3012
98. Alfred Yeager, San Diego 92110-3719
99. Alice Alford, Blythe 92226-2323
100. Alice Hendrix, Orangevale 95662-0142
101. Alice Howard, San Miguel 93451-9727
102. Alice King, Rio Vista 94571-9768
103. Alice Labay, Benicia 94510-2332
104. Alice Larsen, Sebastopol 95472-3555
105. Alice Lasky, Walnut Creek 94598-1041
106. Alice Polesky, San Francisco 94107-2644
107. Alice Sheehy, La Crescenta 91214-2037
108. Alice Simpson, Fulton 95439-8834
109. alice sutton, San Luis Obispo 93401-4132
110. Alice Weigel, Watsonville 95076-3067
111. Alicia Barela, Los Gatos 95032-4406
112. Alicia Gallagher, Benicia 94510-3443
113. Alicia Salazar, Los Angeles 90032-2236
114. Alisa Jenkin, Oak View 93022-9522
115. Alisa Silver, Sacramento 95831-4007
116. Alison Blume, Novato 94945-3205
117. alison buchter, Santa Cruz 95060-5149
118. Alison Chubb, Redwood City 94061-3208
119. Alison Dreyer, Burbank 91506
120. Alison Freeman, Los Angeles 90024-3018
121. Alison Markowitz Chan, San Francisco 94122
122. Alison Montera, San Diego 92128-4734
123. Alison Snow, Sierra Madre 91024-1112
124. Alissa Wyffels, Santa Monica 90403-2107
125. Aliza Rood, Los Angeles 90005-3018
126. Allan Campbell, San Jose 95132-1920
127. Allan Glick, San Diego 92128-2356
128. Allen Carroll, San Jose 95110-2249
129. Allen Leinwand, San Jose 95124-2037
130. Allen Peters, Hemet 92545-3427
131. Allen Royer, San Jose 95125-3114
132. Allie Jennings, Sonoma 95476-5913
133. Allie Palmer, san clemente 92672
134. allison bloom, Mill Valley 94941-2110
135. Allison Dimich, Los Angeles 90049-1944
136. Allison Grant, Westlake Village 91361-3513

137. Allison Moffett, Brea 92821-4939
138. Allison Navarro, San Jose 95127-5439
139. Alma Prins, Berkeley 94702-1618
140. Alta Lowe, San Francisco 94112-1007
141. Althea Kippes, San Francisco 94109-4221
142. Ãlvaro de Regil Castilla, Moorpark 93021-3111
143. Alwen Bauer, Palos Verdes Estates 90274-2006
144. alyce brown, San Francisco 94109-2281
145. Alys Hay, Windsor 95492-6890
146. Alyson Klier, Oceanside 92054
147. Alyx Karpowicz, Alameda 94501-3119
148. Amada A, San Francisco 94117-1215
149. Amanda Barber, Riverside 92505-4718
150. Amanda Barry, Del Mar 92014-3815
151. Amanda Blatchford, Walnut Creek 94598-4854
152. Amanda Glover, Venice 90291-3927
153. Amanda Heinrich, Goleta 93117-4345
154. Amanda Heske, Fullerton 92833-1262
155. Amanda Litwak, Mill Valley 94941-2524
156. Amanda Percy, Burbank 91506-3315
157. Amanda Perez, San Diego 92117-4023
158. Amanda Rosenberg, Oakland 94606-1535
159. Amanda Short, Sonoma 95476-7221
160. Amanda Zangara, Sebastopol 95472-3146
161. Amara Siva, San Diego 92128-3604
162. Amber Coverdale Sumrall, Soquel 95073-9778
163. Amber H, Newark 94560-8522
164. Amber Heard, San Diego 92107-2007
165. Amber Rehling, Santa Cruz 95060
166. Amber Schrumpf, Redding 96003-4022
167. Amber Tidwell, Culver City 90230-5413
168. Amber Wheat, Redondo Beach 90278-2937
169. Amelia Clark, La Mesa 91941-5766
170. Amelia Jones, Santa Monica 90405-4303
171. Amy Agzarian, Culver City 90230-5443
172. Amy Christenson, Seaside 93955-5037
173. Amy Hill, Big Bear Lake 92315-7138
174. amy lanners, La Mesa 91941-7415
175. Amy Leroy, Santa Rosa 95403-2913
176. Amy Malina, Playa Vista 90094-2095
177. Amy Morse, Agoura Hills 91301-4021
178. Amy Pfaffman, San Geronimo 94963-0050
179. Amy Rivera, Encinitas 92024-2835
180. amy schadt, Los Angeles 90042-2359
181. amy shafer, Santa Monica 90402-3028
182. Amy Spencer, Grass Valley 95949-9041
183. Amy Wilson, San Mateo 94401-1213
184. Anahata Pomeroy, Ojai 93024-0320
185. Analee Guillen, Costa Mesa 92627
186. Anastasia Fiandaca, San Francisco 94131-2421
187. anastasia yovanopoulos, San Francisco 94114
188. Anaundda Elijah, San Luis Obispo 93401-7942
189. Andi Brittan, Los Angeles 90019-1604
190. Andre Calvin Jr, Lawndale 90260-1542
191. Andre Leon, Watsonville 95076-2532
192. Andre Pessis, Corte Madera 94925-1314
193. Andrea & James Gutman, Sunland 91040-1215
194. Andrea Bonnett, Altadena 91001-5074
195. Andrea Engelmann, Palm Springs 92264-8267
196. Andrea Fraser, Sherman Oaks 91423-4614
197. Andrea Gera, San Jose 95120-3008
198. Andrea Gross, Oceanside 92049-0084
199. Andrea Herold, Sebastopol 95472-9616
200. Andrea Hilario, La Puente 91744-4745
201. Andrea Hopkins, Monrovia 91016-1514
202. Andrea Iaderosa, Los Angeles 90027-4312
203. Andrea Kean, Berkeley 94708-2005
204. Andrea Rush, San Jose 95123-3609
205. andres romero suarez, Hermosa Beach 90254
206. Andrew Beaupre, Los Angeles 90028-4524
207. Andrew Creighton, Los Angeles 90032-2928
208. Andrew Crisp, San Rafael 94903-1433
209. Andrew Deniger, Castroville 95012-9731
210. Andrew Olsen, Los Angeles 90027-2758
211. Andrew Parratt, San Francisco 94114-2944
212. Andrew Royer, Shasta Lake 96019-9247
213. Andrew Stranahan, San Bruno 94066-1719
214. Andrew Tirrell, San Diego 92109-2002
215. Andrew Walcher, Del Mar 92014-3718
216. Andy Carman, Santa Cruz 95060-6335
217. Andy Cowitt, Oakland 94610-5107
218. Andy L, Irvine 92602-0733
219. Andy Lupenko, Lemon Grove 91945-2615
220. Andy Scott, Paso Robles 93446-4972
221. Angela Downey, San Diego 92109-4059
222. Angela Gantos, Tiburon 94920-2010
223. Angela Jenkins, Los Angeles 90019-2885
224. Angela LaPlante, Monte Sereno 95030-4219
225. Angela T Cannavo, Sunnyvale 94089-5511
226. Angelica Mares, Chino 91710-3451
227. Angelina SAUCEDO, Montebello 90640-6432
228. Angelo Simao, Chico 95928-6580
229. Animae Chi, Ojai 93023
230. Anita Coolidge, Cardiff 92007-1043
231. Anita Eliot, Santa Rosa 95409-4118
232. Anita Grant, Santa Rosa 95401-5601
233. Anita Knight, Del Mar 92014-2732
234. Anita Thomason, Culver City 90230-4943
235. Anjanette George, Menifee 92584-7378
236. Anje' Waters, Grass Valley 95945-7804
237. Ann Alexander, Santa Rosa 95409-5825
238. Ann Bein, Los Angeles 90064-2026
239. Ann Bjorklund, Los Altos Hills 94022-4609
240. Ann Gould Massoubre, Los Osos 93402-2405
241. Ann Griffith, Orinda 94563-2045
242. Ann Grow, Chula Vista 91910-1822
243. Ann Houghtby, Red Bluff 96080-0754
244. Ann M Rockwell, Berkeley 94707-2024
245. Ann Marie Morris, Palos Verdes, 90275-4453
246. Ann Moureau, Desert Hot Springs 92240-2100

247. Ann Nore, San Francisco 94110-2596
248. Ann Olsborg, Santa Rosa 95404-2054
249. Ann Rrennacker, Fort Bragg 95437-4124
250. Ann Schieding, River Pines 95675-0280
251. Ann Stratten, La Mesa 91941-7325
252. Ann Tait, Pasadena 91104-5030
253. Ann Thryft, Boulder Creek 95006-9341
254. Ann Tubbs, San Francisco 94105-3111
255. Ann Zald, Sherman Oaks 91403-4131
256. Anna Bainter, Jamul 91935-7826
257. Anna Hamann, San Diego 92105-1207
258. Anna Harrison, View Park 90043-1634
259. Anna Pedotti, Santa Barbara 93101-1522
260. Anna Schofield, Los Angeles 90024-4838
261. Anna Steffen, Long Beach 90808-2833
262. Anna Utzman, Mill Valley 94941-5032
263. Anne Baldeshwiler, San Diego 92128-1076
264. Anne Barker, San Rafael 94901-3904
265. Anne Calderwood, Murphys 95247-2244
266. Anne Danberg, San Rafael 94901-2638
267. Anne Dugaw, Costa Mesa 92627-3207
268. Anne Edwards, Los Angeles 90071-2901
269. Anne Gregory, Palo Alto 94303
270. Anne Grim, Murrieta 92562-3508
271. Anne Gross, Modesto 95351-4920
272. Anne Harvey, San Diego 92130-2609
273. Anne Hayes, San Diego 92108-1850
274. Anne Huber, Los Gatos 95032-3805
275. Anne Kobayashi, San Diego 92122-5630
276. Anne Lakota, Mill Valley 94941-1516
277. Anne Lebas, San Rafael 94903-2571
278. Anne Munitz, Santa Monica 90402-2921
279. Anne Muraski, Monterey 93940-2006
280. Anne Parzick, Corona Del Mar 92625-1324
281. Anne Smith, Carlsbad 92010-7901
282. anne veraldi, San Francisco 94110-1688
283. Anne-Christine Strugnell, San Rafael 94903-3722
284. Anne-Lise Francois, Berkeley 94708-1821
285. Annette Amey, Berkeley 94708-1634
286. Annette Benton, Antioch 94509-7032
287. Annette Cadosi-Wilson, Healdsburg 95448-9131
288. Annette Ehrlich, Los Angeles 90068-3376
289. Annette Mello, Boulder Creek 95006-9075
290. Annette Paluska, Long Beach 90803-5176
291. Annette Raible, Petaluma 94952-9687
292. Annie Masullo, San Francisco 94114-3361
293. Annie Mladnich, San Leandro 94577-2941
294. Annie Stuart, Petaluma 94952-1008
295. Annie Watanabe-Rocco, Los Angeles 90095-0001
296. Annika Backstrom, Eureka 95501-3371
297. anny anny, Thousand Oaks 91360-2066
298. Anthony Arn, West Hollywood 90069-4383
299. Anthony Castillo, Long Beach 90805-3016
300. Anthony Chico, Duarte 91010-2641
301. anthony oliveria, Elk Grove 95624-3005
302. Anthony Shogren, Los Angeles 90031-3284
303. Anthony Stratton, Elk Grove 95624-2125
304. Antoinette Levine, Ojai 93023-1903
305. Antoinette Wrubel, Half Moon Bay 94019-2221
306. Antonia Conway, Los Gatos 95032-3608
307. Antonia Robertson, Santa Barbara 93108-1633
308. Antonio Carmo, San Marcos 92078-5434
309. Antonio Grijalva, Los Angeles 90068-1438
310. April Barnett, Los Angeles 90019-2922
311. April Hejka-Ekins, Turlock 95380-4740
312. Apryl Mefford-Hemauer, Santa Monica 90405
313. Arbella Parrot, Mill Valley 94941-3930
314. Ardath Lee, Santa Rosa 95405-6646
315. Ariana Newcomer, Los Gatos 95033-8050
316. Ariana Ortiz, Hayward 94541-5424
317. Ariane Beck-Manning, Campbell 95008-0729
318. Ariel White, Valley Village 91607-1443
319. Arin Frankhouse, San Bruno 94066-1847
320. Arin Keshishian, Glendale 91206-2252
321. Arleen Zuniga, Guerneville 95446-8937
322. Arlene Baker, Berkeley 94704-2848
323. Arlene Fisher, Oakland 94605-5834
324. Arlene Hester, Camarillo 93010-2241
325. Arlene Kara, Fairfax 94930-2118
326. Arlene Mendibles, Sacramento 95811-1002
327. arlene nilsson, Los Angeles 90034-5393
328. Arlene Smith, Julian 92036-2412
329. Arlette Towner, La Crescenta 91214-4310
330. Arlyn Marroquin, Van Nuys 91405-1822
331. Armand Neukermans, Portola Vally 94028-8019
332. armeda tafel, Los Angeles 90045-2954
333. Arnaud DUNOYER, Venice 90291-3836
334. Arne Emerson, Santa Monica 90403-5300
335. Arno Safarian, Canoga Park 91304-3661
336. arnold johnson, Los Angeles 90017-1908
337. Art Perez, San Leandro 94578-3908
338. Art Vankampen, Pasadena 91104-2249
339. Arthur Chan, Concord 94518-1646
340. Arthur Connor, Idyllwild 92549-3317
341. Arthur Delgadillo, Lakewood 90715-1415
342. Arthur Gregorian, Oakland 94602-1628
343. Arthur Krakowsky, Livermore 94550-9615
344. Arthur Peill, Solana Beach 92075-2497
345. Arthur Squillante, Castro Valley 94546-4369
346. Arthur Ungar, Lafayette 94549-5725
347. Aryae Katchen, Potrero 91963-0470
348. Asha Sidhu, Oceanside 92057-6147
349. Asher Cohen, Los Altos 94024-7214
350. Ashlee Johnson, Simi Valley 93063-3825
351. Ashley Lewis, Fairfax 94930-2036
352. Ashley Namasondhi, Los Angeles 90004-1411
353. Ashley Sarratt, Burbank 91504-3682
354. Ashni J Akand Karan, Pleasanton 94566-3433
355. aspyn burns, San Diego 92119-3040
356. Astrid Giese-Zimmer, Berkeley 94705-2424

357. Astrid Preston, Santa Monica 90403-2340
358. Atwell, Burbank 91506-1913
359. Aubrie Williams, San Diego 92106-1056
360. Audrey Doocy, Pacific Grove 93950-4218
361. Audrey Haynes, Berkeley 94710-2131
362. Austen Wianecki-Wang, Santa Ana 92706-1614
363. Autumn Scott, Escondido 92026-6136
364. Ava Bhavsar, San Diego 92116-2353
365. Avi Greene, Indio 92203-4419
366. Avry Budka, Tujunga 91042-1302
367. Aydan Demiralp, Irvine 92612-1728
368. B Chan, San Diego 92131-2430
369. B gauler, Riverside 92506-3121
370. B Leightling, La Jolla 92037-5024
371. B Lerner, San Jose 95125-5524
372. B Milton, Shingle Spgs 95682-9803
373. B Vestal, Petaluma 94954-5864
374. B. E. , Westlake Village 91361-4500
375. Bahar Fazeli, Northridge 91324-1014
376. Ballinger Kemp, Richmond 94804-7494
377. barb kaye, Albany 94706-2013
378. Barb Miller, Camarillo 93012-6704
379. Barbara Ardrey, San Jose 95131-2787
380. Barbara Bell, San Luis Obispo 93405-1084
381. Barbara Bellin, Los Angeles 90045-6913
382. Barbara Beno, Hercules 94547-2087
383. Barbara Bettencourt, San Jose 95124-4846
384. Barbara Bills, Placerville 95667-4712
385. Barbara Burgess, Napa 94559-4441
386. Barbara Burr, Davis 95616-1906
387. Barbara Byrne, San Francisco 94121-3523
388. Barbara Caretto, West Hills 91304-6107
389. Barbara Carter, Sonoma 95476-6800
390. Barbara Chudilowsky, Pacific Grove 93950-3604
391. Barbara Cohn, Carlsbad 92010-7072
392. Barbara Consbruck, Sylmar 91342-5150
393. Barbara Danese, Placerville 95667-5601
394. Barbara Daniels, Newbury Park 91320-5022
395. Barbara Dean, Grass Valley 95945-5684
396. Barbara Diane Noren, Campbell 95008-3737
397. Barbara Diederichs, Poway 92064-5832
398. Barbara Doll, Milpitas 95035-4769
399. Barbara Dover, Brentwood 94513-6953
400. Barbara Drosman, Encinitas 92024-7236
401. Barbara Finch, Santa Barbara 93111-1818
402. Barbara Frazer, Sacramento 95816-3937
403. barbara gale, Tarzana 91356-4313
404. Barbara Gladfelter, Dixon 95620-3627
405. Barbara Goldstein, Los Angeles 90064-3824
406. Barbara Greer, Davis 95618-5424
407. Barbara Greer, Esparto 95627-0786
408. Barbara Hardwick, Redondo Beach 90277-6604
409. Barbara Heneveld, Templeton 93465-8476
410. Barbara Hollenbach, Lafayette 94549-5524
411. Barbara Judd, Berkeley 94703-2371
412. Barbara Keating, Blue Lake 95525-0828
413. Barbara Kiernan, Olivehurst 95961-9370
414. Barbara King, Los Angeles 90029-0448
415. Barbara Krahn, Santa Barbara 93111-2539
416. Barbara Lamb, Oakland 94610-3365
417. Barbara Lawson, Calimesa 92320-1529
418. BARBARA MAJOY, MDR 90292-9247
419. Barbara Mauk, Hyampom 96046-0153
420. Barbara Miller, Covina 91723-3610
421. Barbara Mintz, Encinitas 92024-3642
422. Barbara Murray, Los Angeles 90041-2425
423. Barbara Murray, Santa Cruz 95060-9622
424. Barbara Nogal, San Diego 92130-1027
425. Barbara Patinkin, San Francisco 94109-3715
426. Barbara Pietrowiak, Dublin 94568-7274
427. Barbara Price, Menlo Park 94025-2302
428. Barbara Rose, Fremont 94536-4130
429. Barbara Schenk, Beverly Hills 90212-4402
430. barbara sharma, Los Angeles 90029-0125
431. Barbara Small, Fortuna 95540
432. Barbara Small, Fortuna 95540-3646
433. Barbara Stannard, Sacramento 95835-1238
434. Barbara Towner, Oakland 94605-1149
435. Barbara Trees, Tujunga 91042-2036
436. Barbara Whyman, Ventura 93001-2064
437. Barbi Buckles, truckee 96161
438. Barranca Wren, Vallecito 95251-0122
439. Barri Baas, Long Beach 90807-4415
440. Barrie Newell, Manhattan Beach 90266-4047
441. Barrie Stebbings, Stinson Beach 94970-0449
442. Barry Drake, Montrose 91020-1639
443. Barry Erbsen, Studio City 91604-3107
444. Barry Fass-Holmes, San Diego 92108-1800
445. Barry Saltzman, Los Angeles 90035-3946
446. barry weinzveg, Petaluma 94952-9735
447. Barry Zakar, Benicia 94510-0422
448. Bart Levenson, Hidden Valley Lake 95467-8794
449. Barvara Grant, Aptos 95003-9556
450. baudouin debrabandere, Santa Cruz 95062-1861
451. beate dirschl, Mount Shasta 96067-9416
452. Beatrice Battier, Oak View 93022-9528
453. Beatrice Nelson, Hayward 94541-1024
454. Beatrix Schramm, San Diego 92109-5491
455. Beatriz Beltran, Fremont 94555-2524
456. Beatriz Campal, San Jose 95130-2048
457. Beatriz Pallanes, Santa Ana 92704-3131
458. Becky Ryan, MI WUK VILLAGE 95346
459. Belinda Poropudas, San Rafael 94901-3650
460. ben baxter, Running Springs 92382-3243
461. Ben Hauck, El Segundo 90245-3905
462. Ben Martin, Truckee 96161-5031
463. Benita Riveroll, San Diego 92105-4828
464. Benjamin Bingaman, San Jose 95138-2600
465. Benjamin Etgen, Sacramento 95821-3128
466. Benjamin Hunter, Sacramento 95834-1053

467. Benjamin Irwin, Palo Alto 94306-2648
468. Benjamin Patnoi, Pasadena 91104-2421
469. Beri Pezzner, Hawthorne 90250-6340
470. Bernadette Foti, Paso Robles 93446
471. bernard hochendoner, Patterson 95363-8307
472. Bert Greenberg, San Jose 95135-1428
473. Berta Speisman, Laguna Woods 92637-8837
474. Beth Anderson, Arroyo Grande 93420-1808
475. Beth Giansiracusa, San Jose 95124-4912
476. Beth Herndobler, Altadena 91001-4209
477. Beth Purrinson, Sacramento 95821
478. Bethanie Gilbert, San Rafael 94903-2802
479. Bethany Schulze, Marina 93933-5001
480. Betsey Da Silva, Brisbane 94005-1702
481. Betsy Brown, San Francisco 94118-1320
482. Betsy Darr, San Francisco 94121-1216
483. Betsy Marstall, Half Moon Bay 94019-2320
484. Betsy Morrow, Monrovia 91016-5424
485. Betsy Walters, Gardena 90248-3602
486. Bette Byers, Santa Maria 93455-4182
487. betty baker, Lincoln 95648-8158
488. Betty Byrnes, Castaic 91384-3163
489. Betty Hamm, Hesperia 92345-5438
490. Betty Hatch, Santa Barbara 93110-2250
491. Betty Kissilove, San Francisco 94122-3644
492. Bev Kelly, Long Beach 90803
493. Bev Kelly, Long Beach 90803-3515
494. Beverly Allphin, Berkeley 94703-1909
495. Beverly Harris, Red Bluff 96080-3729
496. Beverly Kjer, Chula Vista 91911-5233
497. Beverly Kuck, Bakersfield 93306-7489
498. Beverly Magid, Sherman Oaks 91423-2362
499. Beverly Pena, Tiburon 94920-2148
500. Beverly Rockabrand, San Francisco 94108-1452
501. Beverly Webman, Santa Monica 90405-5433
502. Bianca Molgora, San Francisco 94110-6138
503. Bill Britton, Livermore 94550-3617
504. Bill Hessell, Culver City 90230-4534
505. Bill Kafkis, Maple 90210
506. bill legere, Clovis 93611-3401
507. Bill Obrien, Glendora 91741-2714
508. billie davies, Santa Clara 95051-5319
509. Billy Ragsdale, San Francisco 94110-2423
510. Birgit Hermann, San Francisco 94117-2594
511. Blaise Brockman, Arcadia 91007-6917
512. Blaize Gottman, Lake Elsinore 92530-3701
513. Blake Rothschild, Oakland 94610-1615
514. blake wu, lafayette 94549-3503
515. Blanche Korfmacher, San Francisco 94132-1661
516. Blanco Molina, Ontario 91764-2919
517. Blaze Bhence, Cypress 90630-4119
518. Bo Smitham, San Diego 92130-2180
519. Bob Denton, Costa Mesa 92626-3705
520. Bob Drury, Long Beach 90814-3014
521. Bob Kvaas, Goleta 93117-1623
522. Bob Leppo, Santa Maria 93454-2609
523. Bob Moore, Santa Clarita 91380-1974
524. Bob Plass, Los Banos 93635-6385
525. Bob Rich, Susanville 96130-4604
526. Bob Schildgen, Berkeley 94703-1630
527. Bob Stallard, Salinas 93907-1015
528. Bobbie Brown, San Diego 92114-2407
529. Bonnie Bragg Bragg, Pacific Grove 93950-3240
530. Bonnie Etz-Mott, Trinidad 95570-9784
531. Bonnie Jacobs, Los Angeles 90048-5501
532. Bonnie Karlsen, Sebastopol 95472-5937
533. Bonnie Maas, Cathedral City 92234-2301
534. Bonnie Maloney, Hawthorne 90250-8395
535. Bonnie Payne, Los Gatos 95032-6478
536. Bonnie Price, Spring Valley 91978-1963
537. Bonnie Shand, Bayside 95524-9049
538. Bonnie Stillwater, Los Angeles 90020-3003
539. Bonnie Yelverton, Fontana 92336-0856
540. Brad Boldrini, Pleasanton 94566-6384
541. Brad Knight, Sylmar 91342-6306
542. Brad Nelson, Oxnard 93035-4479
543. Brad Snyder, San Diego 92116-1017
544. Bradd Saunders, Pasadena 91107-5200
545. Bradley Colden, Whittier 90602-3112
546. Bradley Winch, Fawnskin 92333-0370
547. Braja Tarletz de Molina, Pasadena 91107
548. branden faber, Laguna Beach 92651-3660
549. Brandon Ciaccio, El Cajon 92020-1317
550. Brandon Moon, San Diego 92122-2625
551. Brandon Owens, San Francisco 94118-3418
552. Brandon Weeks, Campbell 95008-4513
553. breanna mistler, Dixon 95620-3719
554. Brenda Brazil, Cloverdale 95425-3168
555. Brenda Hager, Thousand Oaks 91360-4742
556. Brenda Honath, Citrus Heights 95610-3269
557. Brenda Koenig, Escondido 92027-1752
558. Brenda Main, Sacramento 95860-0920
559. Brenda Markham, Fresno 93730-1250
560. Brenda Osborne, San Francisco 94108-2023
561. Brenda Perez, Los Angeles 90042-3916
562. Brent Spencer, Long Beach 90808-4105
563. Brent Wu, Stockton 95203-1335
564. Bret Polish, Los Angeles 90034-5075
565. brett bell, Tujunga 91042-2456
566. Brett Holland, Los Angeles 90026-5142
567. Brett Thomsen, Redondo Beach 90278-1310
568. Brian Bui, Westminster 92683-6511
569. Brian Carnes, San Diego 92116-1615
570. Brian Carr, San Jose 95124-6033
571. Brian Cassidy, Capitola 95010-3601
572. Brian Crawford, San Anselmo 94960-1614
573. Brian Flannigan, Rancho Palos Verdes 90275
574. Brian Florian, Beverly Hills 90211-1756
575. Brian Gray, Fair Oaks 95628-3444
576. Brian Grimm, City of Industry 91715-2706

577. Brian Hicks, Oakland 94602-1303
578. Brian Jacobson, West Hills 91307-5283
579. Brian James, San Carlos 94070-3449
580. Brian Kelly, San Bruno 94066-2930
581. Brian MacKay, San Francisco 94115-2671
582. brian olea, Woodland Hills 91367-1249
583. Brian O'Neill, Malibu 90265-3122
584. Brian Paulsen, Fresno 93710-6113
585. brian schoelkopf, Seal Beach 90740-6219
586. brian wingard, Sebastopol 95473-2658
587. brian zeman, Rocklin 95765-4523
588. Briana Freeman, San Jose 95124-5409
589. Briana Kennedy, Aliso Viejo 92656-3870
590. Briana Valdez, Los Angeles 90065-4305
591. Brianne Sparks, Fair Oaks 95628-3703
592. Bridget Flocco, Sonoma 95476-4001
593. Bridgett Heinly, San Diego 92107-4210
594. Briege Baker, Livermore 94550-4035
595. Brigette Greener, San Jose 95125-5905
596. Brittany Euwema, Costa Mesa 92627-3922
597. Bronwen Grebe, Castaic 91384-2453
598. Brooke Battles, Oakland 94606-2373
599. Brooke Knight, Ventura 93002-1685
600. Brooke Prather, Santa Rosa 95404-1034
601. Brooks Frank, San Francisco 94102-5185
602. Bruce Benson, Newbury Park 91320-4745
603. Bruce Bixler, Atherton 94027-6460
604. bruce bryan, Lancaster 93536-9036
605. Bruce Daniels, Capitola 95010-1640
606. Bruce Doucette, Fallbrook 92028-2101
607. Bruce England, Mountain View 94043-5255
608. Bruce Finocchio, Castro Valley 94546-7221
609. Bruce Hector MD, Santa Clarita 91387-5009
610. Bruce Kintz, Idyllwild 92549-0223
611. Bruce Marlow, Nevada City 95959-8939
612. Bruce McKinley, Mount Shasta 96067-1298
613. Bruce Pollock, North Hollywood 91601-4343
614. Bruce Raymond, Oceanside 92054-2409
615. Bruce Stubbs, Carlsbad 92010-2185
616. Bruce Veldhuizen, Oakland 94619
617. Bruce Wallace, Vista 92084-4207
618. Bruce White, Scotts Valley 95067-6616
619. Bryan Ruff, Paradise 95969-2664
620. Bryant Wong, Mission Viejo 92692-2860
621. Bryna Fuchslocher, Thousand Oaks 91360-4846
622. Bryna Herbold, Claremont 91711-2741
623. Bryna Schreier, Burbank 91504-1203
624. Budd Seeley, Alameda 94501-1433
625. Burt Greenspan, Novato 94947-5201
626. C Kerns, Santa Ana 92706-3724
627. C Burdette, Los Angeles 90066-5720
628. C D, Berkeley 94703-1019
629. c Foglietta, Arroyo Grande 93420-5205
630. C G, San Diego 92122-2520
631. C James, Clovis 93613-0032
632. C L Lindsley, vacaville 95687
633. C Leerer, Berkeley 94702-2027
634. C McGee, Los Angeles 90048-1402
635. C McRae, Fairfax 94930-1315
636. C Zuber, Tujunga 91043-0672
637. Caia Cupito, Redding 96003-8277
638. CALVIN JUNG, Burbank 91505-3450
639. Camile Getter, Sacramento 95819-3139
640. Camilla Comanich, Berkeley 94707-1926
641. Camille Avellano, La Crescenta 91214-2213
642. Camille Gilbert, Santa Barbara 93101-4045
643. Camille Spar, Woodside 94062-3641
644. Candace Rocha, Los Angeles 90031-1048
645. Candace Slivinski, Hawthorne 90250-6530
646. Candice Silverstein, North Hollywood 91606
647. Candy Haggblom, Encinitas 92024-1146
648. Cara Barnhill, Coarsegold 93614-9109
649. cara lynn pugh, Ventura 93003-6266
650. Cara O'Neill, Calistoga 94515 9634
651. Caralee Cowen, Walnut Creek 94595-2559
652. Caren Normandin, Rohnert Park 94928-2837
653. Carina Cutler, Kings Beach 96143-0488
654. Carissa Wise, Simi Valley 93065-3315
655. Carl Babcock, Campbell 95008-1831
656. Carl Blank, Twin Peaks 92391-1330
657. Carl Luhring, Vista 92081-8829
658. Carl Mueller, San Pedro 90731-3010
659. Carl Muller, Huntington Beach 92649-2114
660. Carl Parmley, Joshua Tree 92252-3375
661. Carl Sorem, Livermore 94550-4079
662. Carl Wishner, Chicago Park 95712-0665
663. Carla Dimondstein, Fort Bragg 95437-8214
664. Carla Fowler, Richmond 94804-7486
665. Carla Quinones, Santa Rosa 95404
666. Carla Ritter, Mckinleyville 95519-8120
667. Carla Silva, Redondo Beach 90277-2241
668. Carlanne Snyder, Castro Valley 94546-3441
669. Carlos Arnold, Santa Maria 93455-2329
670. Carlos Delatorre, Rch Cucamonga 91737-4371
671. Carlos Nunez, Reseda 91335-6421
672. Carly Molstad, Los Angeles 90042-3745
673. Carmel Dagan, Los Angeles 90048-4817
674. Carmen Battung, Simi Valley 93065-0617
675. Carmen Carrasco, Studio City 91604-1137
676. Carmen Dello Buono, San Jose 95123-2424
677. Carmen Fried, Pasadena 91106-1044
678. Carmen Gagne, Watsonville 95076-2700
679. Carmen Meneses, Concord 94521-4010
680. Carmine Chavez, Canyon Country 91351-3021
681. Carol and Antonio Rocha, Martinez 94553-5417
682. Carol Anna Lind, San Francisco 94117-4460
683. Carol Baier, San Diego 92103-4603
684. Carol Barner, Menlo Park 94025-1916
685. Carol Becker, Sherman Oaks 91423-4017
686. Carol Bettencourt, San Francisco 94109-3960

687. Carol Blaney, Redlands 92373-0521
688. Carol Cotter, Granada Hills 91344-1219
689. Carol Culp, Felton 95018-9103
690. carol dicks, Redwood Valley 95470-9764
691. Carol Downey, Carmichael 95608-4304
692. Carol Easton, Aptos 95003-9762
693. Carol Fusco, Berkeley 94708-2058
694. Carol Gordon, Los Angeles 90027-1118
695. Carol Gurunathan, Mountain View 94040-3746
696. Carol H, San Rafael 94903-1209
697. Carol Hawley, San Diego 92116-3120
698. Carol Holland, Costa Mesa 92627-5430
699. carol houck, Ojai 93023-1620
700. Carol Kummer, Oakland 94610-2432
701. Carol Lake, Solvang 93463-2138
702. Carol Lesh, Berkeley 94702-1304
703. Carol Mock, Fremont 94536-1601
704. Carol Patton, Danville 94506-1146
705. Carol Rasmussen, Walnut Creek 94595-1249
706. Carol Ray, Fontana 92335-3659
707. Carol Rigrod, Encino 91316-2702
708. carol rivers, Los Altos 94022-1025
709. Carol Sangster, Ojai 93024-0149
710. Carol Schaffer, San Pablo 94806-1648
711. Carol Stotts, Santa Barbara 93109-1831
712. Carol Taggart, Menlo Park 94025-5560
713. Carol Taylor, Ojai 93023-3055
714. Carol Treacy, Petaluma 94952-2634
715. carol uschyk, Calistoga 94515-1122
716. Carol Watts, Placentia 92870-6026
717. carol whitnah, inverness 94956
718. Carol Wiley, Victorville 92394-1383
719. Carol Wolfe, Santa Rosa 95405-7037
720. Carole Ann Cole, Santa Barbara 93103-2135
721. Carole Cannon, Rocklin 95677-4213
722. Carole Hisasue, Los Osos 93402
723. Carole Lebental, Rancho Palos Verdes 90275
724. Carole Reiner, Fullerton 92835-2034
725. Carolee Tamori, Oroville 95966-9244
726. Caroline Bergdolt, San Francisco 94129-1256
727. Caroline Beverstock, Atherton 94027-6460
728. Caroline Elman, Northridge 91343-4525
729. Caroline Warren, Chico 95973-0751
730. Carolyn Adamick, Valencia 91355-4443
731. Carolyn Anderson, Sutter Creek 95685-1447
732. Carolyn Boor, Rancho Cucamonga 91730-6893
733. carolyn flook, Santa Monica 90405-1625
734. Carolyn Galluzzo, Oxnard 93036-5392
735. Carolyn Hinds, Fair Oaks 95628-3234
736. Carolyn Howerton, Valley Springs 95252-9394
737. Carolyn Johnson, Glendale 91206-1112
738. Carolyn Keck, San Jose 95112-3442
739. Carolyn Mone, Woodside 94062-4806
740. Carolyn Pettis, Canyon Country 91387-3138
741. Carolyn Rhazi, Mission Viejo 92691-5213
742. Carolyn Sabin, Chico 95926-3445
743. Carolyn Shafer, Port Hueneme 93041-1924
744. Carolyn Shepard, Belmont 94002-2816
745. Carrie Anderson, Oakland 94602-2710
746. Carrie Kappel, Santa Barbara 93108-2617
747. Carrie Kost, Oakland 94611-4707
748. Carrie Lindh, Richmond 94805-1610
749. Carroll Nast, Colfax 95713-9234
750. Cary Frazee, Eureka 95503-9592
751. caryl carr, Palo Alto 94301-2628
752. Caryn Graves, Berkeley 94702-1329
753. Caryn Nordskog, Orangevale 95662-3306
754. Caryn Turrieta, Sunnyvale 94086-7401
755. Casee Maxfield, Los Angeles 90028-8647
756. Casey Martinez, San Francisco 94122-1417
757. Cassandra Voss, Porter Ranch 91326-1027
758. Cassidy Ballentine, Thousand Oaks 91358-0164
759. Cassie Kifer, San Jose 95112-1702
760. Catharine Page-Lekas, Ferndale 95536
761. Cathe Dietrich, Albany 94706-2336
762. Catherine Allen, Shingletown 96088-9528
763. Catherine Bastug Vincenti, Santa Barbara 93101
764. Catherine Beauchamp, Pasadena 91103-2052
765. catherine eaton, Pacific Palisades 90272-1901
766. Catherine FitzGerald, Santa Barbara 93103-1945
767. Catherine Gardiner, Van Nuys 91406
768. Catherine Halley, Oak View 93022-0192
769. Catherine Hunter, La Crescenta 91214-1534
770. Catherine Macan, Eureka 95501-2564
771. catherine pesce, Morgan Hill 95037-3020
772. Catherine Quinlog, Westminster 92683-1940
773. Catherine Riley, Chico 95928-5860
774. Catherine Scott, Hidden Valley Lake 95467-8717
775. Cathleen Branich, Sacramento 95820-5032
776. Cathleen Caffrey, Santa Rosa 95409-2732
777. Cathy Carr, Sonoma 95476-4224
778. Cathy Collings, Nevada City 95959-1921
779. Cathy Cretser, Vacaville 95688-9639
780. Cathy Crum, Agoura Hills 91301-3508
781. Cathy Goodrich, Verdugo City 91046-1002
782. Cathy Grovenburg, San Jose 95124-1512
783. Cathy Heinrich, Merced 95348-2201
784. Cathy Holden, Sacramento 95864-2907
785. cathy juhlin, Paso Robles 93446-2954
786. Cathy L Hodge, Carmichael 95608-4045
787. Cathy Mullins, Laguna Beach 92651-1106
788. Cathy O'Connor, Napa 94558-2262
789. Cathy Rubin, San Jose 95112-2158
790. Cathy Stansell, Frazier Park 93225-0802
791. Cay Fisher, Big Sur 93920-0612
792. Cayley Stoker, Malibu 90265-4774
793. CC Hollis-Franklyn, Belvedere Tiburon 94920
794. Cecelia Wright, Coronado 92118-2971
795. cecile moochnek, Berkeley 94709-1927
796. Celeste Bianco, Sacramento 95817-3643

797. cesar caso, San Jose 95116-2548
798. Cesar Romero, San Jose 95123-3328
799. Ceyla Ludwig, South San Francisco 94080-4744
800. Chad Johnson, Long Beach 90806-5601
801. Chanda Unmack, Santa Clara 95050-6171
802. Chandra Tobey, Vista 92084-2830
803. Chanelle Black, Huntington Beach 92648-4725
804. Chanelle Black, Huntington Beach 92648-5947
805. Charesa Harper, Glen Ellen 95442-9743
806. Charleen Kubota, Oakland 94611-1221
807. Charlene Arbogast, Mendocino 95460-9727
808. Charlene Santiago, San Jose 95131-3608
809. Charles B, Tarzana 91356-1971
810. Charles Calhoun, San Francisco 94115-3310
811. Charles Fishburn, Porterville 93258-0449
812. Charles Fry, Sunnyvale 94085-3459
813. Charles Hammerstad, San Jose 95120-3334
814. Charles Hawk, Fairfield 94534-3322
815. Charles Heinrichs, Oakland 94619-1733
816. Charles Inman, Redwood City 94062-2863
817. Charles Jones, Santa Rosa 95409-3207
818. Charles Moran, Novato 94947-4331
819. Charles Richard Jr, Antioch 94509-4847
820. Charles Richmond, Westminster 92683-8609
821. Charles Sharpe, Bayside 95524-9301
822. Charles Siegel, Berkeley 94704-1210
823. Charles Smith, San Jose 95136-2033
824. Charles Tetoni, Santa Barbara 93103-2214
825. Charles Turner, Chatsworth 91311-3608
826. Charles Wilmoth, San Francisco 94124-1017
827. Charley Cross, Sacramento 95831-2929
828. Charlie BERGSTEDT, San Francisco 94133-1966
829. Charlie Willis, Inglewood 90301-9136
830. Charline Ratcliff, Walnut Creek 94596-4609
831. Charlotte Dickson, San Jose 95135-1336
832. Charlotte Gray, Hemet 92544-5236
833. Charlotte Liniger, Martinez 94553-5853
834. Charlotte Sonoda, Berkeley 94709-2022
835. Chase Chakeris, San Francisco 94132-3293
836. Chayanne Medina, Santa Ana 92701-6021
837. Chee Goh, Mission Viejo 92694-0738
838. Chellsa Avelin, San Anselmo 94960-1251
839. Chelsea Swick, Bayside 95524-9066
840. Cher Clarke, London 90210
841. Cheri Leslie, Venice 90291-3846
842. Cheri Messerli, Los Angeles 90039-3004
843. Cheri Michalak, Escondido 92026-3915
844. Cherie Connick, Crescent City 95531-9677
845. Cherilyn Smith, Los Angeles 90046-4164
846. Cherry Robinson, San Diego 92109-1407
847. Cheryl Albert, Freedom 95019-2708
848. Cheryl Berry, Irvine 92604-3058
849. CHERYL CALLERI, Santa Cruz 95062-4336
850. Cheryl Charles, Hemet 92545-9584
851. Cheryl Del Vecchio, Loomis 95650-8797
852. Cheryl Divine, Columbia 95310-1229
853. Cheryl Fieber, Laguna Niguel 92677-7057
854. cheryl flango, San Francisco 94124-2335
855. Cheryl Gourgouris, Santa Monica 90402-1145
856. Cheryl Heinecke, San Clemente 92673-2755
857. Cheryl Holder, Culver City 90230-6167
858. Cheryl Keith, Rancho Cordova 95670-3852
859. Cheryl Kozanitas, San Mateo 94403-1240
860. Cheryl LaBrecque, San Francisco 94114
861. Cheryl Torralba, Chatsworth 91311-4503
862. Cheryl Young, Corona 92880-3052
863. Cheryll Desberg, Los Angeles 90068-1935
864. Che-Yuan Chang, Walnut Creek 94598-1311
865. chloe ross, West Hollywood 90046-5523
866. Chris Aycock, San Francisco 94116-3039
867. Chris Ayers, Los Angeles 90034-5438
868. Chris Bachman, South Pasadena 91030-4355
869. Chris Brentlinger, Santa Cruz 95062-3226
870. chris cairns, Lakeport 95453-3623
871. Chris Choy, San Francisco 94112-2949
872. Chris DeGoeas, Cerritos 90703-2306
873. Chris Eaton, Tujunga 91042-1836
874. chris eisel, Torrance 90504-4521
875. Chris Jones, Venice 90291-4791
876. Chris Leverich, Playa Del Rey 90293-8919
877. Chris Loo, Morgan Hill 95037-3864
878. Chris MacKrell, Long Beach 90813-4717
879. Chris Malo, Larkspur 94939-1420
880. Chris Rose, Sonoma 95476-3229
881. Chris Rutledge, Hemet 92544-9524
882. Chris Seaton, Santa Barbara 93101-4651
883. Chris Shulda, Lake Forest 92630-6127
884. Chrissy Sepulveda, Anaheim 92802-4778
885. Christel Capps, San Jose 95123-1302
886. Christel Cranston, Anderson 96007-1108
887. Christian Elliott, Santa Clara 95050-4409
888. Christin Miller, Los Angeles 90049-1230
889. Christina Anderson, Laguna Niguel 92677-4259
890. christina baird, Vacaville 95687-7379
891. Christina Beecher, Santa Ana 92705
892. Christina George, Anderson 96007-8258
893. Christina Irving, SONORA 95370
894. Christina Leard, Richmond 94804-5118
895. Christina Locke, Simi Valley 93063-3510
896. Christina Merlo, Oakland 94611-4404
897. Christina Mills, Browns Valley 95918-9666
898. Christina Mills, Woodland 95695-6008
899. Christina Nagao, Woodland Hills 91364-3021
900. Christina Nillo, W Hollywood 90069-5525
901. Christina Rios, Carmichael 95608-2377
902. Christina Skillin, Calabasas 91302-1839
903. Christine Anderson, Lafayette 94549-2221
904. Christine Borje, Los Angeles 90039-1926
905. Christine Bourg, Pleasanton 94566-7338
906. Christine C Jones, Alameda 94502-6901

907. Christine Cadd, Davis 95616-5637
908. Christine Elgin, San Carlos 94070-1638
909. christine fiorentino, Samoa 95564-0044
910. Christine Gary, Sacramento 95831-3787
911. Christine Hayes, Upland 91786-2161
912. Christine Hoeflich, Scotts Valley 95066-3027
913. Christine McAfee-Ward, San Jose 95123-2549
914. Christine Nathanson, Napa 94558-2455
915. Christine Perkins, Sacramento 95819-4043
916. christine raffetto, Healdsburg 95448-0925
917. Christine Rideout, Escondido 92027-6739
918. Christine Salido, San Mateo 94403-4219
919. Christine Sloss, Oakley 94561-3523
920. Christine Stewart, Escondido 92026-1461
921. Christine Taira-Lin, Irvine 92614-7097
922. Christine Weinstein, San Diego 92111
923. Christine Zembal, Culver City 90232-3236
924. Christophe Jonatowski, Sun Valley 91352-1127
925. Christopher Carson, Burbank 91505-2831
926. Christopher Chatard, San Diego 92116-1739
927. Christopher D Stanton, Portola 96122-1595
928. Christopher Dunnbier, Healdsburg 95448-0691
929. christopher james, Nevada City 95959-2435
930. Christopher Kashap, Newbury Park 91320-4950
931. CHRISTOPHER NIAL, Camarillo 93012-4058
932. Christopher Parsons, Los Angeles 90027-1113
933. Christopher Rand, Richmond 94801-3979
934. Christopher Stahl, Sunnyvale 94086-6618
935. Christopher Valadez, Sylmar 91342-5161
936. Christopher Yocum, Yucca Valley 92284-6016
937. Chuck Karp, Palm Desert 92261-4423
938. Chuck Riess, Santa Clara 95051-6501
939. chuck rocco, Simi Valley 93065-2647
940. Chung-Wei Chan, San Jose 95129-3800
941. Ciji Ware, Sausalito 94965-2104
942. Cinda Johansen, Folsom 95630-7928
943. Cinda Spinks, Los Angeles 90042-1361
944. Cindy Beckley, Oakland 94619-3310
945. Cindy Brillhart True, Sonoma 95476-6454
946. Cindy Meyers, Capitola 95010-0423
947. Cindy Stein, Thousand Oaks 91360-1522
948. Cindy Taylor, Daly City 94015-3539
949. Claire Perricelli, Eureka 95501-1312
950. Claire Simonich, Half Moon Bay 94019-5107
951. Claire Watson, Pleasant Hill 94523-5157
952. Clara Carpenter, Alameda 94501-3334
953. Clare Hooson, Belmont 94002-3511
954. Clarence Butler, Redlands 92374-6312
955. Claude McDonald, San Jose 95120-1930
956. claudia Alongi, Cathedral City 92234-3918
957. Claudia Hasenhuttl, Glendale 91206-4621
958. Claudia Mansfield, Weed 96094-9046
959. Claudia Misner, Fairfax 94930-2017
960. Clemens Goewert, Clovis 93619-3909
961. Clifford Gamble, Los Angeles 90043-2040
962. clinton northcutt, Needles 92363-3434
963. Clover Catskill, Pinole 94564-2102
964. Clover Seely, Grass Valley 95945-6719
965. Coach Ron, Los Angeles 90014-2013
966. Coleen Scholfield, Redding 96049-4841
967. COLETTE PIACENTINI, Santa Barbara 93105
968. Colette Stroud, West Hollywood 90046-5527
969. Colin Boyd, Novato 94945-1231
970. Colin McHugh, Los Angeles 90019-2554
971. Colleen Bednarz, Santa Cruz 95062-2628
972. Colleen Carter, Canyon Country 91387-4990
973. Colleen Harrison, Rncho Cordova 95670-4220
974. Colleen Lobel, San Diego 92126-3121
975. Colleen Marshall, Fremont 94536-3825
976. Colleen McGuinness, Point Reyes Station 94956
977. Colleen Wieghorst, Fullerton 92835-2226
978. Collin Bowman, Tahoe Vista 96148
979. Conni Vanbilliard, Oceanside 92057-7002
980. connie batten, Santa Cruz 95062-2328
981. Connie Castro, San Diego 92126-3600
982. Connie Charles, El Cajon 92020-1119
983. Connie Cronin, Berkeley 94705-2035
984. Connie Crusha, El Cajon 92019-3579
985. Connie Hannah, Goleta 93117-6209
986. Connie Klemisch, Simi Valley 93065-3215
987. Connie Peterson, Pismo Beach 93449-2029
988. Connie Sheppard, San Diego 92122-3902
989. Constance Flannery, San Francisco 94131-2704
990. Constance Scudder, Solvang 93463-2933
991. Constance Sutton, Berkeley 94707-1913
992. Constance Youens, Murrieta 92562-3245
993. Coral Taylor, Truckee 96160-1141
994. Corey Benjamin, Los Angeles 90006-2866
995. Corey Monteith, San Francisco 94114
996. Corinn Kintz, Idyllwild 92549-0223
997. Corinne Greenberg, Berkeley 94707-1602
998. Corinne Van Houten, Sacramento 95835-1539
999. Corky Letellier, Weaverville 96093-1488
1000. Courtney C, Galt 95632
1001. cowen bailey, Northridge 91325-4242
1002. Craig Chatterton, Soquel 95073-0073
1003. craig fryer, San Jose 95118-1437
1004. Craig Golden, Lake Balboa 91406-4329
1005. Craig Olson, Santa Rosa 95404-2212
1006. craig r, encinitas 92024
1007. craig suide, San Francisco 94121-2761
1008. Craig Zuppan, Yucaipa 92399-4927
1009. Creda Markham, San Jose 95127-2624
1010. Cristian Rodriguez, Buena Park 90621-3217
1011. Cristy Bodnar, San Francisco 94118-2910
1012. Crystal Hernandez, Torrance 90501-4121
1013. Crystal Hollander, Santa Rosa 95403-3626
1014. CRYSTAL IBARRA, Riverside 92507
1015. Crystal Watson, Carmichael 95608
1016. CT Bross, Walnut Creek 94597-2423

1017. Currie Hambright, Carlsbad 92009
1018. Curry Sawyer, Santa Barbara 93103-2067
1019. Curtis Swan, Long Beach 90802-1164
1020. Cyndi Houck, Santa Rosa 95405-4747
1021. Cyndi Otero, Orangevale 95662-3033
1022. Cynthia Belliveau, Ojai 93023-2883
1023. Cynthia Byrd, San Francisco 94133-2648
1024. Cynthia Coley, Lake Forest 92630-2607
1025. Cynthia Coty, Alhambra 91801-2804
1026. Cynthia Falsken, Norco 92860-2711
1027. Cynthia Luas, Hesperia 92345-3429
1028. Cynthia Mahoney, Danville 94526-3670
1029. Cynthia McMath, Boonville 95415-9101
1030. Cynthia Meyer, Santa Rosa 95405-8326
1031. Cynthia Patrick, Ventura 93004-2370
1032. Cynthia Rickley, Whittier 90601-3718
1033. Cynthia Sills, Rancho Cordova 95670-6992
1034. Cynthia Travis, San Francisco 94117-3815
1035. CYNTHIA TROTTA, West Covina 91791-4123
1036. Cynthia Vincent, Torrance 90505-6921
1037. Cynthia Wilder, Rancho Palos Verdes 90275
1038. D Ashurst, Corning 96021-2331
1039. D Aspen, Santa Barbara 93120-2247
1040. D B, Berkeley 94703
1041. D B, Carlsbad 92009
1042. D Metrov, Goleta 93117-1961
1043. Dale Drouin, Walnut Creek 94596-3326
1044. Dale Haas, San Diego 92115-2202
1045. Dale Keeler, Pomona 91768-1190
1046. Dale McCart, Irvine 92620-3360
1047. Dale Peterson, Berkeley 94710-2520
1048. Dale Riehart, San Francisco 94107-1807
1049. Dalia Salgado, LOS ANGELES 90071
1050. Damian James, Oakland 94609-2739
1051. Damien Hodge, Fontana 92336-4251
1052. Damon Brown, Los Angeles 90016-5229
1053. Dan Anderson, Roseville 95747-5045
1054. Dan Cantor, Los Angeles 91206
1055. Dan Clark, Big Sur 93920-9538
1056. Dan Eloff, Sunnyvale 94089-5001
1057. Dan Esposito, Manhattan Beach 90266-4082
1058. Dan Greaney, Redding 96003-7038
1059. Dan Henneberger, Los Angeles 90066-6696
1060. Dan Matthews, Valley Center 92082
1061. Dan McCrory, Northridge 91324-4533
1062. Dan Rauschenberg, Desert Hot Springs 92240
1063. Dan Reitz, Corona Del Mar 92625-2328
1064. dan walls, Stanford 94305-7553
1065. Dan Wilt, San Diego 92101-7586
1066. Dan Wilt, San Diego 92101-7598
1067. Dana Ahlgren, Rancho Cordova 95670-2877
1068. Dana Gleason, Menlo Park 94025-2548
1069. Dana May, Garden Grove 92840-4208
1070. Dana Thompson, Los Gatos 95032-7391
1071. Dana Weikel, Hanford 93230-7229
1072. Danaan DeNeve, Merced 95348-2241
1073. Dani Bowman, La Canada Flintridge 91011
1074. Dania Moss, Soquel 95073-9537
1075. Daniel Aleman, San Bernardino 92410-2726
1076. Daniel Aron, San Francisco 94107
1077. Daniel Cantor, Withheld 91206
1078. daniel carroll, Palm Springs 92262-4005
1079. Daniel Choi, San Francisco 94114-1600
1080. DANIEL DENIS, Santee 92071-1448
1081. Daniel Dowdle, San Diego 92103-4202
1082. Daniel Fidelman, Palm Desert 92260-5328
1083. Daniel Goldberg, Santa Cruz 95060-2738
1084. Daniel Gonzales, Lancaster 93536-8321
1085. Daniel Gonzalez, San Diego 92129-3819
1086. Daniel Hickey, Cypress 90630-4000
1087. Daniel Lang, San Francisco 94102-5058
1088. Daniel Moyer, Redwood City 94061-2142
1089. Daniel Podell, Santa Rosa 95404-2225
1090. Daniel Shalit, Wrightwood 92397
1091. Daniel Slosberg, Corona 92881-6400
1092. Daniel Stevens, Healdsburg 95448-9601
1093. Daniel Tiarks, Los Angeles 90046-7127
1094. Daniel Weil, Sebastopol 95472-4211
1095. Daniel Williams, Victorville 92392-9478
1096. Daniela Enriquez, San Bernardino 92407-6915
1097. Daniele O'Loughlin, Van Nuys 91405-3007
1098. Daniell Hepting, San Diego 92116-4539
1099. danielle thomas, Santa Monica 90405-4836
1100. Danika Kohler, Valley Village 91607-2760
1101. Dannah Murphy, Capo Beach 92624-1337
1102. Danny Greene, Escondido 92025-6012
1103. Dara Alexander, Bolinas 94915
1104. DARALYNN NAPOLEON, Stockton 95209-
1105. Daria Kent, Nevada City 95959-0765
1106. Dariel Miller, Calabasas 91302-2225
1107. Darienne Hetherman, Altadena 91001-4726
1108. Darin Sullivan, Santa Barbara 93105-4092
1109. Darla Decker, Grass Valley 95949-7173
1110. DARLENE BRINLEY, Santa Monica 90402-
1111. Darlene Vales, San Jose 95135-2217
1112. Darrell Clarke, Pasadena 91101-2568
1113. Darrell Gilbert, Cerritos 90703-6146
1114. Darrell Neft, Costa Mesa 92626-2324
1115. Darren Frale, Los Angeles 90065-3214
1116. Dashiell Dunkell, Santa Cruz 95060-5909
1117. Dave Chelsea-Seifert, Foster City 94404-1851
1118. Dave Ferguson, Sunland 91040-1849
1119. Dave Hullfish Bailey, Van Nuys 91401-3036
1120. Dave Martin, Boonville 95415-1059
1121. David & Pat Dowdey, Thousand Oaks 91360-
1122. David Adams, Penn Valley 95946-9503
1123. David Aloisi, Hermosa Beach 90254-4831
1124. David and Lisa Krausz, Tiburon 94920-1344
1125. David Arnold, Redding 96003-9319
1126. David Attarzadeh, Fremont 94538-3069

1127. David Attarzadeh, Sunnyvale 94086-7640
1128. David Aylward, Redwood City 94061-2773
1129. David Bauer, Santa Rosa 95403-3138
1130. David Beauvais, San Francisco 94122-1547
1131. David Berry, Los Angeles 90024-5756
1132. David caliendo, NEWPORTBEACH 92662
1133. David Carter, Redlands 92373-4827
1134. David Coleman, Cobb 95426
1135. David Cronin, Orinda 94563-1839
1136. David Crosby, Auburn 95603-9547
1137. David Cull, Los Angeles 90026-6331
1138. David Czamanske, Alhambra 91801-1771
1139. David Delagarza, Los Angeles 90038-1648
1140. David Diep, San Jose 95136-2118
1141. David Doering, San Francisco 94109-3607
1142. David Dunnigan, Pacific Grove 93950-2223
1143. david EDF gurley, Santa Rosa 95404
1144. David Ellis, Santa Rosa 95407-9107
1145. David Foulger, Apple Valley 92307-3200
1146. David Fried, Santa Monica 90401-2347
1147. David Goll, San Jose 95123-2004
1148. David Griffith, Rancho Cucamonga 91737-3017
1149. David Hagberg, Lakeport 95453-8729
1150. David Halsing, San Leandro 94577-3828
1151. David Hammond, Willits 95490-8764
1152. David Harralson, Studio City 91604
1153. David Harris, Ventura 93003-1906
1154. David Harrison, Gardena 90247-4026
1155. David Haskins, San Diego 92105-1264
1156. David Heinrichsen, San Jose 95136-2951
1157. David Hermeyer, San Francisco 94117-2240
1158. David Hirsch, Campbell 95008-4353
1159. David Hunt, Fallbrook 92028-9149
1160. David Illig, Fair Oaks 95628-7521
1161. David Johnson, Ventura 93003-4736
1162. David Jones, San Francisco 94114-3637
1163. David Kent, Windsor 95492-9401
1164. David Kranzler, San Mateo 94402-3225
1165. David Lau, Mission Viejo 92692-5190
1166. David Leavengood, Burbank 91505-5402
1167. David Mabe, Thousand Oaks 91320-7056
1168. David McCord, Oakland 94602-3029
1169. David McLaughlin, Burbank 91505-2330
1170. David Miller, Redondo Beach 90277-2133
1171. David Misch, Santa Monica 90403-4701
1172. David Osterhoudt, Rancho Santa Margarita 92688
1173. David P Peterson, San Diego 92116-4841
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1175. David Passmore, Cazadero 95421-9500
1176. David Peha, Torrance 90503-1205
1177. David Perry, Palo Alto 94306-3608
1178. DAVID RAMM, Hayward 94541-3102
1179. David Reed, Guerneville 95446
1180. David Rhoades, Belvedere 94920-2461
1181. David Roche, San Francisco 94117-3104
1182. David Samuelson, Coto DE Caza 92679-4941
1183. David Sanders, Glendora 91740-5388
1184. David Sherman, Santa Rosa 95405-8116
1185. David Smith, Cathedral City 92234-1726
1186. David Stryker, Auburn 95602-9698
1187. DAVID TONG, Garden Grove 92840-1116
1188. David Tramutolo, Bishop 93514-2973
1189. David Varnum, San Francisco 94117-1006
1190. David Wappler, Ojai 93024-1297
1191. David Watson, Guerneville 95446
1192. David Weber, Aliso Viejo 92656-2819
1193. David West, San Jose 95126-3118
1194. David Williams, Oakland 94602-1046
1195. David Yamaguchi, Fresno 93704-1850
1196. David Zebker, San Francisco 94102-1685
1197. Dawn Ayers, Rancho Palos Verdes 90275-2255
1198. Dawn Dowdy, Visalia 93277-7075
1199. Dawn Lay, San Clemente 92672-6426
1200. Dawn Perez, Santa Rosa 95401-5850
1201. dawn tesluk, Oceanside 92054-5727
1202. Dawn Welden, San Mateo 94404-2016
1203. Dawn Ziegler, Fontana 92335-5571
1204. Dawne Adam, Walnut Creek 94597-7528
1205. Dawnell Blaylock, Auburn 95602-8875
1206. Dayna Woerner, Novato 94949-6282
1207. Dean McCleskey, Santa Ana 92706-1937
1208. Dean Peppard, Downey 90240-2622
1209. dean weiss, Encino 91436-1411
1210. Deann Wright, San Francisco 94121-1016
1211. Deanna Rhoades, La Mesa 91942-5069
1212. Deb St Onge, Poway 92064-3945
1213. Debbie Atlas, Newbury Park 91320-5913
1214. Debbie Bolsky, Santa Monica 90403-1162
1215. Debbie Chaddock, San Diego 92116-3954
1216. debbie galletly, Pasadena 91105-1705
1217. Debbie Gerberich, Apple Valley 92307-5633
1218. Debbie Kalama Perkins, Albany 94706-1502
1219. Debbie Kasch, Red Bluff 96080-3505
1220. Debbie Lloyd, Montara 94037
1221. Debbie Notkin, Oakland 94609-1004
1222. Debbie Rudell, Camarillo 93010-2102
1223. Debbie Sayre, Fremont 94536-5277
1224. Debbie Stamp, Redwood Valley 95470-6149
1225. Debbie Wagstaff, Barstow 92312-2065
1226. Debbie Wescott, Vista 92085-0691
1227. Debby Berg, Los Angeles 90049-2226
1228. Deborah Alcaraz, Madera 93636-7603
1229. Deborah Alexzander, Castro Valley 94546-2271
1230. Deborah Bacon Dilts, Santa Cruz 95060-1027
1231. Deborah Baldwin, Oakland 94618-2121
1232. Deborah Biron, Hayward 94544-6815
1233. Deborah Chesher, Irvine 92620-3375
1234. Deborah Childers, Turlock 95382-3200
1235. Deborah Coates, Los Angeles 90065-2541
1236. Deborah Colotti, Santa Rosa 95404-2241

1237. Deborah Colotti, Sebastopol 95472-4839
1238. Deborah Cosetto, Manteca 95336-5177
1239. Deborah Cowder, Oakland 94606-1120
1240. Deborah Evans, Mission Viejo 92691-3636
1241. Deborah Fallender, Santa Monica 90405-2828
1242. Deborah Fischer, Fair Oaks 95628-6921
1243. Deborah Ford, Woodland 95776-0056
1244. Deborah Gostin, San Diego 92103-4866
1245. Deborah Gray, Truckee 96161-7036
1246. Deborah Gunther, Santa Barbara 93105-2129
1247. Deborah Hall, San Francisco 94117-4020
1248. Deborah Holcomb, Los Angeles 90025-6314
1249. Deborah Holland, Temecula 92592-7701
1250. Deborah Jenkins, Hacienda Heights 91745-5602
1251. Deborah Konar, Oakland 94618-1053
1252. Deborah Lakeman, Studio City 91604-2125
1253. Deborah Lee Chill, Yucaipa 92399-5374
1254. Deborah McCarthy, San Clemente 92672-9494
1255. Deborah McCarthy, San Clemente 92673-6917
1256. Deborah Miller, Del Rey Oaks 93940-5624
1257. Deborah Parker, Oakland 94611-1309
1258. Deborah Pendrey, Oak View 93022-9312
1259. Deborah Sargent, Poway 92064-6510
1260. Deborah Sjelin, Long Beach 90814-2710
1261. deborah werter, Lodi 95242-3925
1262. Deborah Williams, Gardena 90249-1520
1263. Deborah Wood, Fairfield 94533-5241
1264. Debra Banes, Sacramento 95834-9641
1265. Debra Day, Livermore 94550-4342
1266. Debra Dizin, Oakland 94619-1222
1267. Debra Jurey, Templeton 93465-9308
1268. Debra Polansky, Auburn 95603-9456
1269. Debra Rasmussen, Oroville 95966-8030
1270. Debra Roberts, El Dorado Hills 95762-5520
1271. Debra Sakarias, Alpine 91901-3918
1272. Debra Shwiff, Laguna Beach 92651-2537
1273. Debra Stretch, Sebastopol 95473-0218
1274. Debra Taube, San Francisco 94123-4227
1275. Debra Wanamaker, San Jose 95126-3116
1276. Dedra Hauser, Palo Alto 94306-1148
1277. Dee Warenycia, Roseville 95661-7303
1278. Deimile Mockus, Los Angeles 90004-3837
1279. Deirdre Boland, Los Angeles 90027-5550
1280. Delaire Fattah, Los Angeles 90024-8301
1281. dena elfert, Berkeley 94702-1753
1282. Dena Schwimmer, Los Angeles 90019-2407
1283. Denali McCullough, San Jose 95123-2048
1284. Denese Burrell, Vacaville 95687-3412
1285. Denese Stokes, Big Bear City 92314-0272
1286. Deni Marshall, Elk Grove 95758-4137
1287. Denice Eldridge, Vacaville 95687-5112
1288. Denise Baker, La Crescenta 91214-3821
1289. Denise Barger, Bishop 93514-9506
1290. Denise Belsey, Oceanside 92057-4205
1291. Denise Berezonsky, Oakland 94608-2744
1292. Denise Bunger, San Jose 95132-1615
1293. Denise Couey, Riverside 92506-5356
1294. Denise Crum, Oceanside 92057-4205
1295. Denise Edwards, Redding 96002-3335
1296. Denise Fachko, Buena Park 90621-3324
1297. Denise George, San Francisco 94117-2248
1298. Denise Lenardson, Sunland 91040-1916
1299. Denise Lenker, San Clemente 92672-5191
1300. Denise Leyda, Campbell 95008-0683
1301. Denise Lindsly, Walnut Creek 94597-3208
1302. Denise Redden, Auburn 95603-4125
1303. Denise Smith, Scotts Valley 95066-3005
1304. Denise Vandermeer, Woodland Hills 91367-5312
1305. Denise Williams, Santa Barbara 93101-3107
1306. Denise Yamamoto, Torrance 90503-9340
1307. Dennis Allen, Santa Barbara 93103-3201
1308. Dennis Allen, Santa Barbara 93105-2138
1309. Dennis Brand, Santa Barbara 93109-1131
1310. Dennis Busto, San Bernardino 92405-2631
1311. Dennis Curry, Paso Robles 93446-9338
1312. Dennis Dismachek, Scotts Valley 95066-2618
1313. Dennis Hays, Vallejo 94591-7567
1314. Dennis Holz, Encinitas 92024-2226
1315. Dennis Landi, Long Beach 90813-4027
1316. Dennis Ledden, Mount Aukum 95656-0004
1317. Dennis Therry, Bayside 95524-0735
1318. Dennis Villavicencio, Three Rivers 93271-9626
1319. Derald Myers, Santa Cruz 95062-4058
1320. Derek Dewhirst, San Jose 95118-3466
1321. Derek Lockwood, Laguna Hills 92653-5439
1322. Derrell Chambers, Kensington 94708-1131
1323. Desiree Banzhaf, Santa Cruz 95060-4719
1324. Desiree Patterson, Orange 92869-1306
1325. Devin McMahon, Stanford 94305-7486
1326. Dew Drop, San Fransisco 94123
1327. Dewitt Durham, San Carlos 94070-1661
1328. dg van arsdale, Burlingame 94010-4306
1329. Dh Higgins, Berkeley 94709
1330. Diana C, Hell no 95123
1331. Diana Castro, Long Beach 90814-1502
1332. Diana Cole, Oceanside 92057-1955
1333. Diana Daniels, Sacramento 95818-3600
1334. Diana Davis, San Anselmo 94960-2113
1335. Diana Good, Chico 95928-5847
1336. Diana Hoffmann, Sheep Ranch 95246-9579
1337. Diana Holmes, Petaluma 94953-0142
1338. diana kliche, Long Beach 90804-1201
1339. Diana Lubin, La Mesa 91941-7121
1340. Diana Madoshi, Rocklin 95765-5566
1341. Diana Rothman, Santa Cruz 95060-3640
1342. Diana Weinstock, Pleasanton 94566-5766
1343. Diana Wuerthner, San Francisco 94110-4905
1344. Diane Balter, San Francisco 94118-4113
1345. Diane Berliner, Los Angeles 90046-2004
1346. Diane Cantwell, Tujunga 91042-1546

1347. Diane Charles, Burbank 91506-3039
1348. Diane Clement, Los Osos 93402-2177
1349. Diane Cooper, Playa Del Rey 90293-7909
1350. Diane Cornwall, Cool 95614-2026
1351. Diane Demarco, Cambria 93428-2510
1352. diane gerard, Cardiff 92007-2226
1353. Diane Grobman, Santa Rosa 95409-5927
1354. Diane Johnson, Escondido 92027-1422
1355. Diane Joyce, Temecula 92592-6473
1356. Diane Knight, West Hills 91307-2516
1357. Diane Krell-Bates, San Diego 92122
1358. Diane London, Woodland Hills 91365-7071
1359. Diane Mojica, Arcadia 91006-4931
1360. Diane Neophytou, Oakland 94601-3703
1361. Diane Parks, Mission Viejo 92692-4090
1362. Diane Rossi-Pearl, South San Francisco 94080
1363. Diane Seaman, Santa Monica 90403-3259
1364. Diane Silveria, Newbury Park 91320-2127
1365. Diane Stoecken, Eureka 95501-4336
1366. Diane Wrona, Kentfield 94904-2817
1367. Dianne Brenner, El Cerrito 94530-2738
1368. Dianne Brooke, Cambria 93428-0545
1369. Dianne Bryant, Yuba City 95993-8521
1370. Dianne Burns, Carmel By The 93921-0714
1371. Dianne Sax, Venice 90291-2806
1372. diena street, Modesto 95355-4023
1373. Dimitri Katsaros, San Jose 95129-2021
1374. Dina Bianco, Seal Beach 90740-6158
1375. Dineo Maine, Chula Vista 91915-2322
1376. Dione King, San Francisco 94114-1811
1377. Diran Depanian, Los Angeles 90027-2478
1378. Dirk Verbeuren, Valley Village 91607-1615
1379. Dixie van der Kamp, Santa Rosa 95404-8887
1380. Dobby Morse, Oakland 94606-2562
1381. Dodie Shepard, Burbank 91505-2401
1382. Dominic De Bellis, Benicia 94510
1383. Don Bush, Los Angeles 90066-4225
1384. Don Deck, Mammoth Lakes 93546-9796
1385. Don Edwards, Sherman Oaks 91423-3217
1386. Don Johnston, Davis 95618-4418
1387. Don Madden, Grass Valley 95949-9402
1388. Don Martin, Nipomo 93444-6629
1389. Don Schwartz, Larkspur 94939-2321
1390. Don Sparks, Northridge 91325-2049
1391. Donald Betts, Oceanside 92057-8246
1392. donald dodge, San Francisco 94114-2325
1393. Donald Fuhrer, Montecito 93108-1415
1394. Donald Isbell, Carlsbad 92008-4241
1395. Donald M Dudan, Walnut Creek 94596-6312
1396. Donald Mackay, South Pasadena 91031-0823
1397. Donald Mosier, Del Mar 92014-2539
1398. Donald Nagle, San Mateo 94402-3605
1399. Donald O'Hare, Los Angeles 90062-2302
1400. Donald Quick, West Covina 91790-3122
1401. Donald Sauer, Pismo Beach 93449-1505
1402. Donald Taylor, Fair Oaks 95628-6411
1403. Donald Wenger, El Cajon 92021-1815
1404. Donald Wise, Villa Park 92861-2328
1405. Donna Campbell, Sonoma 95476-5425
1406. Donna Carr, MD, Encinitas 92024-2240
1407. Donna Crossman, Coronado 92118-2025
1408. Donna DeDiemar, Berkeley 94706-2506
1409. Donna Ditmore, Alturas 96101-9010
1410. Donna Fabiano, Forestville 95436-9385
1411. Donna Forst, Santa Rosa 95409-6390
1412. Donna Fountain, Downey 90242-3637
1413. Donna Giddens, Elk Grove 95758-7640
1414. Donna Jones, Penn Valley 95946-9713
1415. Donna Kincannon, Fair Oaks 95628-3730
1416. Donna Kowzan, Moorpark 93021-2844
1417. Donna Leslie-dennis, Long Beach 90807-1225
1418. Donna Meyers, Long Beach 90814-1502
1419. Donna Olsen, Fremont 94536-7031
1420. Donna Padnos, San Jose 95124-1243
1421. Donna Pedroza, Alameda 94501-6065
1422. Donna Rogers, Irvine 92618-8073
1423. Donna Shelton, Murrieta 92562-4313
1424. Donna Simonds, Morgan Hill 95037-3926
1425. Donna Tobar, Irvine 92602-1004
1426. Donna Walker, Los Angeles 90028-7386
1427. Donna Woodhams, Rialto 92376-5024
1428. Donna-Lee Phillips, Eureka 95501-2052
1429. Donnalynn Polito, Half Moon Bay 94019
1430. Donzaleigh Abernathy, Los Angeles 90077-1724
1431. Doreen Maxwell, Ben Lomond 95005-9315
1432. Dori Peck, Los Angeles 90025-5925
1433. Doris Horvath, San Andreas 95249
1434. Doris Telles, Mountain Center 92561-0450
1435. Doris Van, Fresno 93720-2669
1436. Dorit Oren, Kensington 94708-1006
1437. Dorothy J Clazie, Petaluma 94954-8536
1438. Dorothy Jardin, Los Olivos 93441-0525
1439. Dorothy Lee, Napa 94558-4338
1440. Dorothy LiCalzi, Santa Monica 90405-4219
1441. Dorothy Mitchell, Chico 95926-1511
1442. Dorothy Nelson, Manteca 95336-4551
1443. Dorothy Thomas, San Jose 95112-1314
1444. Dorothy Wallstein, Santa Barbara 93101-3609
1445. Dorothy Wilcox, Petaluma 94952-1806
1446. Dort Rothafel, Santa Cruz 95060-5614
1447. Doug Danaher, San Jose 95124-5413
1448. Doug Edwards, Irvine 92612-4116
1449. doug krause, fargo 92008
1450. Doug Kroll, Fairfax 94930-1201
1451. Doug McBride, Auburn 95602
1452. Doug Musick, Walnut Creek 94597-7570
1453. douglas donehoo, Los Angeles 90048-3659
1454. Douglas Dyakon, Los Angeles 90069-1313
1455. Douglas Estes, San Francisco 94118-4063
1456. Douglas Hart, Huntington Beach 92649-3692

1457. Douglas Linneman, Yucca Valley 92284-6044
1458. Douglas McCormick, Coto DE Caza 92679-4123
1459. Douglas Schorling, Visalia 93290-6816
1460. Douglas Searson, Sausalito 94965-2301
1461. Dr Betty Blue, Cypress 90630-5443
1462. Dr Jessica Theissen, Emeryville 94608-2936
1463. Dr Pocholo Rous, Burbank 91504-4029
1464. Dr. Pocholo Rous, Burbank 91504-4029
1465. Dr. Truthsayer, San Rafael 94915-1403
1466. Drew Meseck, Laguna Beach 92651-3967
1467. Dru Isanda, Citrus Heights 95621-1223
1468. Duana Moser, lajolla 92037
1469. Duane Tucker, Palm Springs 92262-7913
1470. Duke McPherson, Santa Barbara 93108-1027
1471. Duncan Seffern II, San Diego 92109-1916
1472. duncan van arsdale, Burlingame 94010-4306
1473. Dustin Arduser, Banning 92220-2106
1474. Dustin Haley, North Highlands 95660-4232
1475. Dusty Smith, Santa Maria 93456-5506
1476. Dwain Jones, Riverside 92506-2325
1477. Dyani Bishop, Mckinleyville 95519-4230
1478. Dylan Busby, Mammoth Lakes 93546-0736
1479. E Antonio, Santa Monica 90404-2759
1480. E H Estes, Mountain View 94041-1051
1481. E Lehuanani Phillips, Santa Clarita 91321-2673
1482. E P, Talmage 95481-0178
1483. Eamon Briggs, Santa Cruz 95060-2906
1484. eanthy zeltman, Apple Valley 92308-8429
1485. Earl Balch, San Diego 92109-8249
1486. Earl Frounfelter, Santa Maria 93454-6644
1487. Earl Guy, Escondido 92027-4451
1488. Earl Shimaoka, Sunnyvale 94086-4911
1489. Earth Accounting, Sherman Oaks 91423-1163
1490. Ed Atkins, Boulder Creek 95006-8733
1491. Ed Giguere, Gold River 95670-7617
1492. Ed Green, Fremont 94539-3662
1493. ed l, Santa Monica 90404-3141
1494. ed lin, Santa Monica 90404-3141
1495. Ed Oberweiser, Fort Bragg 95437-8256
1496. Edgar DeMeo, Palo Alto 94306-2313
1497. Edh Stanley, Sacramento 95823-1457
1498. Edie Schaffer, San Francisco 94112-2230
1499. Edie Stafford, Pine Mountain Club 93222-6825
1500. Edith Davidson, San Leandro 94577-6042
1501. Edmond Green, Los Alamitos 90720-4459
1502. Edmund Jones, Sacramento 95814-5437
1503. Eduardo Hernandez, Menlo Park 94025-1217
1504. Eduardo Izquierdo, Santa Cruz 95060-3538
1505. edward abbey, Santa Monica 90401-2652
1506. Edward Atwood, San Francisco 94103-4190
1507. Edward Goral, Montrose 91020-2008
1508. Edward Macan, Eureka 95501-2564
1509. Edward Mainland, San Francisco 94105-3456
1510. Edward Nattenberg, San Rafael 94901-1411
1511. Edward Nattenberg, Walnut Creek 94595-2559
1512. Edward Neely, San Francisco 94115-1724
1513. Edward North, Palo Alto 94301
1514. Edward Radlo, Los Altos Hills 94022-2454
1515. Edward Redig, Paso Robles 93446-7350
1516. Edwin Serna, Los Angeles 90011-2249
1517. Edwina Smith, San Francisco 94114-2323
1518. Eileen Arterburn, Escondido 92025-4313
1519. Eileen Bill, Santa Rosa 95404-5972
1520. Eileen Cohen, Berkeley 94702-1948
1521. Eileen Gross, San Francisco 94117-3223
1522. Eileen Heaser, Sacramento 95819-2717
1523. Eileen Massey, Oakland 94608-2310
1524. Eka Darville, Los Angeles 90066-4818
1525. Elad Alon, El Cerrito 94530
1526. Elaine Alfaro, Felton 95018-9637
1527. Elaine Barrett, San Diego 92103-4474
1528. Elaine Benjamin, Alpine 91901-2240
1529. Elaine Berg, Simi Valley 93065-7369
1530. Elaine Bierman, San Diego 92128-3119
1531. elaine dove, Tustin 92780-2359
1532. Elaine Edell, Westlake Village 91362-4742
1533. Elaine Genasci, San Luis Obispo 93401-6710
1534. Elaine Kluever, Huntington Beach 92646-3439
1535. Elaine Larson, Petaluma 94954-1588
1536. Elaine Livesey-Fassel, Los Angeles 90064-4523
1537. Elaine Mont-Eton, San Rafael 94901-5116
1538. Elaine Russell, Long Beach 90815-3114
1539. Elba (Evita) McCullough-Beas, Bonita 91902
1540. Elba McCullough, Bonita 91902-4258
1541. Eldene Paschal, Browns Valley 95918-9645
1542. Eleanor Anderson-Miles, Richmond 94804-4931
1543. Eleanor Begley, Eureka 95503-7923
1544. Eleanor Cionco, Roseville 95747-8810
1545. Eleanor Decker, Glen Ellen 95442-1168
1546. Eleanor Miller, Encinitas 92024-2331
1547. Elena Hernandez, Windsor 95492-9734
1548. Elena Myers, San Francisco 94107-3410
1549. Elenita Duelo, Penn Valley 95946-9133
1550. Elisa Barucchieri, San Clemente 92672-4321
1551. Elisa Martinez, Aromas 95004-9691
1552. Elisa Nocedal, Belmont 94002-2776
1553. Elisabeta Revencu, San Francisco 94131-2430
1554. Elisabeth Ann Elling, San Francisco 94114-3908
1555. Elisabeth Belding, Oakland 94619-2029
1556. Elisabeth Gray, Santa Barbara 93111-1691
1557. Elisabeth Schroeder, North Hollywood 91601
1558. Elisabeth Vetorino, Gualala 95445-8580
1559. Elisabeth Wadleigh, Palo Alto 94303-4409
1560. Elise Bell, Oakland 94608-4025
1561. Elisha Morgan, San Diego 92110-1700
1562. Elisse De Sio, San Carlos 94070-5009
1563. Elizabeth A Flynn, Oceanside 92057-6449
1564. Elizabeth Adan, Carmichael 95608-1858
1565. Elizabeth Anthony, San Jacinto 92581-0695
1566. Elizabeth Backo, Vista 92081-8337

1567. Elizabeth Bianchi, Ojai 93023-2156
1568. Elizabeth Burgess, Carmichael 95608-4325
1569. Elizabeth Caravati, San Francisco 94109-3218
1570. Elizabeth Chandler, Santa Cruz 95060-2301
1571. Elizabeth Colwell, San Diego 92106-1945
1572. Elizabeth Cutter, Auburn 95603-3508
1573. Elizabeth Daskarolis, Oakland 94619-3509
1574. Elizabeth Davis, Davis 95616-0146
1575. Elizabeth Edinger, North Hollywood 91601-3981
1576. Elizabeth French, Laguna Niguel 92677-5621
1577. Elizabeth Friis, Pleasant Hill 94523-1731
1578. elizabeth godwin, Santa Clarita 91351-5722
1579. Elizabeth Grainger, Claremont 91711-3225
1580. Elizabeth Guzman, Long Beach 90802
1581. Elizabeth Hecker, yorba linda 92886
1582. Elizabeth Jache, Lemon Grove 91945-3716
1583. Elizabeth Johnson, Sacramento 95831-1558
1584. Elizabeth Kobayashi, Penn Valley 95946-9414
1585. Elizabeth Levy, Richmond 94805-1136
1586. Elizabeth Littell, Oakland 94602-3905
1587. Elizabeth Livolsi, Brentwood 94513-6700
1588. Elizabeth Morrison, Los Angeles 90004-5914
1589. Elizabeth Myrin Shore, San Anselmo 94979-2748
1590. Elizabeth Obermeyer, San Francisco 94118-3205
1591. Elizabeth Powell, Pacific Grove 93950-4253
1592. Elizabeth Ross, San Leandro 94577-2135
1593. Elizabeth Rowin, Los Angeles 90027-1411
1594. elizabeth shaskey, Cupertino 95014-4703
1595. Elizabeth Shen, Mountain View 94043-2167
1596. Elizabeth Smith, San Francisco 94121-3614
1597. Elizabeth Sullivan, Penngrove 94951-0172
1598. elizabeth swanson, Mission Viejo 92692-2113
1599. Elizabeth Swarthout, Richmond 94805-2079
1600. Elizabeth T, San Jose 95132-2618
1601. Elizabeth Terry, Oakland 94609-1706
1602. Elizabeth Walsh, Santa Monica 90401-1613
1603. Elizabeth Wharton, Oakland 94619-1620
1604. Elizabeth Ziff, Sherman Oaks 91403-4910
1605. Ella Craig, Eureka 95501-3433
1606. Ella Craig, Eureka 95503-6371
1607. Ella Korsak, Diamond Bar 91765-3131
1608. Ellen Akre, San Rafael 94901-1407
1609. Ellen Blakeborough, Escondido 92026-7212
1610. Ellen Caprio, San Diego 92131-3724
1611. Ellen Cavalli, Sebastopol 95472-2144
1612. Ellen Koivisto, San Francisco 94122-2856
1613. Ellen McCann, Escondido 92027-1401
1614. Ellen McKnight, Glen Ellen 95442-9480
1615. Ellen North, Laguna Niguel 92677-1447
1616. Ellen Phillips, El Cajon 92019-5277
1617. Ellen Smith, Palo Alto 94301-3116
1618. Ellen Van Allen, Santa Rosa 95404-5152
1619. Ellen WAYKER, Los Gatos 95030-6243
1620. Ellen Weber, Larkspur 94939-2175
1621. Ellen Weld, Penn Valley 95946-9350
1622. Elli Kimbauer, Crescent City 95531-2152
1623. Ellie Thomas, Redlands 92373-6936
1624. Elliott Sernel, Palm Springs 92262-2911
1625. Elmone Kissling, Eureka 95503-9765
1626. Elnor Eggart, Santa Clarita 91390-5801
1627. Eloise Bienvenu, West Covina 91791-3846
1628. Elvira Arias, Harbor City 90710-4298
1629. Elyse Ellinger, Irvine 92620-1849
1630. Emi Kaneshiro, San Diego 92128-2328
1631. Emilie Kapono, Rancho Cucamonga 91730-3667
1632. Emilio Ghergo, Cambria 93428
1633. Emily Alma, Chico 95928-7101
1634. Emily Bernath, Ventura 93003-4815
1635. Emily Haver, Portola 96122-2402
1636. Emily Scholl, Sacramento 95820-4263
1637. Emma DARMON, Noisy-le-sec 93130
1638. Emma Gardner, Petaluma 94953-2880
1639. Emma Louise Gilbride, Fairfield 94533-4656
1640. Emmett Culley, Paradise 95969-3743
1641. Emmylou Gutierrez, Fresno 93710-3913
1642. Enica Allen, Walnut Creek 94595-4527
1643. Enid Miller, Oak Park 91377-5556
1644. Enrico Verga, Seal Beach 90740-6473
1645. Enrique Dominguez, Downey 90242-4725
1646. Erany Barrow Pryor, Simi Valley 93063-2731
1647. Eric Bratcher, Hayward 94544-3521
1648. Eric Ciccone, Del Mar 92014-3578
1649. Eric Duggan, West Sacramento 95691-5967
1650. Eric Hamlin, Escondido 92027-3593
1651. Eric Hirshik, Fairfield 94534-7134
1652. Eric Jorgensen, Nevada City 95959-9722
1653. eric koenig, Novato 94945-1687
1654. Eric Mattei, Canoga Park 91304-3643
1655. Eric Morse, Culver City 90230-8471
1656. Eric Nilsson, Chico 95926-2859
1657. Eric Ramstrom, Redding 96002-5125
1658. Eric Sheppard, Encino 91316-4323
1659. Eric Tilenius, Hillsborough 94010-7233
1660. Eric Tyler Conrad, Morro Bay 93442-2435
1661. Erica Arrendondo, Sylmar 91342-4153
1662. Erica Costanzo, Oceanside 92058-1667
1663. Erica Rutherford, Oakland 94618-2345
1664. Erica Silverman, Los Angeles 90031-1416
1665. Erica Torell, Rohnert Park 94928-4073
1666. Erica Tyron, Claremont 91711-3818
1667. Erich Champion, Scotts Valley 95066-3701
1668. Erif Thunen, Albion 95410-0184
1669. Erik Kemper, Laguna Beach 92651-1519
1670. Erik Shank, Woodland 95695-2564
1671. Erika Lowry, Mill Valley 94941-3429
1672. Erika Parker, Antioch 94509-4355
1673. Erika Pringsheim, Lafayette 94549-3126
1674. Erin Foret, Martinez 94553-6121
1675. erin garcia, Sherman Oaks 91403-3414
1676. erin garcia, Tarzana 91356-1545

1677. Erin Millikin, San Diego 92154-4858
1678. Erin Stuart-Jennings, San Francisco 94112-1604
1679. Erna Strauch, South San Francisco 94080-3564
1680. Ernest Devaurs, West Sacramento 95691-4406
1681. Ernest Isaacs, Berkeley 94708-1633
1682. Ernest Stevens, Winterhaven 92283-9674
1683. Ernest Walters, Union City 94587-4331
1684. Ernestine Bonn, San Diego 92116-4039
1685. Ernie Walters, Union City 94587-4331
1686. Esmeralda Mendoza, Oxnard 93033-8520
1687. Estelle Moulton, Los Gatos 95031-0750
1688. Estelle Piper, Pleasanton 94566-6383
1689. Esther Jones, Laguna Niguel 92677-9200
1690. Ethan Krenzer, Trabuco Canyon 92679-3922
1691. Etta Robin, Bakersfield 93312-5824
1692. Eudora Dadpagouh, Riverside 92505-2914
1693. Eudora Tharp, Claremont 91711-4211
1694. Eugene Greenwood, Redwood City 94061-3872
1695. Eugene Majerowicz, View Park 90008-4821
1696. Eugenie Yaryan, Mill Valley 94941-2830
1697. Eujenia Nieto, Santa Clara 95051-3820
1698. Euripides Toro, Los Angeles 90041-3420
1699. Eva Anda, Santa Barbara 93111-2526
1700. EVA BOVENZI, San Francisco 94103-1224
1701. Eva Hofberg, Anaheim 92802-1748
1702. Eva Manus, Laguna Niguel 92677-7824
1703. Eva Suhr, Palo Alto 94306-1347
1704. Evan Jane Kriss, Sausalito 94965-2066
1705. Evan Jones, Carmichael 95608-2860
1706. Evan Kerrigan, San Francisco 94110-5209
1707. Evan McDermit, Fullerton 92832-1110
1708. Eve Duran, San Ysidro 92173-2517
1709. Eve Gordon, Tarzana 91356-1705
1710. Eve Lurie, OAKLAND 94608
1711. Eveline Blanchette, Atascadero 93422-1232
1712. Evelyn Greenwald, San Luis Obispo 93401-6026
1713. Evelyn Trevethan, Napa 94559-2133
1714. Evette Andersen, Grass Valley 95945-4813
1715. Ewa Pietraszak, Los Angeles 90058-1138
1716. Ewa Pocztowska, Santa Monica 90405-3153
1717. Eystein Stenberg, San Francisco 94107-3657
1718. F Hammer, San Francisco 94123-3159
1719. Fabrice Habelski, Castro Valley 94546-2415
1720. Faith Herschler, Stanton 90680-4233
1721. Faith Strailey, Quincy 95971-3012
1722. Farel Footman, Los Angeles 90065-3955
1723. Farid Alkoraishi, Campbell 95008-6261
1724. Farideh Kioumehr, Los Angeles 91403
1725. Farzad Ghazzagh, Novato 94949-5939
1726. Fawn Caldwell, Ramona 92065-4241
1727. Faye Gregory, Colton 92324-2734
1728. feliz nunez, Bermuda Dunes 92203-1147
1729. Felza Murray, Lomita 90717-0762
1730. Fernando Castrillon, Albany 94706-1164
1731. Fernando Matias, Sunnyvale 94087-1501
1732. Fia Perera, Pasadena 91101-3921
1733. Fiona Priskich, Darlington 90210
1734. Fiona Priskich, Swan View 90210-5432
1735. Flint Sheffield, Sacramento 95814-1469
1736. Florante Pascual, American Canyon 94503-1379
1737. Florence Korzin, Los Angeles 90068-3921
1738. Florence Mesker, Los Angeles 90035-2523
1739. Florene Rozen, Los Angeles 90027-3169
1740. Forest Frasieur, Benicia 94510-3288
1741. Foster Boone, Etna 96027-9414
1742. Fran Farina, Santa Barbara 93111-1637
1743. Fran Watson, Spring Valley 91977-5227
1744. Frances Alet, Calabasas 91302-3408
1745. Frances Andrews, Davis 95616-3089
1746. Frances Blythe, Dixon 95620-2464
1747. Frances Elbik, Whittier 90605-3037
1748. Frances Garland, Carson 90746-0305
1749. Frances Logan, San Diego 92117-6101
1750. Frances Schutzer, Redwood City 94062-3053
1751. Frances Vanloan, Novato 94949-6250
1752. Frances Wesson, Hemet 92545-1111
1753. Frances Whiteside, Montclair 91763-2551
1754. Francesca Suzio, Richmond 94803-3230
1755. Francesca Wander, San Francisco 94121-3016
1756. Francie Rehwald, Malibu 90265-2115
1757. Francine Banda, South Pasadena 91030-3518
1758. Francine Crapuchettes, Altadena 91001-2843
1759. Francis Jansen, Santa Barbara 93101-8303
1760. Francisca Salazar, Los Angeles 90063-2916
1761. Francisco Koch, North Hills 91343-3720
1762. Francisco Martinez, San Francisco 94134-1340
1763. Franck de Chambeau, Rancho Mirage 92270
1764. Francoise Rothstein, Mill Valley 94941-1378
1765. Frank and Mary Vaz, Vista 92083-4727
1766. Frank B Anderson, San Pedro 90731-1840
1767. Frank B. Anderson, San Pedro 90731-1840
1768. Frank Chlarson, Costa Mesa 92627-2835
1769. Frank Dorf, Fair Oaks 95628-6664
1770. Frank Frank De Haan, Sun Valley 91352-2732
1771. Frank Kiernan, Olivehurst 95961-9370
1772. Frank Landis, San Diego 92129-4302
1773. Frank R Scott, Santa Ana 92706-3115
1774. Fred Cerrillo, Glendale 91208-2025
1775. Fred Dean, Los Angeles 90029-1130
1776. Fred Granlund, N Hollywood 91601-1723
1777. Fred Tashima, Los Angeles 90066-4914
1778. Freda Hofland, Los Altos Hills 94022-4239
1779. Frederick Hamilton, Rancho Cucamonga 91739
1780. Frieda Brock, Westlake Village 91362-3157
1781. Fritz Pinckney, Napa 94558-3756
1782. g martin, San Carlos 94070-4316
1783. G Victor, Kenwood 95452-1085
1784. Gabriel Chang, Bellflower 90706-5325
1785. Gabriel Gardner, Lakewood 90712-3413
1786. Gabriel Graubner, Santa Rosa 95404-8601

1787. Gabriel Kram, San Rafael 94903-3209
1788. Gabriel Lautaro, Oakland 94610-5007
1789. Gabriel Steinfeld, Oakland 94610-3861
1790. Gabriela Delfin, Riverside 92507-2388
1791. Gabriella Madriles, Los Angeles 90003-2252
1792. Gabriella Nail, Los Angeles 90045-2748
1793. Gaia Memmo, Los Angeles 90035
1794. Gail Dunford, Poway 92064-3659
1795. Gail Farina And Coe, Los Angeles 90066-3027
1796. gail lytle, Turlock 95382-2849
1797. Gail McMullen, Los Angeles 90027-3722
1798. Gail Noon, San Pedro 90731-7149
1799. Gail Reisman, Newport Beach 92663-4905
1800. Gail Reutershan, Ben Lomond 95005-9627
1801. Gail Sredanovic, Menlo Park 94025-6501
1802. Gail Tinsley, Goleta 93117-1004
1803. Gail Trace, Cayucos 93430-0241
1804. Gail Weininger, Alameda 94501-1152
1805. Gail Zans, Desert Hot Springs 92241-8282
1806. Galen Abbott, San Francisco 94107-2703
1807. Gariesue Gordon, Palmdale 93550-3983
1808. Garrett Alden, Chico 95926-2774
1809. Garrett Delorm, San Francisco 94118-1143
1810. Gary Agliata, San Marcos 92078-1043
1811. Gary Alderette, Santa Rosa 95401-5748
1812. Gary and Seraphina Landgrebe, Soquel 95073
1813. Gary Baxel, cathedral city 92234
1814. gary baxel, Cathedral City 92234-3861
1815. Gary Bea, Sunnyvale 94087-5262
1816. Gary Beckerman, Santa Ynez 93460-9615
1817. Gary Bippert, Simi Valley 93065-5725
1818. Gary Charles, Long Beach 90801-3321
1819. Gary Gall, Cambria 93428-2019
1820. Gary Gates, Santa Cruz 95062-5119
1821. Gary Jones, South San Francisco 94080-1329
1822. Gary Kraus, Playa Del Rey 90293-8696
1823. Gary Massing, San Francisco 94121-3321
1824. Gary Reinoehl, Pioneer 95666-9350
1825. Gary Searby, Windsor 95492-8163
1826. Gary Thomsen, Newport Beach 92661-1409
1827. Gary W Dolgin, Santa Monica 90402-1242
1828. Gavrilah Wells, San Francisco 94114-3640
1829. Gayle Kirma, Redondo Beach 90277-6509
1830. Gayle Riggs, Palo Alto 94304-2600
1831. Gayle Spencer, Menlo Park 94025-6315
1832. Gaylen Stirton, Oakland 94619-1833
1833. Geena Verna, Torrance 90505-2805
1834. Gemma Geluz, Fairfield 94533-1469
1835. Gena Pennington, Bayside 95524-9303
1836. Gene Massion, Aptos 95003-9300
1837. gene vidal, Redwood City 94061-2616
1838. Genette Foster, Pasadena 91106-1312
1839. Genevieve Hahn Kerr, San Anselmo 94960-1625
1840. Genevieve Riber, San Diego 92103-1636
1841. Genie Shenk, Solana Beach 92075-1315
1842. Geoff Quinsey, Chico 95926-1756
1843. Geoff Regalado, Burbank 91503-4183
1844. Geoffrey Eargle, Sacramento 95841-2066
1845. Geoffrey Gallegos, San Francisco 94131-2808
1846. George Anderson, Murrieta 92562-5543
1847. GEORGE BUDD, Los Angeles 90035-3506
1848. George Chadderton, San Ramon 94583-1265
1849. George Cleveland, Santa Clara 95051-5626
1850. George Dean, Grass Valley 95945-5684
1851. George Forrester, Bristol 90210
1852. George Fourchy, Fairfield 94533-9520
1853. George Lindelof, Carpinteria 93013-2425
1854. George Loeb, Three Rivers 93271-9700
1855. George Mageles, Saratoga 95070-1690
1856. George Moschonas, Los Angeles 90034-3133
1857. George Nickle, West Hollywood 90046-5412
1858. George Royer, Los Gatos 95032-3572
1859. George Ruiz, San Carlos 94070-2220
1860. George Schneider, San Diego 92105-5153
1861. George Shaker, Cathedral City 92234-6511
1862. George Wood, Ukiah 95482-8340
1863. Georgette M Petrone, Culver City 90232-3126
1864. Georgia Carver, Rancho Cordova 95670-3636
1865. Georgia Goldfarb, Malibu 90265-5359
1866. Georgia Gruver, Hayward 94542-1639
1867. Georgia Labey, La Mesa 91942-2174
1868. Gerald Bender, Santa Rosa 95409-3858
1869. gerald frink, Sacramento 95814-5950
1870. Gerald Orcholski, Pasadena 91104-3427
1871. Gerald Shaia, Sun Valley 91352-4005
1872. Gerald Telep, Rancho Cordova 95742-7766
1873. Geraldine May, Creston 93432-9773
1874. Gerda Rasker, Oakland 94611-2133
1875. Gerri Battistessa, Petaluma 94952-4115
1876. Giina Felicetta, North Hollywood 91602-2012
1877. Gil Gaus, Kings Beach 96143-1252
1878. Gil Leib, Santa Monica, 90403
1879. Gil Varon, Santa Barbara 93101-3210
1880. Gilad Lumer, Marina Del Rey 90292-5952
1881. Gilberto Mello, Los Angeles 90068-2016
1882. Gilles poupardin, San Francisco 94117-1423
1883. Gillian Cornelius, Studio City 91604-5208
1884. Gillian Moreland, San Diego 92128-2953
1885. Gina Dowden, San Marcos 92078-4303
1886. Gina Gatto, Castro Valley 94546-2731
1887. Gina Luzzi, San Francisco 94127-2219
1888. Gina Matteucci, Sacramento 95822-2922
1889. Gina Mori, Arroyo Grande 93420-3745
1890. Gina Pearlin, Santa Cruz 95062-2420
1891. Ginabella Mallari, Huntington Beach 92649-3696
1892. Ginger Schedler, Fresno 93728-1634
1893. Giovani Su, Los Angeles 90063-3233
1894. Gisela Pimentel, San Pedro 90731-3014
1895. Gisela Rivera, South Gate 90280
1896. GL Caviglia, Morgan Hill 95038-1954

1897. Gladys Eddy-Lee, San Diego 92115-7009
1898. Glen Williams, Weed 96094-9225
1899. glenda coker, Fresno 93726-1460
1900. Glenn Karnofsky, Carnelian Bay 96140-0667
1901. Glenn Mullins, Buena Park 90620-1269
1902. Glenn Siegfried, Arcata 95521-9006
1903. Gloria Aguirre, Castaic 91384-2518
1904. Gloria Albert, Santa Monica 90403-2950
1905. Gloria Barba, Sun Valley 91352-3043
1906. Gloria Berger, San Diego 92109
1907. Gloria Carrillo, San Diego 92167-0331
1908. Gloria Hollahan, Lompoc 93436-7848
1909. GLORIA JOHNSON, Vista 92084-3513
1910. gloria manjarrez, Orland 95963-1930
1911. Gloria Mejia, Hemet 92543-8820
1912. Gloria Naisbitt, Santa Rosa 95404-6178
1913. Gloria Valoris, Sacramento 95841-2865
1914. Glorianna Llight, Santa Barbara 93140-4212
1915. Golda Michelson, Fairfax 94930-1509
1916. Gonzalo Castillo, West Sacramento 95691-5823
1917. Goran Markovic, Seaside 93955-4105
1918. Gordon Gerbitz, Santa Barbara 93101-3478
1919. Gordon Gilmore, Concord 94520-5452
1920. Gordon Kauhanen, Monterey 93940-4936
1921. Grace Babashoff, Big Bear Lake 92315-3409
1922. Grace Feldmann, Santa Barbara 93105-9785
1923. Grace Huenemann, San Francisco 94107-2750
1924. grace lee, Los Gatos 95032-3483
1925. Gracie Hind, Long Beach 90815-1313
1926. Graciela Huth, Los Angeles 90045-3707
1927. Grady Hunt, San Mateo 94403-1415
1928. Graham Bottoms, Redwood City 94063-4302
1929. Graham Douglas, Brisbane 94005-1302
1930. grant hueth, Santa Cruz 95062-2959
1931. Grant Miller, Foothill Ranch 92610
1932. Grant Power, Los Angeles 90026-4134
1933. Grant Rich, Oakland 94609-2962
1934. Green Greenwald, Sebastopol 95472-3435
1935. Greg & Laurie Schwaller, Three Rivers 93271
1936. Greg Baskin, Chico 95926-3750
1937. Greg Denari, Saratoga 95070-5937
1938. Greg Fisch, San Diego 92130-6754
1939. Greg Pennington, San Francisco 94109-6178
1940. Greg Rosas, Castro Valley 94546-3653
1941. Greg Taylor, San Francisco 94107-1847
1942. Greg Winton, Moreno Valley 92557-8554
1943. Gregg Johnson, San Jose 95126-5006
1944. Gregg Silk, San Mateo 94402-1542
1945. Gregg Silk, San Mateo 94402-1555
1946. Gregg Sparkman, Palo Alto 94301-2437
1947. gregory andronaco, Ukiah 95482-4712
1948. Gregory Fite, Castro Valley 94546-1406
1949. Gregory Martin, Healdsburg 95448-3551
1950. greta langmead, Beverly Hills 90212-3615
1951. Gretchen Antill, Novato 94949-6642
1952. Gretchen Cooper, San Diego 92128-2098
1953. Gretchen Sauer, San Leandro 94577-3023
1954. Gunilla Karlsson, PhD. , Oak Park 91377-4820
1955. Guy Clark, Los Gatos 95033-8990
1956. Guy White, North Hollywood 91601-2817
1957. Guy Zahller, Aptos 95003-4577
1958. Gwen Bedient, West Sacramento 95691-5818
1959. Gwendolyn Dashiell, Culver City 90230-5010
1960. Gwyn Drischell, Tujunga 91042-2939
1961. Gwyneth Perrier, San Francisco 94121-3517
1962. H Clarke Gentry, Oakland 94609-1346
1963. H Coetzee, La Canada 91011-2459
1964. H Gabriel Larios, Whittier 90602-2621
1965. H Leff, San Francisco 94108-1011
1966. H Thomson, Long Beach 90802-4718
1967. Hakim Aammar, Antony 92160
1968. Hale Tokay, Oakland 94602-4051
1969. Hanin Alhassan, El Segundo 90245-2077
1970. Hank Perera, Ontario 91764-4649
1971. hanna parsano, Capitola 95010-2410
1972. Hannah MacLaren, Altadena 91001-5280
1973. Hannah Mitchell, Sacramento 95818-3901
1974. Hannelore McCrumb, San Jose 95112-3428
1975. Hans Bertsch, Imperial Beach 91932-2543
1976. Harlan Lebo, La Mirada 90637-0614
1977. Harley Sebastian-Lewis, Sacramento 95823-3043
1978. Harold Hedelman, Woodacre 94973
1979. HAROLD MANN, San Jose 95124-1860
1980. Harold Wakefield, Woodland Hills 91367-3545
1981. Harriet Harvey-Horn, Los Gatos 95032-5003
1982. Harriet Sherry, Covina 91723-1812
1983. Harry Blumenthal, Eureka 95501-3304
1984. Harry Brass, Berkeley 94706-2412
1985. Hayley Scott, Lafayette 94549-4631
1986. Heather Ablog, El Dorado Hills 95762-9552
1987. Heather Berk, Fountain Valley 92708-6858
1988. Heather Busch, Petaluma 94952-2552
1989. Heather Cornish, San Francisco 94122-2867
1990. Heather Day, Livermore 94550-2305
1991. Heather Grigsby, Citrus Heights 95610-3149
1992. Heather Guentzel Frank, Los Angeles 90048
1993. Heather Hall, Westlake Village 91361-2113
1994. Heather Lutz, Dana Point 92629-4308
1995. Heather Matteson, San Luis Obispo 93405-6326
1996. heather rider, Los Angeles 90049
1997. Heather Rudin, Lancaster 93536-5860
1998. Heather Vollstedt, Carmichael 95608-3675
1999. Hector Gonzalez, Los Angeles 90015-1571
2000. Hector Parra, Mountain View 94043-2548
2001. Hedvig Fejerne, Mountain View 94043-3057
2002. Heidi Bourne, Arcata 95518-4313
2003. Heidi Collins, La Mesa 91942-5018
2004. Heidi Dauwalter, Simi Valley 93065-5912
2005. Heidi Ellis, Los Angeles 90036-2854
2006. Heidi Holland, Santa Cruz 95062-4812

2007. Heidi McGough, Santa Cruz 95060-5339
2008. Heidi Nurse, Fair Oaks 95628-3435
2009. Heidi Palmer, Rancho Cucamonga 91739
2010. Heidi Wilcox, San Francisco 94121-3106
2011. Heidi Ziegler, Manhattan Beach 90266-5111
2012. Heike Behl, San Diego 92109-3696
2013. Helen Bacon, San Rafael 94901-1204
2014. Helen Bruner, Mill Valley 94941-2956
2015. Helen Cooluris, San Francisco 94127-1304
2016. Helen Crawford, Nevada City 95959-2922
2017. Helen Doherty, Thousand Oaks 91361-5303
2018. Helen Gallagher, Sacramento 95826-2128
2019. Helen Goldstein, Santa Rosa 95404-2563
2020. Helen Gordon, Woodside 94062-4534
2021. Helen Mehoudar, Berkeley 94707-1538
2022. Helen Miller, Van Nuys 91401-2115
2023. Helen Prusiner, San Francisco 94123-4620
2024. Helen Ritenour, Porter Ranch 91326-1632
2025. Helena Wilcox, Stockton 95204-2702
2026. Helene Carol Meeks, Hayward 94545-1508
2027. Helga S, Victorville 92392-7988
2028. Henry Narve Jr, Thousand Oaks 91358-1908
2029. Henry Narve, Thousand Oaks 91358-1908
2030. Henry Sanchez, Ojai 93023-9514
2031. Henry Weinberg, Santa Barbara 93110-2032
2032. Herb Stern, San Diego 92106-1104
2033. Herbert C ZIEGLER, YUCAIPA 92399-4612
2034. Herbert C Ziegler, Yucaipa 92399-4612
2035. Herman Chaney, Oakland 94612-4052
2036. Hieu Buu, Stockton 95209-2102
2037. Hilarey Benda, Los Angeles 90035-1418
2038. Hilary Emberton, Grass Valley 95945-7317
2039. Hilda Ruvalcaba, Coachella 92236-2923
2040. Hildy Roy, Magalia 95954-0886
2041. Hillary Kantmann, Oakland 94608-1205
2042. Hillary Ostrow, Encino 91316-1013
2043. Hoang Vu, Milpitas 95035-3907
2044. Hollis Reed, San Francisco 94134-1022
2045. Holly Burgin, Van Nuys 91405-1435
2046. Holly Chadwin, Santa Barbara 93110-1470
2047. Holly Dupre, Chula Vista 91913-1659
2048. Holly Quinn, Arcata 95521-6552
2049. Hope Ashlley, San Francisco 94105-2009
2050. Hope Orozco, Santa Fe Springs 90670-2847
2051. Howard Belove, Petaluma 94952-2409
2052. Howard Cohen, Campbell 95008-4600
2053. Howard Eisenberg, San Mateo 94402-3334
2054. Howard Holko, San Anselmo 94960
2055. Howard Judkins, Altadena 91001-3206
2056. Howard Lange, San Diego 92129-2250
2057. howard mainhart, Arroyo Grande 93420-4118
2058. Howard Miller, Ventura 93003-1319
2059. Howard Wilshire, Sebastopol 95472-9459
2060. Hugh Lawrence, Carlsbad 92009-8926
2061. Hugh Moore, Los Angeles 90064-4848
2062. Huguette Moran, Long Beach 90815-4728
2063. Hyla Wetherill, Los Angeles 90028-6041
2064. Hyun Lee, Irvine 92618-3976
2065. Ian Carlon, San Jose 95116-2513
2066. Ian Haddow, San Francisco 94131-3040
2067. Ian Kent, Kirkwood 95646
2068. ian' lin, Chino Hills 91709-1760
2069. Ian Murray, Santa Rosa 95405
2070. Ian Nelson, Santa Rosa 95403-1767
2071. Ian Price, Belmont 94002
2072. Ian Rose, Orange 92866-1041
2073. Ian Silverstein, Pacific Palisades 90272-1969
2074. Ian Williams, Ojai 93023-2309
2075. Ida & Bruce Raby, San Jose 95125-1802
2076. Idell Burden, Imperial 92251-9619
2077. Ilana Bar-David, San Francisco 94121-2427
2078. Ileana Labergere, San Francisco 94103-2754
2079. Ilene Atkins, Studio City 91604-3444
2080. Ilona Geller, Encino 91316-3400
2081. Ilona Reitzner, Santa Rosa 95401-5861
2082. Imogene Blatz, Saratoga 95070-3331
2083. Inge Wagner, Los Angeles 90020-2055
2084. Ingeborg MacKay, Petaluma 94954-4431
2085. Ingrid Brewer, Westlake Village 91362-7006
2086. Ingrid Skei, Thousand Oaks 91362-1811
2087. Ingrid woods, Mill Valley 94941-1519
2088. Inna Gergel, Granada Hills 91344-3510
2089. Irene Dillon, San Francisco 94117-3715
2090. Irene Jimenez, indio 92201
2091. Irene Kang, Los Angeles 90066-3040
2092. Irene Kang, Los Angeles 90066-6439
2093. Irene Lutz, Canyon Cntry 91351-1168
2094. Irene Nakamura, Arleta 91331-5722
2095. Irene Salinas, Hanford 93230-7630
2096. Irene Snavely, Covina 91724-3447
2097. Irma Lopez, Reseda 91335
2098. IRVING Shapiro, Cypress 90630-3052
2099. isaac Wingfield, Santa Rosa 95403-1948
2100. Isabel Bauer, Redwood City 94062-1034
2101. Isabel Freeman, Topanga 90290-3448
2102. Isabel Molloy, San Francisco 94121-3427
2103. Isabel Obrien, Palo Alto 94303-3702
2104. Isabella La Rocca, Berkeley 94703-6003
2105. Isaiah Rodriguez, San Jose 95122-3906
2106. Ismael Macias, Sacramento 95825-6610
2107. Ivonne Walters, Redlands 92374-6259
2108. J Agata, Sebastopol 95472
2109. J Crawford, San Diego 92105-5153
2110. J Davis, San Francisco 94102-4000
2111. J Duerr, Sacramento 95831-1840
2112. J Mac, topanga 90290
2113. J P Perino, Novato 94945-1607
2114. J W White, LOS ANGELES 90045
2115. Jaci Springfield, San Diego 92116-2211
2116. Jack Coombes, Sacramento 95814-4334

2117. Jack Mahrt, Morro Bay 93442-2944
2118. Jack Nounnan, Trinidad 95502
2119. Jack O, Laguna Beach 92651-2056
2120. Jack Preston Marshall, Barstow 92311-9747
2121. Jackie Bear, Los Angeles 90048-4407
2122. Jacklyn Lowe, San Diego 92115-6817
2123. Jaclyn Palmer, Pasadena 91103-3301
2124. Jacob Davis, Sonoma 95476-4206
2125. Jacque Gamboa, La Jolla 92037-7515
2126. Jacquelin Sonderling, Los Angeles 90028
2127. jacqueline kramer, Sonoma 95476-6264
2128. Jacqueline Meyer, Foster City 94404-1431
2129. Jacqueline Serman, Ventura 93003-4464
2130. Jacqueline Van Sinderen, Lafayette 94549-2221
2131. Jacqueline Walburn, Garden Grove 92845-3018
2132. Jacqueline Wells, Calabasas 91302-1828
2133. Jacqueline Wright, Los Angeles 90041
2134. Jacquelyn Evans, Berkeley 94708-1204
2135. Jacquelyn Roberts, Tehachapi 93561-8581
2136. Jacquelynn Avakian, Los Alamitos 90720-2221
2137. Jacqui Bradshaw, Tehachapi 93581-1896
2138. Jacquie Forester, Encinitas 92024-6540
2139. Jade de la Cruz, Windsor 95492-8060
2140. Jaianand Sethee, Cardiff By The Sea 92007-1806
2141. Jake Schwartz, Petaluma 94952-2483
2142. James Allison, Carpinteria 93013-1829
2143. James Armbruster, Escondido 92026-3934
2144. James Begg, Truckee 96161-2154
2145. James Bergantino, Bakersfield 93313-6110
2146. James Carpenter, Oakland 94619-2817
2147. James Cooper, Ojai 93023-2961
2148. James Cooper, Pebble Beach 93953-2747
2149. James Dawson, Davis 95618-6741
2150. James Hammonds, Bonita 91902-1019
2151. James Higdon, Benicia 94510
2152. James Inskeep, Fremont 94555-2867
2153. James Jones, bethel island 94511-2259
2154. James Kirks, Chico 95973-1076
2155. James Littlefield, Aptos 95003-4322
2156. James Lowman, San Bernardino 92410-4717
2157. JAMES MALOT, Davis 95616-7514
2158. James Masi, San Francisco 94158-1593
2159. James Naprawa, Walnut Creek 94596-5423
2160. James Nelson, Carmichael 95608-3402
2161. James Noordyk, San Diego 92109-2802
2162. James Perkins, Los Angeles 90037-4029
2163. James Petrone, Los Angeles 90027-1302
2164. James Price, Santa Monica 90404-1767
2165. James Putnam, Santa Clara 95051-6717
2166. James Rees, Castro Valley 94546-4517
2167. James Roberts, Sugarloaf 92386-0819
2168. James Ryder, Oakland 94618-1039
2169. James Samis, Rancho Palos Verdes 90275-4660
2170. james snow, venice 90291
2171. James Stamos, Saratoga 95070-4910
2172. James Tangney, Fair Oaks 95628-3861
2173. James Villalobos, Los Angeles 90027-4201
2174. James Wilson, Oxnard 93035-2529
2175. Jamesena Bounds, Long Beach 90802-5827
2176. JamesW Gilliam, Glendora 91740-1295
2177. Jamie Chen, Murrieta 92562-5961
2178. Jamie Clark, San Francisco 94108-1514
2179. Jamie Feusner, Los Angeles 90019-3610
2180. Jamie Perlman, Newport Beach 92660-9039
2181. Jamie Peters, San Diego 92109-1916
2182. Jamie Swanson, Los Angeles 90039-1523
2183. Jamie Trask, Mission Viejo 92691-6131
2184. Jamielle Stanley, Los Angeles 90039-3035
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2188. Jan Dawkins, Oceanside 92057-2631
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2198. Jan Warren, Walnut Creek 94598-1719
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2200. Jana Mariposa Muhar, Santa Rosa 95401-5539
2201. Jana Perinchief, Sacramento 95821-3402
2202. Janae Wilson, Seal Beach 90740-5728
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2206. Jane Biggins Esq, Ukiah 95482-1387
2207. Jane Crist, Pacific Palisades 90272-2425
2208. Jane Engelsiepen, Carpinteria 93013-3077
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2210. Jane Holt, Los Altos 94024-6907
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2219. Janek Bielski, Marina Del Rey 90292-5698
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2222. Janet Aguilera, Daly City 94014-3639
2223. Janet Bagby, Boulder Creek 95006-9742
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2226. Janet Bowden, Culver City 90232-3452

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2299. Jean-Michel Ricard, Santa Barbara 93108-1941
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2306. Jeanne Schneider, San Francisco 94117-4309
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2308. jeannie pollak, Oxnard 93036-6210
2309. jeannine jacobs, Cambria 93428-2407
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2313. Jeff Garner, San Francisco 94110-5264
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2316. Jeff Levicke, Valley Village 91607-1612
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2318. Jeff Melin, Santa Cruz 95060-1920
2319. Jeff Nadler, Oceanside 92057-2621
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2322. Jeff Thayer, San Diego 92117-2507
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2328. Jeffrey N McMahan, Los Angeles 90025-0359
2329. Jeffrey Tischler, Monterey 93940-3850
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2333. Jenice Staniford, San Diego 92115-3830
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2339. Jennifer Biswas, Culver City 90232-3212
2340. Jennifer Boelter, Merced 95340-0727
2341. Jennifer Bradford, Spring Valley 91977-3325
2342. jennifer bradley, Santa Monica 90404-4636
2343. Jennifer Brooks, Los Altos 94022-1654
2344. jennifer cardoza, Piedmont 94610-1523
2345. Jennifer Cartwright, Costa Mesa 92628-3395
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2347. Jennifer Chavez, La Habra Heights 90631-8724
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2353. Jennifer Hayes, Modesto 95350-1716
2354. Jennifer Huffsmith Shamberger, Indio 92201
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2359. Jennifer King, South Lake Tahoe 96150-4229
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2363. Jennifer Palladini, Sonoma 95476-5736
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2365. jennifer potthast, Santa Barbara 93101-7338
2366. Jennifer Russell, Santa Monica 90403-5364
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2369. Jennifer Strong, South Pasadena 91030-3110
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2389. Jerry Horner, Walnut Creek 94595-1234
2390. Jerry Hudgins, Point Reyes Station 94956-1408
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2397. Jerry Whitley, Laguna Hills 92653
2398. Jes Gildea, San Clemente 92673-3111
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2400. Jesse Cabral, Colton 92324-6617
2401. Jesse Goldstein, Santa Barbara 93105-4268
2402. Jesse Turner, San Francisco 94117-3052
2403. Jesse Wiley, San Ramon 94583-3228
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2405. Jessica Condon, Fountain Valley 92708-4708
2406. Jessica Croxton, Venice 90291-2806
2407. Jessica Dardarian, Los Angeles 90046-3279
2408. Jessica Gildea, San Clemente 92673-3111
2409. Jessica Goodwin, Toluca Lake 91602-2560
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2411. Jessica Hickman, Valencia 91355-4961
2412. Jessica Hueter, Magalia 95954-9214
2413. Jessica Jasper, Cupertino 95014-3815
2414. Jessica Koran, Menlo Park 94025-7037
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2416. Jessica Likens, Buena Park 90620-3156
2417. Jessica Parlanti, Mountain View 94040-1692
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2422. Jessica Towns, Santa Clarita 91351-5746
2423. jewel huckaby, Sacramento 95833-1509
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2425. Jill Alcantar, San Francisco 94112-1905
2426. Jill Burnham, Loma Linda 92354
2427. Jill Clemence, Torrance 90505-7045
2428. Jill Clemence, Walnut 91789-2706
2429. Jill Keeler, Walnut Creek 94598-2834
2430. Jill Lunn, Apple Valley 92308-8061
2431. Jill Miotke, Costa Mesa 92627-5527
2432. Jill Rian, Oakland 94602-1629
2433. Jill Sherwood, Belvedere Tiburon 94920-1807
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2437. Jim Coots, Long Beach 90815-2434
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2440. Jim Fleming, Simi Valley 93065-7352
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2455. Jo Baxter, Santa Monica 90402-1619
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2467. Joan Hasselgren, San Francisco 94117-1148
2468. Joan Hebert, Menlo Park 94025-1849
2469. joan heron, Fort Bragg 95437-4204
2470. Joan Hunnicutt, Citrus Heights 95621-6218
2471. Joan Jennings, Palo Alto 94306-4115
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2473. Joan Littlefield, Aptos 95003-4322
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2488. Joann Howard, San Diego 92128-3652
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2490. Joann Mcauliffe, Venice 90291-3828
2491. JoAnn Offill, Ventura 93004-4028
2492. Joann Sarachman, Whittier 90601-3620
2493. Joanna Dewey, Claremont 91711-4535
2494. Joanna Morgan, Santa Barbara 93109-1924
2495. Joanna Walters, Truckee 96162-8431
2496. Joanne Britton, San Diego 92115-4201
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2499. Joanne Fleischman, San Diego 92128-3758
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2501. Joanne Harding, Hayward 94541-3583
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2504. Joanne Tenney, Escondido 92026-1973
2505. Joanne Tyler, Newport Beach 92663-2734
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2534. Joel Klayman, Huntington Beach 92649-3117
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2555. John Dutton, Santa Barbara 93110-1504

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2558. John Essman, Healdsburg 95448-1381
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2563. John Gize, San Jose 95118-3924
2564. John Gosselin, San Francisco 94122-3428
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2568. John Harris, Pittsburg 94565-0410
2569. John Hauschild, Auburn 95603-4921
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2576. John Keating, Santa Barbara 93110-1221
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2589. john pennell, Modesto 95351-2139
2590. John Price, San Jose 95128-1127
2591. John Rowell, Los Gatos 95032-5106
2592. John Ryan, Santa Cruz 95062-4058
2593. John Sefton, Trabuco Canyon 92678-0714
2594. John Siebel, Murrieta 92562-3017
2595. John Tansley, San Francisco 94133-0351
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2597. John Van Straalen, Petaluma 94952-2752
2598. John Varga, Huntington Beach 92648-5326
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2600. John Weate, Vista 92081-6331
2601. John Weaver, Fremont 94536-5508
2602. John Whitney, Los Angeles 90069-1316
2603. John Wiesner, Castro Valley 94546-0674
2604. John Zimmermann, Long Beach 90803-8031
2605. johna alexander, Chico 95926-5120
2606. Jolene Edwards, Grass Valley 95945-4608
2607. Jon Anderholm, Cazadero 95421-9580
2608. Jon Bazinet, San Lorenzo 94580-2444
2609. Jon Bleyer, San Diego 92107-1811
2610. Jon Cotham, Ojai 93023-3126
2611. Jon Culbertson, San Anselmo 94960-2261
2612. Jon Darke, LA 90012-3712
2613. Jon Grutman, Los Angeles 90036-5524
2614. Jon Porter, Md, Rossmoor 90720-4740
2615. Jon Povill, Topanga 90290-3538
2616. Jonathan Baty, Redlands 92373-6904
2617. Jonathan Boorstin, Studio City 91604-4029
2618. Jonathan Chu, Fremont 94539-4440
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2621. Jonathan Eisler, Quincy 95971
2622. Jonathan Sampson, Santa Rosa 95404-2260
2623. Jonel Lancaster, Anaheim 92804-5511
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2625. Jonothan Woodward, Alameda 94501-2392
2626. Jordan Hashemi-Briskin, Palo Alto 94306-2512
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2628. jordan neiman, Los Angeles 90068-2415
2629. Jordan Winehouse, Leeds 94111
2630. Jose De Cecco, San Francisco 94114-1105
2631. José Espinosa, San Francisco 94110-1119
2632. Jose Garcia Davis, Los Angeles 90027-4753
2633. Jose Mendez, Monterey Park 91755-3439
2634. Jose Vempilly, Fresno 93701
2635. Joseph & Kathryn Yarosevich, Chico 95973-9771
2636. Joseph & Mrs Kathryn Yarosevich, Chico 95973
2637. Joseph A Sandoval, Monterey Park 91754-6001
2638. Joseph Boone, San Luis Obispo 93401-2606
2639. Joseph Bourque, Martinez 94553-6624
2640. Joseph Caballero, San Francisco 94114-2016
2641. Joseph Dadgari, Los Angeles 90049-8205
2642. Joseph Kotzin, Los Angeles 90036-4414
2643. Joseph Levinson, Berkeley 94703-1832
2644. Joseph Pluta, Bakersfield 93301-4931
2645. Joseph Ramirez, Los Angeles 90064-4112
2646. JOSEPH REEL, Pacific Grove 93950-6066
2647. Joseph Rosales, Ontario 91761-0330
2648. Joseph Szabo, Los Angeles 90045-4332
2649. Joseph Vella, Aptos 95003-2708
2650. Josephine Gold, San Diego 92128-5621
2651. Josh Buffon, Goleta 93117-3048
2652. Josh Chesler, Culver City 90230-5544
2653. Josh Zhu, San Diego 92130-3407
2654. Joshua Allen, Santa Barbara 93103-2426
2655. Joshua Debbs, Sacramento 95823-5057
2656. Joshua Dubansky, Fresno 93704-6143
2657. Joshua Wong, Tustin 92782-6511
2658. Josiane Petitt, Vista 92084-7234
2659. Jossy Zamora, Rialto 92376-6003
2660. Joy Monahan, Riverside 92506-7584
2661. Joy Turlo, Redondo Beach 90277-5811
2662. Joyce Acda, Hayward 94542-1219
2663. Joyce Brogger, Concord 94521-3531
2664. Joyce Chang, Los Altos 94024-7036
2665. Joyce Cochran, San Francisco 94118-2826

2666. joyce heyn, Poway 92064-4071
2667. Joyce Humphrey, Half Moon Bay 94019-0055
2668. Joyce Lane, San Diego 92115-5444
2669. Joyce Lavey, San Francisco 94110-7413
2670. Joyce Ownbey, Sacramento 95826-2936
2671. Joyce Towers, Ventura 93003-0384
2672. Joyce Vega, Monterey Park 91754-3920
2673. Juan Lora, Los Angeles 90046-4038
2674. Juanita Lackey, Fresno 93720-3605
2675. Jud Woodard, Sutter Creek 95685-9632
2676. Jude Clark Warnisher, Los Osos 93402-3810
2677. Jude Lotz, Burbank 91505-1607
2678. Judeen Schneider, Long Beach 90804-3209
2679. Judi Kaminski, Mission Viejo 92692-1645
2680. judi martin, oaklawn 94619
2681. Judi Naue, Manteca 95337-4337
2682. Judith Aka Rose Wemmer, Los Angeles 90045
2683. Judith Arrieta, Carlsbad 92008-2782
2684. Judith Barney, Solana Beach 92075-1646
2685. Judith Blick, Del Mar 92014-3241
2686. Judith Collins, Half Moon Bay 94019-2354
2687. Judith Edwards, Mendocino 95460-1187
2688. Judith Gage, Soquel 95073-2630
2689. Judith Goe, San Diego 92102-1228
2690. Judith Gordon, San Francisco 94133-3756
2691. Judith Hall, Pacifica 94044-2148
2692. Judith Justin, Fallbrook 92028-9373
2693. Judith Kliban, Corte Madera 94976-0608
2694. Judith Little, Arcata 95521-9208
2695. Judith Mantell, Brentwood 94513-8087
2696. Judith Patt, Victoria, BC, voting absentee Berkeley 94705
2697. Judith Schumacher-Jennings, Walnut Creek 94595-3012
2698. judith sloane, Valley Center 92082-5016
2699. Judith Stone, Sebastopol 95472-9578
2700. Judith Van Herik, Grass Valley 95949-7737
2701. Judith Wright, Sacramento 95816-4821
2702. Judy Alexandre, Ventura 93004-2304
2703. Judy Burlison, Red Bluff 96080-3041
2704. judy dutil, Los Gatos 95033-9704
2705. Judy Ecklund, La Jolla 92037-0014
2706. Judy Howell, Jamestown 95327-9674
2707. Judy Ilan, Berkeley 94709
2708. Judy Jackson, Berkeley 94708-1608
2709. Judy Johnson, Placerville 95667-4929
2710. Judy Ludwig, Huntington Beach 92646-5453
2711. Judy Lukasiewicz, Santa Cruz 95065-9789
2712. Judy Malouf, Dana Point 92629-3703
2713. Judy Miller, Santa Barbara 93109-1414
2714. Judy Reinert, Santa Clarita 91355-3717
2715. Judy Rydburg, Laguna Niguel 92677-5918
2716. Judy Smith, Moreno Valley 92555-2002
2717. Judy Trahan, Oakland 94611-5033
2718. Judy Utvich, Los Angeles 90048-3530
2719. Judy Willhoite, Coalinga 93210-1420
2720. Julia Broad, Anaheim 92804-3435
2721. Julia Conklin, Pasadena 91107-1800
2722. Julia McFarland, Mountain View 94043-2994
2723. Julia Rinaldi, Santa Rosa 95407-6680
2724. Julia Ronlov, San Diego 92103-4813
2725. Julia Russell, Roseville 95747-5863
2726. Julia Schroter, Anaheim 92805-4463
2727. Julia Stander, Van Nuys 91411-3019
2728. Julia Toney, Grass Valley 95945-8508
2729. Julia Vetrie, Canyon Country 91387-6318
2730. Julian Yerena Jr, Parlier 93648-2706
2731. Juliana Linssen, San Jose 95125-1650
2732. Juliann Berman, Redwood City 94061-4228
2733. Julie Beer, Palo Alto 94306-1518
2734. Julie Heath Elliott, Los Angeles 90064-3620
2735. Julie Lane, Sebastopol 95472-5819
2736. Julie Lawyer, Benicia 94510-1434
2737. Julie LIKHT, Culver City 90230-8105
2738. Julie Neidich, Ladera Ranch 92694-0890
2739. Julie Nelson, North Hollywood 91601-4822
2740. Julie Osborn, Sacramento 95835-1926
2741. Julie Pritikin, Granada Hills 91344-3032
2742. Julie Ries, Topanga 90290-4410
2743. Julie Schisler, Concord 94518-1726
2744. Julie Smith, Los Osos 93402-4006
2745. Julie Svendsen, Burbank 91505-3837
2746. Julie Waddell, San Diego 92131-4750
2747. Julie Wright, Los Angeles 90039-3409
2748. juliet hawk, San Diego 92116-1333
2749. Juliet Holmes, Roseville 95747-6768
2750. Juliet Schmitt, Carlsbad 92010-7040
2751. June Ehemann, Duarte 91010-3225
2752. K B, West Hollywood 90069
2753. K Nilsen, Ben Lomond 95005
2754. K R, Commerce 90040-1489
2755. K Silvey, Martinez 94553-5344
2756. K Strasser, Martinez 94553-3369
2757. Ka Man Lee, Los Angeles 90025-4370
2758. Kai Bello, Huntington Beach 92647-7926
2759. Kamela Proulx, Los Osos 93402-2516
2760. Kara Vesely, Long Beach 90805-2341
2761. kara wenrich, North Hollywood 91601-3035
2762. Kare Nyne, Oakland 94601-4354
2763. Kareela Collins, Twin Bridges 95735-0992
2764. Karen and Allen Perry, Yucca Valley 92284-1703
2765. Karen Bates, Fresno 93722-4761
2766. karen Bolla, Alameda 94501-1055
2767. Karen Brant, San Francisco 94117-4320
2768. Karen Christensen, Malibu 92677
2769. Karen Christie, Topanga 90290-3555
2770. Karen Cooksey, Camarillo 93010-2014
2771. Karen Davies, Fresno 93704-1813
2772. Karen Donaldson, Grass Valley 95945-3215
2773. Karen Gordon, Albany 94706-1692

2774. Karen Gurtler, Pleasanton 94566-6037
2775. Karen Hansen, Burbank 91504-3924
2776. Karen Hastings, Santa Barbara 93109-1112
2777. Karen Hellwig, Los Angeles 90056-1737
2778. Karen Hildebrand, Santa Cruz 95060-5069
2779. Karen Jacques, Sacramento 95811-7105
2780. Karen Keefer, Redwood City 94061-2625
2781. Karen Kone, Redding 96002-0824
2782. karen krulevitch, Carpinteria 93013-1206
2783. Karen Lautsch, San Mateo 94402-2014
2784. Karen Lockwood, La Jolla 92037
2785. Karen Mayer, Eureka 95503-9776
2786. Karen Miner, El Dorado Hills 95762-7512
2787. Karen Nagano, Napa 94558-4324
2788. Karen O'Rourke, Canoga Park 91304-1005
2789. Karen Parlette, Eureka 95501-5626
2790. Karen Patterson, Oakdale 95361-2760
2791. Karen Phelps, Capitola 95010-2104
2792. Karen Piotrowski, Fairfield 94533-7772
2793. Karen Profet, Manhattan Beach 90266-2648
2794. Karen Quail, Davis 95616-2667
2795. Karen Rath, Oakland 94619-2717
2796. Karen Reid, Santa Rosa 95403-2410
2797. Karen Slater, Redding 96003-4050
2798. Karen Socher, Ventura 93001-3908
2799. Karen Spiegel, Burbank 91501-1438
2800. Karen Stewart, San Jose 95120-1781
2801. Karen Toscos, Atherton 94027-3824
2802. Karen Villanueva, San Francisco 94132-3055
2803. Karen Waterbury, Santa Clara 95051-1155
2804. Karen Wilson, Vallejo 94590-3197
2805. Karenn Ohlinder, Gardena 90249-3957
2806. Kari Walters, Pacific Palisades 90272-2155
2807. Karin Langer, Westlake Village 91362-4709
2808. Karin Machusic, Clayton 94517-1905
2809. Karin Rettig, Garden Grove 92845-3017
2810. Karissa Huang, Sunnyvale 94086-8230
2811. Karl B Ehlert, Redwood City 94061-3702
2812. Karl Eggers, Long Beach 90815-2303
2813. Karl Koessel, Mckinleyville 95519-8168
2814. Karl Overby, Fullerton 92835-2211
2815. Karl Schumaker, Boulder Creek 95006-9718
2816. Karl Twombly, Palm Desert 92211-4553
2817. Karla Frandson, San Diego 92128-2608
2818. Karla Holmberg, Concord 94521-5005
2819. Karla Sterling, Spring Valley 91977-2435
2820. Karla Villalobos, Aliso Viejo 92656-1399
2821. Karlee Schnyder, El Cajon 92020-1058
2822. Karsten Mueller, Santa Cruz 95060-1766
2823. Karyn Lebrun, Escondido 92027-4246
2824. Karynn Merkel, Eureka 95503-5402
2825. Kashyap Puranik, Mountain View 94043-1351
2826. Katarina Grabowsky, Castro Valley 94546-2942
2827. Katarina Wittich, Los Angeles 90065-5020
2828. Kate Brotherton, Lake Forest 92630-6630
2829. Kate Considine, Camarillo 93012-9114
2830. Kate Disney, Los Altos 94022-1269
2831. Kate Lebares, Alameda 94501-3457
2832. kate rohrbach, Sausalito 94965-2048
2833. Kate Stemig, la 90045
2834. Kath Disney Nilson, Mendocino 95460-1842
2835. Katharine Kehr, Sebastopol 95472-3739
2836. Katherine Allen, Redway 95560
2837. Katherine Blake, Hayward 94541-5649
2838. Katherine Brady, Tustin 92782-3336
2839. Katherine Cima, San Francisco 94117-3917
2840. KATHERINE davis, San Clemente 92672-3315
2841. katherine haley, Lower Lake 95457-1309
2842. Katherine Harband, San Rafael 94913-4180
2843. Katherine Nolan, Cupertino 95014-2455
2844. Katherine Patterson, Ukiah 95482-4678
2845. Katherine R, Bake 93311
2846. Katherine Richardson, Pleasant Hill 94523-4521
2847. Katherine Roberts, Berkeley 94702-2029
2848. katherine ruiz, San Jose 95136-2058
2849. Katherine Villagran, Temecula 92592-8190
2850. Katherine Westine, Oakland 94618-1335
2851. Katherine Wright, Aliso Viejo 92656-1478
2852. Katheryn Rusk, Mission Viejo 92691-3929
2853. Kathey Ahrens, Roseville 95678-3105
2854. Kathi Sanger, Los Angeles 90068-2520
2855. Kathie Kingett, La Habra Heights 90631-8057
2856. kathie piccagli, San Francisco 94112-1743
2857. Kathlean Gardenias, Chico 95926-2578
2858. Kathleen Barrett, Newbury Park 91320-5116
2859. Kathleen Berry, Eureka 95501-1974
2860. Kathleen Clark, Glendale 91207-1811
2861. Kathleen Cooper, Lake Elsinore 92530-7525
2862. Kathleen DeLander, South San Francisco 94080
2863. Kathleen Engberg, Lakewood 90713-1618
2864. Kathleen Gadway, Berkeley 94703-2514
2865. Kathleen Grantham, Granada Hills 91344-3905
2866. Kathleen Head, Murrieta 92562-3525
2867. Kathleen Jacecko, Redondo Beach 90278-2827
2868. Kathleen Kalberer, Modesto 95350-5354
2869. Kathleen Kuczynski, Lake Forest 92630-3520
2870. Kathleen MacDonald, Mendocino 95460-0353
2871. Kathleen McNulty, Alameda 94501-7361
2872. kathleen montgomery, Hemet 92544-1980
2873. kathleen obre, Laguna Beach 92651-3036
2874. Kathleen Polletta, Fortuna 95540-2755
2875. Kathleen Powell, Vallejo 94590-3943
2876. Kathleen Rohlfing, Lincoln 95648-7711
2877. Kathleen Salvas, Grass Valley 95945-6412
2878. Kathleen Sanders, Susanville 96130-0776
2879. Kathleen Schinhofen, San Clemente 92674-1072
2880. Kathleen Shecter, Half Moon Bay 94019-1437
2881. Kathleen Sumida, San Diego 92120-1333
2882. Kathleen Trenam, Jackson 95642-2107
2883. kathleen van every, Atascadero 93422-4916

2884. Kathleen Wheeler, Chula Vista 91910-2409
2885. Kathryn Armstrong, Bodega 94922-0176
2886. Kathryn Black, Oakland 94611-5131
2887. Kathryn Choudhury, Moraga 94556-2310
2888. Kathryn Donahue, McKinleyville 95519
2889. Kathryn Hughes, Moreno Valley 92555-3114
2890. Kathryn Lanning, Visalia 93277-8802
2891. Kathryn Mahon, Pinon Hills 92372-1331
2892. Kathryn Rollins, Costa Mesa 92627-2347
2893. Kathryn Santana, Bradbury 91008-1218
2894. Kathy Brigger, Nuevo 92567-8920
2895. Kathy Cox, Moreno Valley 92556-0239
2896. Kathy Farmer, Shasta 96087-0722
2897. Kathy Frances, Arcata 95521-6541
2898. Kathy Hanson, Huntington Beach 92649-4027
2899. Kathy Hopkins, San Bernardino 92404-5303
2900. Kathy Jones, Benicia 94510-3728
2901. Kathy Karlin, Woodland Hills 91364-2726
2902. Kathy Kosinski, Goleta 93117-1500
2903. Kathy MacDougall, Ukiah 95482-4705
2904. Kathy Obrien, Redway 95560
2905. Kathy Popoff, San Pedro 90732-5015
2906. Kathy Robinson, Pleasant Hill 94523-3331
2907. Kathy Ruppel, Stanford 94305-8434
2908. Kathy Steinbrecher, Lafayette 94549-3026
2909. Kathy Zelaya, Los Angeles 90042-1281
2910. Katie Zukoski, Chico 95928-9197
2911. Katrina Brewer, Los Angeles 90049-5435
2912. Katy R, sebastopol 95472
2913. kay Gallin, Los Angeles 90064-2680
2914. Kay Ikranagara, Oakland 94618-1043
2915. Kay Mervin, Sacramento 95819-4204
2916. Kay Riley, Manhattan Beach 90266-3622
2917. Kay Schaser, Eureka 95501-3351
2918. Kaylah Sterling, Emeryville 94608-3577
2919. Keefe Nghe, Ventura 93004-2556
2920. Keisha Evans, East Palo Alto 94303-1753
2921. Keith Bein, Oakland 94602-4039
2922. Keith Bentz, St Helena 94574
2923. Keith Kinder, Pleasanton 94566-3212
2924. Keith Kotka, Santa Cruz 95065-9631
2925. keith Schubert, Long Beach 90804-1510
2926. Keith Sklower, El Cerrito 94530-2345
2927. Keith Widaman, Los Angeles 90041-3227
2928. Kelcey Poe, Oakland 94605-4126
2929. Kellee Richards, North Hollywood 91605-1250
2930. Kelli Lent, Alameda 94501-1603
2931. Kelli McGregor, Granada Hills 91344-4511
2932. Kelly Bowen, San Diego 92116-1930
2933. Kelly Finn, Grass Valley 95949-7802
2934. kelly hammargren, Berkeley 94703-1709
2935. Kelly Inglett, Montebello 90640-3491
2936. Kelly Miller, San Diego 92128-3835
2937. Kelly Morton, San Diego 92127-2005
2938. Kelly Walsh, Oakland 94609-2057
2939. Kelsey Quirarte, Yorba Linda 92887-6251
2940. Kelsey Wagner, Arroyo Grande 93420-3316
2941. Ken & Andrea Chraft, Simi Valley 93063
2942. Ken Bruer, Santa Barbara 93105
2943. Ken Ige, Brentwood 94513-5030
2944. Ken Mundy, Los Angeles 90068-1262
2945. Ken Sanford, Escondido 92029-4307
2946. Ken Yoskowitz, Paradise 95969-6606
2947. Kendall Hailey, Los Angeles 90006-5112
2948. Kendall Reid, San Clemente 92672-4332
2949. Kendra Brooks, Seal Beach 90740-6514
2950. Kendra Young, San Jose 95129-3944
2951. Kenneth A Meersand, Shell Beach 93448-3483
2952. Kenneth Aronson, California City 93505-4823
2953. Kenneth Bess, Walnut Creek 94595-1020
2954. Kenneth Fisher, Fortuna 95540-2409
2955. Kenneth Harper, Richmond 94805-2050
2956. Kenneth Kubarych, Del Mar 92014-4115
2957. Kenneth Lavine, Portola Valley 94028-7911
2958. Kenneth Nahigian, Sacramento 95827-3266
2959. kenneth naylor, Santa Maria 93455-4182
2960. Kenneth Poggenburg, Jr, Encinitas 92024-2423
2961. Kenneth Randolph, Manteca 95336
2962. Kenneth Weaver, Fallbrook 92028-3487
2963. Kenneth Wright, Santa Rosa 95403-1761
2964. Kent Grigg, Walnut Creek 94595-1320
2965. Kent Lennox, San Francisco 94134-2457
2966. Kent Williams, Glendora 91741-6603
2967. Kera Ung, Monterey Park 91755-3911
2968. Kermit Carraway, Auburn 95602-9505
2969. Kerreen Brandt, San Rafael 94903-3311
2970. Kerri Sevenbergen, Spring Valley 91977-4539
2971. Kerry Stanwyck, San Rafael 94903-3667
2972. Ketty Owens, Moorpark 93021-2777
2973. Keven Haddix, Fresno 93730-1227
2974. Kevin Abrahamian, Glendale 91202-2207
2975. Kevin Barnard, San Francisco 94115-4314
2976. Kevin Bissonnette, San Clemente 92672-2207
2977. Kevin Curtis, Fullerton 92832-1607
2978. Kevin Edelbrock, San Francisco 94117-2728
2979. Kevin Fistanic, Los Angeles 90066-6753
2980. Kevin Gamez, Bakersfield 93301-1516
2981. Kevin Kearney, Winchester 92596-8858
2982. Kevin Kraft, Menlo Park 94025-6050
2983. Kevin Lozaw, San Anselmo 94960-1417
2984. Kevin Mazzocco, Auberry 93602-9501
2985. Kevin McKelvie, Palm Springs 92264-9385
2986. Kevin Patterson, Walnut Creek 94595-2336
2987. Kevin Reynolds, Hayward 94541-3280
2988. Kevin Schader, Pleasant Hill 94523-1370
2989. Kevin Vasquez, Auburn 95602-8936
2990. Kevin Wall, Pleasant Hill 94523-3565
2991. Kevin Yerby, Sacramento 95838-1876
2992. Khalil Khan, San Diego 92116-1609
2993. Kim Baranek, Alameda 94501-1264

2994. Kim Barclay, Buena Park 90621-1044
2995. Kim Brack, Thermal 92274-8528
2996. Kim Fowler, Oakland 94619-3378
2997. Kim Hooper, Berkeley 94707-1911
2998. kim mcgoldrick, San Diego 92104-4921
2999. Kim Messmer, Santa Clara 95051-1154
3000. Kim Moore, Los angeles 90034
3001. Kim Nicholson, Valley Village 91607-2216
3002. Kim P, Santa Cruz 95062-3506
3003. Kim Peterson, Cloverdale 95425-3551
3004. Kim Tran, Santa Ana 92707-4315
3005. Kim Turner, Petaluma 94954-3905
3006. Kimberlie Laderriere, Paso Robles 93446-9449
3007. Kimberly Beliveau, Vallejo 94589-2528
3008. Kimberly Cerutti, El Dorado Hills 95762-5470
3009. Kimberly Emerson, Los Angeles 90034-4307
3010. Kimberly Hill, Carlsbad 92008-1127
3011. Kimberly Notary, Modesto 95350-5860
3012. Kimberly Scibetta, Shadow Hills 91040-1427
3013. Kimberly Simpson, San Fernando 91344-2336
3014. Kimberly Torres, Temecula 92592-6423
3015. Kimberly Vass, Fresno 93705-4430
3016. Kira Ballinger, Mission Viejo 92691-4240
3017. Kirk Margo, North Hollywood 91601-4532
3018. Kirk Nason, Huntington Beach 92648-4806
3019. Kirk Nelson, Oakland 94619-2938
3020. Klaudia Englund, Thousand Oaks 91360-1923
3021. Kody Diaz, San Clemente 92673-5647
3022. Kris Gregory, San Jose 95112-1750
3023. Kris Head, Garden Grove 92843-1078
3024. Krishna Venkatraman, San Francisco 94129-1078
3025. Krista Dana, Sunnyvale 94087-2241
3026. Kristeene Knopp, Oakland 94608-2814
3027. Kristen Conner, San Pablo 94806-4058
3028. Kristen Hickey, Escondido 92029-4040
3029. Kristen R, San Leandro 94579
3030. Kristi Wilson, Escondido 92025-3850
3031. Kristin Anundsen, San Francisco 94131-2009
3032. Kristin Shay, Newport Beach 92663-4227
3033. Kristina Hancock, San Diego 92101-8201
3034. Kristine Hodson, N Hollywood 91601-1775
3035. kristy christine, Placerville 95667-7702
3036. kuniko vroman, San Jose 95136-1322
3037. KURT Cruger, Long Beach 90803-5416
3038. Kurt Gary, Los Angeles 90066-1712
3039. Kurt Gross, San Diego 92176-6898
3040. Kurt Lorenz, Nevada City 95959-1564
3041. Kyle Yaskin, Los Angeles 90046-2133
3042. Kymberly Tompkins, Valencia 91354-1356
3043. L Denardo, Danville 94526-5650
3044. L Dinger, Rocklin 95677-4786
3045. L Douglas, Penngrove 94951-0502
3046. L Licari, Fullerton 92833-2439
3047. L Richards, Santa Rosa 95404-2231
3048. L Y Chan, San Francisco 94131-3355
3049. Lacey Hicks, Union City 94587-4578
3050. Lael Jackson, Del Mar 92014-0424
3051. laila del monte, Van Nuys 91406-6317
3052. Lama Lane, Costa Mesa 92627-7140
3053. Lana Brewer-Fioresi, Sonoma 95476-7717
3054. Lana Kennings, Mill Valley 94941-4116
3055. Lana Touchstone, Vallejo 94591-5738
3056. Lance Robert, San Diego 92101-8639
3057. Lance Sprague, Gualala 95445-8327
3058. Lanelle Lovelace, Columbia 95310-0283
3059. Lanie Keystone, Vacaville 95688-2136
3060. Larissa Berry, Hacienda Heights 91745-2934
3061. Larry & Evelyn Harvill, Redlands 92374-6455
3062. Larry Branson, Pomona 91767-4739
3063. Larry Brenner, San Francisco 94114-1434
3064. Larry Burback, San Francisco 94114-3367
3065. Larry Downing, Port Hueneme 93041-3404
3066. Larry Holme, Oakland 94611-1200
3067. Larry Jasper, West Hollywood 90046-5810
3068. Larry Lima, Campbell 95008-2903
3069. Larry Melton, Davis 95616-2710
3070. Larry Miller, Beverly Hills 90212-4222
3071. Larry Rosenberg, Tahoe City 96145-6902
3072. Larry Steen, Los Angeles 90035-4412
3073. Larry Wittmeyer, Guerneville 95446-9662
3074. LARRY&LORETTA Bodiford, Soulsbyville 95372-0579
3075. Laszlo Kurucz, Lake Forest 92630-6731
3076. Laura Berguer, Novato 94945-2612
3077. Laura Black, Beverly Hills 90212-1671
3078. Laura Buss, San Francisco 94110-5814
3079. Laura Cook, Santa Cruz 95062-5028
3080. Laura Craun, Bakersfield 93311-1817
3081. Laura D, Albany 94706-1525
3082. Laura DeHaven, Santa Barbara 93105-6420
3083. Laura Dorais, Benicia 94510-3114
3084. Laura Freeman, Sacramento 95821-3839
3085. Laura Havstad, Sebastopol 95472-9571
3086. Laura Jones, Cerritos 90703-6946
3087. Laura Koeninger, Ukiah 95482-3705
3088. Laura LaRocca, Toluca Lake 91602-2560
3089. Laura Larsen, San Francisco 94122-3608
3090. Laura Larson, Los Angeles 90021-1244
3091. Laura Lichterman, Mill Valley 94941-3858
3092. Laura Lois, Rohnert Park 94928-4109
3093. Laura McKinney, Saratoga 95070-5028
3094. Laura Milbury, Modesto 95355-9679
3095. Laura Morales, San Ysidro 92173-2444
3096. Laura Newton, Cathedral City 92234-7845
3097. Laura Overmann, Burlingame 94010-5141
3098. Laura Payne, Alhambra 91803-4302
3099. Laura Quay, Irvine 92612-2724
3100. Laura Rasay Siasoco, San Jose 95134-2615
3101. Laura Thomas, Oxnard 93035-1717
3102. Laura Woods, Los Angeles 90036-3769

3103. Laureen McCoy, La Crescenta 91214-2856
3104. Laurel Brewer, West Hollywood 90069-4063
3105. Laurel Crockett, Clayton 94517-1933
3106. Laurel DeCou, Oakland 94609-1839
3107. Laurel Langill, Los Altos 94024-4741
3108. Laurel McKeever, City 96057
3109. Laurel Przybylski, Oakland 94605-2903
3110. Laurel Tucker, Claremont 91711-3741
3111. Lauren Appling, Penn Valley 95946-9458
3112. Lauren Baldwin, Vista 92081-7359
3113. Lauren Bryant, La Crescenta 91214-1323
3114. Lauren Govain-Eastman, Oakland 94606-2582
3115. Lauren Hansen, San Diego 92122-5273
3116. lauren kline, Redondo Beach 90277-0267
3117. Lauren Leonarduzzi, Gilroy 95020-3018
3118. Lauren Linda, Laguna Woods 92637-8151
3119. Lauren Murdock, Santa Barbara 93110-1650
3120. Lauren Perrish, Norwalk 90660
3121. Lauren Ranz, Lafayette 94549-6243
3122. Lauren Schiffman, El Cerrito 94530-1331
3123. Lauren Shapiro, Canoga Park 91304-6111
3124. Lauren Stoneburner, Rancho Palos Verdes 90275
3125. Laurene Brown, Encinitas 92024-4231
3126. Laurie Alper, Santa Monica 90403-1668
3127. Laurie Barlow, San Marino 91108-2842
3128. Laurie Budash, Napa 94559-2436
3129. Laurie DeWitt, Oceano 93445-9433
3130. Laurie Eisler, Cotati 94931-4565
3131. Laurie Epstein-Terris, Sacramento 95822-1122
3132. Laurie Hallihan, Alpine 91901-2269
3133. Laurie Long, San Rafael 94901-1938
3134. Laurie Mitcheltree, Yorba Linda 92886-3603
3135. Laurie Price, Redwood City 94063-2705
3136. Laurie Tsitsivas, Dana Point 92629-2046
3137. Lawrence Dillard, Jr, San Francisco 94107-1330
3138. Lawrence Dillard, Jr. , San Francisco 94107-1330
3139. Lawrence Elbe, Redding 96001-2984
3140. Lawrence Fait, Riverside 92504-6074
3141. Lawrence Joe, Pasadena 91107-5557
3142. Lawrence Laslett, Watsonville 95076-9632
3143. Lawrence Mallach, Thousand Oaks 91360-6541
3144. Lawrence Padilla, Roseville 95678-2141
3145. Lawrence Thompson, Livermore 94550-8134
3146. LawrenceMark Olson, Glendora 91740-5400
3147. Leah Anton, Ross 94957-0342
3148. Leah Berman, Aptos 95003-3305
3149. Leah Mercado, Covina 91722-3545
3150. Leah Olson, San Francisco 94104-4215
3151. Leah Olson, San Francisco 94117-2439
3152. LeAnn Miller, Napa 94559-3717
3153. Leanna Noble, Long Beach 90802-2373
3154. Leanna Pierson, Sacramento 95822-4229
3155. Leanne Friedman, Davis 95616-0853
3156. Leanne Landers, Vista 92084-3846
3157. Leasa Thernes, San Diego 92104-5007
3158. Lee Ann Kolker, Cupertino 95014-3628
3159. Lee Backus, Simi Valley 93063-2003
3160. Lee Berthel, Oakland 94619-2406
3161. Lee Dragu, Calabasas 91302
3162. lee Jordan, Los Angeles 90056-1906
3163. Lee margot, San Diego 92104-5442
3164. Lee Perry, Corralitos 95076-0514
3165. Lee Robinson, El Dorado Hills 95762-9747
3166. Lee Tennant, Dana Point 92629-1910
3167. lee wilson, San Diego 92126-1802
3168. Leigh Ann DiCarlo, Winchester 92596-8506
3169. Leigh Clark, Granada Hills 91344-6858
3170. Leigh DiCarlo, Winchester 92596-8506
3171. Leigh Levin, Los Angeles 90024-2263
3172. Leigh Stroud, Encinitas 92024-2103
3173. Leilani DiCato, Orange 92868-3925
3174. Leland Wilson, La Verne 91750-4333
3175. Lena Fine, Campbell 95008-3536
3176. Leni Gerber, Los Angeles 90035-2619
3177. Lenore Cymes, Palo Alto 94303-3119
3178. Lenore Dowling, Los Angeles 90039-3049
3179. Lenore Sorensen, Kensington 94707-1319
3180. Leon Van Steen, San Francisco 94134-1910
3181. Leona Mccann, Concord 94519-1718
3182. Leonard Anderson, Santa Cruz 95062-1821
3183. leonardo nunez, Lompoc 93436-1707
3184. Leroy Short, Huntington Beach 92649-2217
3185. Les Roberts, Fresno 93704-4335
3186. Lesle Helgason, Pebble Beach 93953-3043
3187. Lesley Pamela Culhane, Camarillo 93010-1108
3188. Lesley Paul, Harbor City 90710-2648
3189. Leslie Aisenman, Sylmar 91342-1705
3190. Leslie Andrews, Santa Cruz 95060-5003
3191. Leslie Bennett, Moorpark 93021-3186
3192. Leslie Bogart, Santa Monica 90405-2720
3193. Leslie Browne, Santa Monica 90403-1035
3194. Leslie Carothers, Altadena 91001-4308
3195. Leslie Crockett, San Rafael 94901-3830
3196. leslie davis, Fair Oaks 95628-3913
3197. Leslie Gould, San Anselmo 94960
3198. Leslie Hixson, Santa Ana 92707-4921
3199. Leslie Nieves, Hayward 94544-4461
3200. Leslie Rapp, San Diego 92129-5712
3201. Leslie Robinson, Sacramento 95816-5626
3202. Leslie Shapiro, Arroyo Grande 93420-5548
3203. Leslie Silton, Los Angeles 90027-5920
3204. Leslie Taylor, Ojai 93023-1802
3205. leslie wilmington, San Rafael 94901-2662
3206. Letitia Berlin, Albany 94706-1037
3207. Lew Douglas, Oakland 94618-1624
3208. Lewis Kawecki, Kings Beach 96143-0096
3209. Lexie Cole, Santa Monica 90404-5117
3210. Li Lan Chan, Westminster 92683-6345
3211. lia supanich, Petaluma 94952-3669
3212. Lianna Giovannoni, Windsor 95492-9491

3213. Licia Perea, Los Angeles 90027-4753
3214. Lidice Pollan, Woodland Hills 91364-5345
3215. Li-hsia Wang, Berkeley 94705-1947
3216. Lilithe Magdalene, Middletown 95461-1478
3217. Lillie Falco-Adkins, Mountain View 94043-3330
3218. Lily Lau-Enright, Sacramento 95819-1759
3219. Lily Marie, Rough and Ready 95975-0242
3220. Linda Akins, Altaville 95221-1027
3221. Linda Antone, Santa Barbara 93105-3174
3222. Linda Barner, Fresno 93726-3322
3223. Linda Baxter, Yreka 96097-9602
3224. Linda Bloombecker, Santa Cruz 95062-4163
3225. Linda Boone, Palm Desert 92260-5754
3226. Linda Bottarini, Santa Cruz 95060-1803
3227. Linda Bouman, Fullerton 92835-1949
3228. Linda Boyle, Redding 96002-0746
3229. Linda Bruce, Yuba City 95993-5608
3230. Linda Brush, Truckee 96162-7986
3231. Linda Claire, Irvine 92606-1204
3232. LINDA D JONES, Bakersfield 93387-0876
3233. Linda David, San Diego 92105-4511
3234. Linda Dragavon, San Francisco 94114-3925
3235. Linda Eckert, Arcata 95518-4934
3236. Linda Emme, Marshall 94940
3237. Linda Ferratta, Santa Barbara 93105-9759
3238. Linda Fong, Sacramento 95831-2823
3239. LINDA FOSTER-BROOKS, La Palma 90623
3240. Linda Frankel, San Leandro 94578-1925
3241. Linda Gee, San Leandro 94578-3503
3242. Linda Goldman, Mission Viejo 92691-1917
3243. Linda Hall, Castaic 91384-3211
3244. linda hunt, Berkeley 94702-1913
3245. Linda Kierce, Cambria 93428-3605
3246. Linda klein, El Segundo 90245-3259
3247. Linda Krieg, Redwood City 94061-2774
3248. Linda Kroosz, Half Moon Bay 94019-1771
3249. Linda L Hill, Goleta 93117-4090
3250. linda lagace, Riverbank 95367-9638
3251. Linda Little, Woodland Hills 91364-4417
3252. Linda Lux, Vallejo 94591-7763
3253. Linda MacNeal, Oak View 93022-9528
3254. Linda Malcom, Vallejo 94591-8003
3255. Linda Marble, San Francisco 94132-3034
3256. Linda Martin, Auburn 95603-6050
3257. Linda McElroy, Sacramento 95827-1102
3258. Linda Mellen, Newport Beach 92661-1434
3259. Linda Morgan, San Pablo 94806-3767
3260. Linda Nicholes, Anaheim 92807-4070
3261. Linda Noble, Sunol 94586-9425
3262. Linda Oeth, Corona Del Mar 92625-2611
3263. Linda Ostro, Oakland 94611-2621
3264. Linda Paravagna, Walnut Creek 94598-3204
3265. Linda Prandi, Sacramento 95834-7519
3266. Linda Reilly, Cypress 90630-4119
3267. Linda Richards, Gilroy 95020-9476
3268. Linda Rzeznik, Los Angeles 90027-2667
3269. Linda Schmid, Mountain View 94043-1126
3270. Linda Shadle, Anaheim 92804-5268
3271. Linda Spanski, Oceanside 92054-6536
3272. Linda Sturges, Glendale 91202-1679
3273. Linda Taffet, Dana Point 92629-2202
3274. Linda Torn, Los Angeles 90031-1416
3275. Linda Toy, San Rafael 94901-1406
3276. Linda Waldron, San Diego 92103-1876
3277. Linda Ward, Montebello 90640-2147
3278. Linda Whetstine, Poway 92064-3714
3279. Linda Wood, Fresno 93704-6146
3280. Linda Zagula, Berkeley 94702-1803
3281. Lindsay DeBoer, Mission Viejo 92692-2709
3282. Lindsay Duran, Mission Viejo 92690-1208
3283. Lindsay Mugglestone, Berkeley 94705-1948
3284. Lindsey Shere, Healdsburg 95448-9304
3285. Linnea Fronce, Sacramento 95822-1712
3286. Lisa Ann Kelly, Santa Barbara 93101-1021
3287. Lisa Annecone, Santa Rosa 95407-5499
3288. Lisa Atwood, El Cajon 92020-7360
3289. Lisa Barron, Los Angeles 90064-2308
3290. Lisa Bernstein, Piedmont 94620-0663
3291. Lisa Brackmann, San Diego 92117-6122
3292. Lisa Dahill, Thousand Oaks 91360-3218
3293. lisa getline, Carmel 93923-8376
3294. Lisa Gherardi, Los Gatos 95032-5422
3295. Lisa Hammermeister, Granada Hills 91344-2857
3296. Lisa Holtzman, Santa Monica 90405-4929
3297. Lisa Jensen, Emerald Hills 94062-3917
3298. Lisa Krekorian, San Mateo 94402-1328
3299. Lisa Marguerite Mora, Los Angeles 90066-1154
3300. Lisa Nelson, Benicia 94510-2227
3301. LISA PATTON, San Francisco 94115-3234
3302. Lisa Piner, Costa Mesa 92626-2066
3303. Lisa Rhudy, El Portal 95318-0295
3304. Lisa Soon, Santa Cruz 95060-5210
3305. Lisa Turco, Sherman Oaks 91411-3018
3306. Lisa Voorhees, Mission Viejo 92691-2215
3307. Lisa Wenzel, Albany 94706-2316
3308. Lisa Williams, Huntington Beach 92646-3127
3309. Lisabeth Collins, Los Angeles 90026-2531
3310. Lisbeth Caccese, Santa Barbara 93110-4406
3311. Lise Kastigar, Laguna Niguel 92677-2720
3312. Lissa Wentner, San Rafael 94901-4204
3313. Liz Davenport, Upland 91784-1914
3314. Liz Frankfather, Los Angeles 90019-3155
3315. Liza Markle, Santa Monica 90403-3276
3316. Lizabeth Flyer, Burbank 91505-3410
3317. Lloyd Niven, Studio City 91604-1016
3318. lloyd reynolds, Fountain Valley 92708-1145
3319. Lois B, Freedom 95019-0007
3320. Lois Ehrenfeld De Buren, San Francisco 94114
3321. Lois Shubert, Camarillo 93010-3036
3322. lollie ragana, Santa Monica 90405-5538

3323. Lonna Richmond, Muir Beach 94965-9757
3324. Lonnie Sheinart, Los Angeles 90064-3521
3325. Lora Jerugim, Los Angeles 90048-4710
3326. lorelai dubler, Santa Barbara 93102-1231
3327. Lorena Serrano, San Francisco 94109-4415
3328. Loretta Long, Napa 94558-5579
3329. Loretta Thomason, Palmdale 93551-4064
3330. Lori Christensen, San Diego 92120-3235
3331. Lori Conrad, Davis 95618-1613
3332. Lori Dick, Claremont 91711-1431
3333. Lori Goodman, Beverly Hills 90210-1015
3334. Lori Kegler, San Pedro 90731-6213
3335. Lori Smith, Cathedral City 92234-6726
3336. Lori Vest, Potter Valley 95469-9736
3337. Lori White, Kelseyville 95451-9516
3338. Lorna Hudgins, Pasadena 91104-4002
3339. Lorne Cheeseman, Irvine 92620-1953
3340. Lorraine Lawrence, San Diego 92130-2218
3341. Lorraine Lowry, Etobicoke 90211
3342. Lorraine Seiji, El Cerrito 94530-3217
3343. Lorraine Unger, Bakersfield 93312-6731
3344. Lorretta Marcel, San Francisco 94134-1220
3345. Lorrie Klosterman, Berkeley 94709-1032
3346. Lotti Knowles, Valley Glen 91401-4700
3347. Louis Adamo, Redwood City 94063-0041
3348. Louis Spirito, Malibu 90265-4461
3349. Louise Garrett, Citrus Heights 95621-4913
3350. Louise Hawley, Palm Springs 92264-7932
3351. Louise Johnson, Modesto 95350-5035
3352. Louise Mcternan Loane, San Francisco 94116
3353. Louise Rangel, Santa Paula 93060-1425
3354. Louise Zimmer, Paso Robles 93446-4253
3355. lowell abellon, Los Angeles 90032-1926
3356. lu carpenter, San Francisco 94131-1022
3357. Luan Aubin, Sacramento 95828-6101
3358. Luce Gauthier, Los Angeles 90016-1512
3359. Lucia Dill, Oakland 94602-2513
3360. Luciana Johnson, Sacramento 95819-4125
3361. Lucienne O'Keefe, Greenbrae 94904-2441
3362. Lucile J Taber, San Francisco 94127-1705
3363. Lucille Hayes, Campbell 95008-3746
3364. Lucinda Henderson, Lafayette 94549-2140
3365. Lucy Nichols, Ventura 93004-3150
3366. Luis Lozano, Long Beach 90803-7230
3367. Luis Marquez, Chula Vista 91910-5325
3368. Luise Perenne, Fountain Valley 92708-6722
3369. Luke Johnson, Inglewood 90301-3519
3370. Lupe Avila, Sebastopol 95473-0507
3371. Luranne Drager, San Francisco 94122-2728
3372. Lyle Eklof, S San Fran 94080-4164
3373. Lyn Goldinger, Culver City 90230-4933
3374. Lyn Mcclure, Placerville 95667-9144
3375. Lyn Younger, San Jose 95111-3810
3376. Lynda Aubrey, Elk 95432-0126
3377. Lynda Wu, Mammoth Lakes 93546
3378. Lynette Aguzzi, San Ramon 94582-4608
3379. Lynette Ridder, Concord 94521-2910
3380. Lynn Armstrong, El Cerrito 94530-3349
3381. Lynn Baker, Martinez 94553-1566
3382. Lynn Bennett, Calistoga 94515-9594
3383. Lynn Boulton, Lee Vining 93541-0234
3384. Lynn Camhi, Petaluma 94952-6446
3385. Lynn Fonkalsrud, Camarillo 93010-9237
3386. lynn harrigan, Marina 93933-2206
3387. Lynn Hurley, Santa Barbara 93105-2569
3388. Lynn Piquett, Santa Cruz 95060-3709
3389. Lynn Race, 92583
3390. Lynn Stafford, Pine Mountain Club 93222-6825
3391. Lynn Thorensen, Santa Cruz 95060-6455
3392. Lynne Colvig, Thousand Palms 92276-3759
3393. Lynne Eggers, San Francisco 94110-5331
3394. Lynne Frame, Mill Valley 94941-2723
3395. Lynne Pertum, Pasadena 91106-3764
3396. Lynne Pratt, San Diego 92109-6602
3397. Lynne Preston, San Francisco 94107-2688
3398. Lynne Weiske, Los Angeles 90048-5106
3399. Lynnette Royce, Bishop 93514-3437
3400. M Susan Ditzler, Carmel 93923-8204
3401. M Blissit, Palm Springs 92264-8683
3402. M Canter, Belvedere Tiburon 94920-2036
3403. m d, Manhattan Beach 90266
3404. M J Greene, Studio City 91604-3024
3405. M K Russell, Mill Valley 94941-2240
3406. m may, Carlsbad 92008-1949
3407. M McCormick, Newport Beach 92663-2102
3408. M Pinochet, Sausalito 94966-2009
3409. m robinson, n hollywood 91606
3410. M Ross, San Rafael 94901-1834
3411. M Sanders, Petaluma 94952-4123
3412. M Silver, Sacramento 95831-4007
3413. M Topping, Los Angeles 90004-1450
3414. M Virginia Leslie, Milpitas 95035-3532
3415. Macrina Rodriguez, Sacramento 95835-2059
3416. Maddy Hengge, Encinitas 92024-2654
3417. Madeleine Butcher, Woodland Hills 91365-6548
3418. Madeleine Fisher Kern, Los Angeles 90036-3013
3419. Madeleine H Peterson, Santa Maria 93454-2677
3420. Madeline Coleman, Monte Sereno 95030-2251
3421. Madison Irvin, Torrance 90505-7217
3422. Maeve Murphy, San Rafael 94901-4372
3423. Magaly Fernandez, San Francisco 94124-2345
3424. Magda Martine, Fallbrook 92028-4006
3425. Magdalena Aguilar, Santa Ana 92703-3558
3426. Maggie Flower, Del Mar 92014-3612
3427. Maggie Hughes, Berkeley 94704-2247
3428. Majda Jones, Portola Valley 94028-8038
3429. Malcolm Groome, Topanga 90290-3353
3430. Mani White, Oakland 94602-1448
3431. Manmeet Toor, Los Angeles 90024-3000
3432. Manuel Banuelos, Rosemead 91770-3010

3433. Manuel Castaneda, West Covina 91790-3948
3434. Mara Johnson, Santa Clarita 91390-5716
3435. Marc Futernick, Pasadena 91106-4316
3436. Marc Gordon, Sunnyvale 94087-4054
3437. MARC HERTZ, Van Nuys 91401-1445
3438. Marc Joseph, San Mateo 94402-3840
3439. Marc Lieberman,San Francisco 94102
3440. Marc Silverman, Los Angeles 90068-3071
3441. Marci Levine, Los Angeles 90046-1840
3442. Marci Nunez, Castro Valley 94546-4135
3443. marci smith, Tehachapi 93561-7953
3444. Marcia Edelen, Berkeley 94704-2711
3445. Marcia Jones, El Dorado Hills 95762-5402
3446. Marcia Joswick, Pinole 94564-1153
3447. Marcia McEachern, San Rafael 94901-1208
3448. Marcia Petroczky, Long Beach 90807-1707
3449. Marcia Shakman-Stern, Canyon Country 91351
3450. Marcia Tyriver, Santa Rosa 95409-5913
3451. Marcia Wilson, Oakland 94605-4610
3452. Marcie Ligammari, Paradise 95969-4264
3453. MARE DON, Playa Del Rey 90296-5324
3454. Maree McGuirea, Castro Valley 94552-9501
3455. Maree Penhart, Oxnard 93035-3743
3456. Marek Ertl, Zvolen 96001
3457. Margaret Anderson, Petaluma 94952-4030
3458. Margaret Branch, Arcata 95521-6519
3459. Margaret Brooker, Marina Del Rey 90292-7398
3460. Margaret DeMott, Sacramento 95822-8309
3461. Margaret Fish, Boonville 95415-0533
3462. Margaret Keenan, San Jose 95129-3126
3463. Margaret Madsen, Soquel 95073-3021
3464. Margaret Masek, Danville 94526-3739
3465. Margaret Morales, Santa Cruz 95062-2952
3466. Margaret Ong, Davis 95617-0128
3467. Margaret Phelps, Los Angeles 90024-6183
3468. Margaret Rogers, Redwood City 94062-1315
3469. Margaret Spak, Menlo Park 94025-2739
3470. Margaret T Petkiewicz, San Jose 95125-2952
3471. Margaret Wessels, Aptos 95003-5927
3472. Margaret Wilkes, San Jose 95128-2143
3473. Margarette Woodard, Lake Arrowhead 92352
3474. MARGARITA SANIN, Los Angeles 90065-3717
3475. Margarita Zamora, Alamo 94507-1251
3476. Margarite Reynolds, San Francisco 94107-2384
3477. Marge Schwartz, Santa Barbara 93121-1955
3478. Margie Borchers, Santa Barbara 93101-1138
3479. Margo Berdanis, Long Beach 90807-4810
3480. Margot White, Toluca Lake 91602-1566
3481. Margret Head, San Jose 95117-1653
3482. Marguerite Sgrillo, Richmond 94806-5899
3483. Marguerite Shuster, Sierra Madre 91024-1232
3484. Mari Dominguez, Linden 95236-9419
3485. Mari Matsumoto, Alameda 94501-1509
3486. Maria Bernardo, Burbank 91505-4554
3487. Maria D'Amato, Los Angeles 90026-1009
3488. Maria Dambrosio, Bermuda Dunes 92203-9514
3489. Maria Elena Hernandez, Los Angeles 90048-4427
3490. Maria J Cruz, Fresno 93722-2807
3491. Maria Jolliff, Vista 92081-8784
3492. maria koci, Oakland 94609-1914
3493. Maria Manjarrez, Sunnyvale 94086-6651
3494. Maria Montalvan, Chula Vista 91910-7850
3495. Maria Nesheim, Aptos 95003-3347
3496. Maria Schneider, San Diego 92128-3653
3497. Maria Socorro, Los Angeles 90066-3710
3498. Maria Sosa, San Luis Obispo 93405-6865
3499. Mariam Shah-Rais, Los Angeles 90035-4324
3500. Marian Brischle, San Francisco 94114
3501. Marian Carter, West Covina 91791-1937
3502. Marian Gorrell, Thousand Oaks 91362-2761
3503. Marian Hardin, Daly City 94015-4555
3504. Marian Isaac, Modesto 95354-0238
3505. Marian Kadota, Carpinteria 93013-1459
3506. marian valeri, San Diego 92123-3436
3507. Mariana Delafuente, Newcastle 95658-9720
3508. Marianna Mejia Contact, Soquel 95073-9708
3509. Marianna Mejia, Soquel 95073-9708
3510. Marianna Riser, Novato 94949-6305
3511. Marianne Bentel, La Quinta 92253-3736
3512. Marianne Bithell, Arcata 95521-9212
3513. Marianne Brettell-Vaughn, Bishop 93514-7079
3514. marianne ewing, Bolinas 94924-9735
3515. Marie Andreini, Livermore 94550-7384
3516. Marie Anthony, Palo Alto 94303-3965
3517. Marie Beckham, Aptos 95003-2842
3518. Marie Burkart, Hayward 94544-4978
3519. Marie O'Rourke, San Mateo 94402-3601
3520. Marie Perry, Ceres 95307-4102
3521. Marie Sherwood, Los Angeles 90068-2982
3522. Marie Turner, Playa Vista 90094-2313
3523. Marika Leff, Novato 94948-1851
3524. Marilu Romero, Fontana 92336-3023
3525. Marilyn Anderson, Mill Valley 94941-5056
3526. Marilyn Barthelow, Auburn 95602-9314
3527. marilyn berlin, San Francisco 94122-4219
3528. marilyn Brown, Grover Beach 93433-1646
3529. Marilyn Carlson, Los Gatos 95030-6312
3530. Marilyn Gudmundsson, Hermosa Beach 90254
3531. Marilyn Jasper, Loomis 95650-9749
3532. Marilyn Judson, Santa Monica 90403-2218
3533. Marilyn Levine, Mountain View 94041-1640
3534. Marilyn McAteer, Antioch 94531-7638
3535. Marilyn Price, Mill Valley 94941-2074
3536. Marilyn Rodgers, San Jose 95136-2910
3537. Marilyn Shepherd, Trinidad 95570-0715
3538. Marilyn Standley, Sebastopol 95473-2327
3539. Marilyn Tovar, Stockton 95210-6740
3540. Marilyn Tripp, Salinas 93901-4612
3541. Marilyn Veltrop, Soquel 95073-9710
3542. Marilyn Wills, Los Osos 93402-2304

3543. Marina Sastre, Torrance 90503
3544. Marinna Wagner, Los Angeles 90086-2283
3545. Marion O'Leary, San Jose 95123-5303
3546. Marion Toms, Santa Barbara 93108-1644
3547. Marion Van, San Bernardino 92404-6135
3548. Maris Sidenstecker, Watsonville 95076-4442
3549. marisa baca, Fremont 94536-4464
3550. Marisa Kieren, San Jose 95118-1617
3551. Marisa Nelson, Sausalito 94965-2064
3552. Marisa Roszak, Valencia 91355-2253
3553. Marisol Murad, Los Angeles 90046-1414
3554. Marjorie Moss, Del Mar 92014-3823
3555. Marjorie Nothern, Danville 94506-2124
3556. Marjorie Salmeron, Eureka 95501-3706
3557. Marjorie Sanchez, Monterey Park 91755-4131
3558. Marjorie Trolinder, Fairfield 94534-4017
3559. marjorie xavier, Hayward 94542-2152
3560. Mark Anderson, Comptche 95427-0456
3561. Mark Betti, Sherman Oaks 91423-4530
3562. Mark Ferlito, Discovery Bay 94505-9227
3563. Mark Fiore, San Francisco 94122-2120
3564. Mark Gallegos, Los Angeles 90033-3111
3565. Mark Golembiewski, Pacifica 94044-3845
3566. Mark Grossman, Palo Alto 94301-4004
3567. Mark Hacker, Baldwin Park 91706-5613
3568. Mark Hanisee, Riverside 92506-4708
3569. Mark Hargraves, Sebastopol 95472-9602
3570. Mark Hurst, Orinda 94563-3922
3571. Mark Lindsey, Long Beach 90803-5324
3572. Mark Luiso, San Jose 95118-3543
3573. Mark Merner, Santa Rosa 95404-4029
3574. Mark Moise, Oxnard 93033-4530
3575. Mark Moramarco, Gualala 95445-1532
3576. Mark Poland, Palmdale 93550-7703
3577. Mark Reback, Los Angeles 90042-1107
3578. Mark Spevak, Anaheim 92808-1047
3579. Mark Standon, San Bernardino 92407-2840
3580. Mark Sussek, Van Nuys 91404-2475
3581. Mark Tokarczyk, Del Mar 92014-0572
3582. Mark Walkowiak, Burbank 91506-1321
3583. Mark Weinberg, Oakland 94602-1529
3584. Mark Wilson, San Jose 95129-4054
3585. Marko Pavlovic, Sacramento 95831-3566
3586. Marla Crites, Chico 95928-9103
3587. Marla Feierabend, Santa Barbara 93109-1835
3588. Marla Hess, Fullerton 92831-3318
3589. MArlene Saifer, Venice 90291-4565
3590. Marlies Lee, San Jose 95120-3133
3591. Marlyne Hadley, Clayton 94517-1433
3592. Marrick Sayers, Studio City 91604-5505
3593. Marsha Bezan, Sebastopol 95472-4290
3594. Marsha Harris, Pauma Valley 92061-9552
3595. Marsha Klotzle, Altadena 91001-2328
3596. Marsha Lucero, Nipomo 93444-2007
3597. Marsha Lyon, San Diego 92116-4008
3598. Marsha Slosburg, Sylmar 91342-3327
3599. Marston James, Los Angeles 90046-4314
3600. Marta Peters, Clovis 93612-3532
3601. Martha and Richard Galaif, Pacific Palisades 90272-2603
3602. Martha Dragovich, Martinez 94553-2320
3603. Martha Engber, Santa Clara 95051-4611
3604. Martha Fellows, Ojai 93023-1701
3605. Martha Hollenbeck, Greenbrae 94904-1124
3606. Martha Kean, City 94526
3607. Martha Low, Salinas 93907-8531
3608. Martha McNamee, Walnut Creek 94595-1367
3609. Martha Muller, Long Beach 90805-3616
3610. Martha Schwartz, Santa Cruz 95060-4856
3611. Martha Widmann, Three Rivers 93271-9708
3612. Martha Williams, Pacifica 94044-4438
3613. Martin Horwitz, San Francisco 94122-1608
3614. Martin Marcus, San Diego 92120-1112
3615. Martin Saitta, San Diego 92108-1070
3616. Martin Slack, Redondo Beach 90277-2545
3617. Martin Spitz, Napa 94558-6724
3618. Martin Tripp, Santa Clarita 91390-3100
3619. Martitia Palmer, Winnetka 91306-2997
3620. Marty Miner, Moss Beach 94038-0021
3621. Maruka Fernandez, Oakland 94606-4801
3622. MARVIN COHEN, Walnut Creek 94595-2433
3623. Marvin Sawyer, Yucca Valley 92284-8653
3624. Mary Able, Mcarthur 96056-7633
3625. Mary Ann Taylor, Vallejo 94591-6629
3626. Mary Ann Wilkinson, Pacific Grove 93950-3528
3627. Mary Anne Fuchs, San Diego 92130-4839
3628. mary appel, Sacramento 95811-4194
3629. Mary Argo, Sacramento 95818-3027
3630. mary baville, San Dimas 91773-3669
3631. mary betlach, Glendale 91206-1110
3632. Mary Bryden, South Lake Tahoe 96151-4368
3633. Mary Budrunas, Orange 92869-2863
3634. mary Burns, Paradise 95969-2512
3635. Mary Charters, Los Gatos 95030-5821
3636. Mary Chase, Novato 94947-3714
3637. Mary Claire Frantz, Burbank 91504-3680
3638. Mary Currie, San Anselmo 94960-1412
3639. Mary DeLap, Sebastopol 95472-3055
3640. Mary Doane, Freedom 95019-2215
3641. Mary Eister, Arroyo Grande 93420-4222
3642. Mary Elizabeth Perry, Pasadena 91105-1339
3643. Mary Ellen Weldele, Hacienda Heights 91745
3644. Mary Elliott-Klemm, Somerset 95684-0310
3645. Mary F Platter-Rieger, San Diego 92105-5130
3646. Mary Fedullo, San Jose 95123-5001
3647. Mary Grindeland, Sunnyvale 94089-5001
3648. Mary Haberle, Los Angeles 90027-6008
3649. Mary Haley, Elk Grove 95758-7134
3650. mary Hamilton, Hemet 92544-4937
3651. Mary Hicklin, Lakeside 92040

3652. Mary Hicklin, San Diego 92117
3653. Mary Jane Adams, Paso Robles 93446-2035
3654. Mary Jane Ryan, Walnut Creek 94595-1337
3655. Mary Lorain, Oakland 94602-1766
3656. Mary Lou Copp, Mountain View 94043-1435
3657. Mary Mallory, Orinda 94563-4214
3658. Mary Malloy, MD, Hillsborough 94010-7143
3659. Mary Malone, Los Angeles 90071-2632
3660. Mary Martin, Modesto 95350-0713
3661. Mary Miles-Finigan, San Jose 95127-2543
3662. Mary Nybakken, San Francisco 94127-1826
3663. Mary Osborn, El Dorado 95623-5028
3664. Mary Page, Aptos 95003-3979
3665. Mary Parks, Lompoc 93436-1364
3666. Mary Patz, Simi Valley 93063-2390
3667. Mary R Mcdermith, Mountain View 94040-4556
3668. Mary Rakow, San Francisco 94111-2327
3669. Mary Romanek, Santa Monica 90404-1215
3670. Mary Rose, Berkeley 94702-1438
3671. Mary Ross, Rancho Palos Verdes 90275-5735
3672. Mary Rossi, Santee 92071-1161
3673. Mary Scheid, Grass Valley 95945-7004
3674. Mary Shallenberger, Paradise 95969-4271
3675. Mary Smith, Santee 92071-8458
3676. mary speare, San Diego 92109-1349
3677. mary stark, Pasadena 91107-2061
3678. Mary Sullivan, Huntington Beach 92647-3360
3679. Mary Tilton, Capistrano Beach 92624-1233
3680. Mary Walter, Berkeley 94704-1828
3681. Maryann LaNew, San Clemente 92673-6520
3682. Marybeth Rice, Berkeley 94708-1820
3683. Maryellen Jackson, Monte Rio 95462-0132
3684. Maryellen Redish, Palm Springs 92264-0648
3685. MaryKay Rodarte, Phelan 92371-6430
3686. Marylouise Johnson, Santa Monica 90406-2024
3687. Marylucia Arace, Fullerton 92835-4020
3688. MaryLynn Kramer, Fullerton 92835-1811
3689. Mary-Lynne Bainbridge, Los Gatos 95032-4729
3690. Masayo Honjo, Newbury Park 91320-3748
3691. Mashuri Warren, Lafayette 94549-1807
3692. Mason Kocel, Oceanside 92057-1835
3693. Mathew Vipond, Sacramento 95818-3554
3694. Matilde Navarro, Garden Grove 92841-1528
3695. Matt Barmore, San Diego 92109-3752
3696. Matthew Askari, Los Angeles 90004-1207
3697. Matthew Dunaway, Bishop 93514-2954
3698. Matthew Emmer, Sherman Oaks 91423-4048
3699. Matthew John, Marina Del Rey 90292-7397
3700. Matthew Johnson, Anaheim 92801-1327
3701. Matthew Patchell, San Francisco 94131-2738
3702. Matthew Reid, Calistoga 94515-1737
3703. Matthew Reola, San Clemente 92672-6624
3704. Matthew Roth, La Mesa 91942-3831
3705. Matthew Ruggiero, Oakland 94601-3807
3706. Maura Metz, Davis 95617-4195
3707. Maureen Besancon, Nevada City 95959-9602
3708. maureen maloney, San Jose 95117-2203
3709. Maureen mcdonald, Los Angeles 90068-2334
3710. Maureen Mehler, Laguna Woods 92637-8729
3711. MAUREEN PLIMIER, Oakland 94611-5305
3712. Maurica Anderson, Bridgeport 93517
3713. Maurice Robinson, Manhattan Beach 90266-7229
3714. Mauro Ferrero, Los Angeles 90045-1055
3715. Mavis Lazell, Santa Rosa 95404-3025
3716. maxine dorazio, Lafayette 94549-2922
3717. Maxine Jacobsen, Stockton 95209-4894
3718. Maxine Litwak, Novato 94949-5347
3719. Maya Markovich, Palo Alto 94306-1236
3720. Maylou Bartlett, Berkeley 94710-2620
3721. Mckenzie Rasmussen, Goleta 93117-2467
3722. mecky,jay,al,li myers, tower, morale, Redondo Beach 90277-3243
3723. Meera P, Fremont 94539-4914
3724. Megan Clock, Nevada City 95959-2200
3725. Megan McCullough, Oak View 93022-9329
3726. Megan Shumway, Sacramento 95821-2514
3727. Meghan ODell, Long Beach 90803-5869
3728. Melanie B Goldman, Valley Center 92082-5006
3729. Melanie Cresci, El Cerrito 94530-1725
3730. Melanie Cross, Palo Alto 94306-2608
3731. melanie fisher, Calabasas 91302-3073
3732. Melanie Goldberg, Albany 94706-2132
3733. Melanie Haupt, Modesto 95355-2278
3734. Melanie Irwin, Ventura 93003-6472
3735. Melanie Jones, San Pedro 90731-6979
3736. Meleina Mayhew, Los Angeles 90039-3643
3737. Melia Schiwiwtz, San Francisco 94117
3738. Melinda Cotton, Long Beach 90803-0310
3739. Melinda Dean Young, Atascadero 93422-3477
3740. Melinda Forstey, San Diego 92109-6318
3741. Melinda Goulart, Morgan Hill 95037-4726
3742. Melinda Lusk Zuerlein, Carlsbad 92008-2510
3743. Melissa Aguirre, Anaheim 92806-3629
3744. Melissa Atkinson, Los Angeles 90064-3208
3745. Melissa Bischoff, Berkeley 94707
3746. Melissa Borbon, Los Banos 93635-2905
3747. melissa felipe, Fallbrook 92028-2401
3748. Melissa Hammons, Fresno 93727-6162
3749. Melissa Hutchinson, Pacific Grove 93950-3146
3750. Melissa Locher, Redlands 92373-6716
3751. Melissa Marquez, Placerville 95667-9301
3752. Melissa McCarthy, San Francisco 94117-3816
3753. Melissa Murphy, El Cerrito 94530-1843
3754. Melissa Ochoa, Los Angeles 90061-3012
3755. Melissa Schwartz, Pasadena 91103-3040
3756. Melodie White, Walnut Creek 94595-1428
3757. Melody Grigg, Santa Maria 93455-3129
3758. melody hamilton, trinidad 95570
3759. Melony Davis, Inglewood 90302-3946
3760. melvin taylor, Sacramento 95823-5780

3761. Melvin Zimmerman, Morro Bay 93442-2141
3762. Melvyn Nefsky, Marina Del Rey 90292-9240
3763. mendy bates, Foresthill 95631-0826
3764. Mendy Thijssen, Mountain View 94043-4656
3765. Mercy Sidbury, Sebastopol 95472-2017
3766. Meredith Hazan, Los Angeles 90068-3822
3767. Meredith Priestley, Solana Beach 92075-2416
3768. Merilie Robertson, Canoga Park 91307-1240
3769. Merlin Wilson, Salinas 93907-2038
3770. Merry Campbell, Pollock Pines 95726-9582
3771. Meryl Lowell, South Lake Tahoe 96150-7421
3772. Meryl Martino, Mammoth Lakes 93546-3326
3773. Mh Ciesinski, San Jose 95120-4037
3774. Mha Atma S Khalsa, Los Angeles 90035-3314
3775. Mia Trachinger, Los Angeles 90027-4615
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3778. Michael Archer, Santa Cruz 95061-7346
3779. Michael Belli, South San Francisco 94080-4230
3780. Michael Berg, San Jose 95138-1717
3781. michael bordenave, Fresno 93728-2941
3782. Michael Boshears, Crestline 92325-3684
3783. Michael C Ford and Richard B. Marks, Watsonville 95076-2018
3784. Michael Cavanaugh, Redondo Beach 90278-3861
3785. Michael D Nesel, Palmdale 93550-3202
3786. Michael Daetwyler, Fresno 93730-4757
3787. Michael Diaz, Walnut Creek 94597-2400
3788. Michael Drella, Santa Ana 92701-8211
3789. Michael Epling, Pacifica 94044-3635
3790. Michael Fishbein, Los Angeles 90025-1829
3791. Michael Freeman, Bakersfield 93309-1189
3792. Michael Fruth, Oakhurst 93644-9304
3793. Michael Garitty, Nevada City 95959-8515
3794. michael gertz, San Francisco 94117-1562
3795. Michael Glow, Los Gatos 95032-3627
3796. Michael Gold, San Francisco 94110-5730
3797. Michael Harris, San Rafael 94903-1605
3798. Michael Henderson, Huntington Beach 92649
3799. Michael Hogan, Del Mar 92014-4230
3800. Michael House, Redwood City 94061-3543
3801. Michael Hunter, Woodacre 94973-0696
3802. Michael Johns, Corona 92883-5223
3803. Michael Kast, Panorama City 91402-1476
3804. Michael Keene, Nevada City 95959-2914
3805. Michael Kemper, San Francisco 94109-4915
3806. Michael Kenney, El Cerrito 94530-1610
3807. Michael Kloby, Lake Forest 92630-6514
3808. Michael Leonard, La Jolla 92038-0654
3809. Michael Levin, San Francisco 94131-1934
3810. Michael Lynch, Oakland 94605-2230
3811. michael mazzarella, Pacific Palisades 90272-2203
3812. Michael McGinley, San Francisco 94133-1511
3813. Michael McLaughlin, Downey 90241-4978
3814. michael mclaughlin, Sacramento 95826-1815
3815. Michael Mills, Sierra Madre 91025-0037
3816. Michael Mitsuda, Fremont 94555-1285
3817. Michael Neal, Loomis 95650-8401
3818. Michael Olander, Rancho Cucamonga 91701
3819. michael pfeffer, San Francisco 94107-2528
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3821. Michael Rodriguez, Rosemead 91770-4110
3822. Michael Rotcher, Mission Viejo 92692-2351
3823. Michael Russell, Santa Paula 93060-1302
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3825. Michael Sarabia, Stockton 95207-5147
3826. Michael Sawaya, Los Angeles 90024-3083
3827. Michael Smith, La Jolla 92037-7714
3828. Michael Soto, Alhambra 91801-1769
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3833. Michaele Belles, Huntington Beach 92647-6403
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3835. Michaline LePaule, Berkeley 94703-1323
3836. Michel Horvat, Los Angeles 90036-2514
3837. Michele Coakley, Rancho Cordova 95670-2517
3838. Michele Dawn Sanderson, Walnut Creek 94595-
3839. Michele Halligan, Ukiah 95482-4206
3840. Michele Pedrini, Arcadia 91007-6778
3841. Michele Sanderson, Walnut Creek 94595-3793
3842. Michele Santoro, Davis 95616-5597
3843. Michele Sterling, San Francisco 94117-1709
3844. Michele Taylor, Perris 92571-3784
3845. Michelle Baik, Brea 92821-5400
3846. Michelle Bitting, Pacific Palisades 90272-2309
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3848. Michelle Cheung, San Diego 92130-6011
3849. Michelle Embree, Sacramento 95822-2569
3850. Michelle Esparza, Reseda 91335-1638
3851. Michelle Goodman, Hawthorne 90250-4949
3852. Michelle Haddy, Orange 92869-3194
3853. Michelle Lind, Hawthorne 90250-4949
3854. Michelle Montgomery, Napa 94558-6606
3855. Michelle Moudry, Redlands 92373-5935
3856. Michelle Nelson, Gilroy 95020-8217
3857. Michelle Orengo-McFarlane, El Sobrante 94803
3858. Michelle Palladine, Palm Springs 92262-6620
3859. Michelle Robinson, Los Angeles 90020-2509
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3862. Mikail Barron, Felton 95018-9624
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3865. Mike Chatlosh, Menifee 92584-7669
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3868. Mike Moore, Playa Del Rey 90293-7774
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3870. Mike Therrien, San Pedro 90731-6859
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3876. Milton Carrigan, San Luis Obispo 93401-5501
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3879. Mir Bahmanyar, Van Nuys 91406-5407
3880. Miranda Everett, Lake Isabella 93240-0616
3881. Miranda Leiva, Sherman Oaks 91423-2279
3882. miranda mendoza, Santa Rosa 95401-6124
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3890. Mitchel Saadi, San Jose 95128-1117
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3893. Miyuki Powell, Midway City 92655-1609
3894. MJ Murphy, Carlsbad 92009-2040
3895. M'Lou Christ, Santa Ana 92705-2826
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3897. Molly Huddleston, Santa Rosa 95402-1119
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3899. Monica Gallegos, Riverside 92503-3554
3900. Monica Rudman, Sacramento 95816-3344
3901. Monica Wiesener, Calabasas 91302-1076
3902. Monika Calef, Huntington Beach 92647-4240
3903. Morena Loomis, Goleta 93117-1302
3904. Morgan Campbell, Daly City 94015-4908
3905. Morgan Corviday, Eureka 95501-2242
3906. Morgan Kousser, Altadena 91001-3430
3907. morgan lewis, Simi Valley 93063-3336
3908. Mrs Joyce Raye, Salinas 93908-9336
3909. Ms Lilith, Ventura 93003-4929
3910. Musser IV, San Jose 95125-4610
3911. Mya Russell, Grass Valley 95945-8711
3912. Mya Shone, Vallejo 94591-4110
3913. Myrna Faulds, Millbrae 94030-2113
3914. Myrna Velasco, Canyon Country 91351-2721
3915. n gooch, Ridgecrest 93555-3609
3916. N Kaluza, El Sobrante 94803-3857
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3918. Nadia Haddad, Monterey Park 91754-3619
3919. Nadia Haddad, Monterey Park 91754-3622
3920. Nadine Larsen, Dana Point 92629
3921. Nadya Disend, Oakland 94608-2612
3922. Nadya Tichman, Oakland 94602-1929
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3924. Nagisa VanVliet, Livermore 94551-8938
3925. Naida Sperling, Palo Alto 94303-3731
3926. Namita Dalal, Los Altos 94022-4268
3927. Nan Matthews, Pacifica 94044-2407
3928. Nan Singh-Bowman, Ben Lomond 95005-9213
3929. Nance Wilson, Oakland 94611-1237
3930. Nancey Carter, Topaz 96133-9115
3931. Nanci Clifton, Oakland 94611-1833
3932. Nancy Abel, Santa Monica 90405-1541
3933. Nancy Adinolfe, Sacramento 95827-1025
3934. Nancy Barcellona, Los Angeles 90004-5312
3935. Nancy Beaney, Los Angeles 90066-5473
3936. Nancy Berman, Kensington 94707-1412
3937. nancy bohnet, Sausalito 94965-1449
3938. Nancy Borelli, Santa Rosa Valley 93012-9387
3939. Nancy Bukowksi, Carmichael 95608-5655
3940. Nancy Corona, Riverside 92504-2362
3941. Nancy Cronin, Sacramento 95833-2388
3942. Nancy Fomenko, San Jose 95135-2102
3943. Nancy Forbes, Rancho Palos Verdes 90275-4463
3944. Nancy Freemer, Lake Elsinore 92530-5612
3945. Nancy Gilbert, Grass Valley 95945-7956
3946. Nancy Grant, El Cerrito 94530-1652
3947. Nancy Hartman, Lafayette 94549-4210
3948. Nancy Havassy, Oakland 94611-2149
3949. Nancy Heck, Santa Maria 93454-6648
3950. Nancy Hiestand, Davis 95616-3523
3951. Nancy Hounshell, Modesto 95358-0019
3952. Nancy Jensen, San Diego 92103-3312
3953. Nancy Key, Palmdale 93551-5649
3954. Nancy Kubik, Novato 94949-5347
3955. Nancy Lilienthal, Los Angeles 90035-3107
3956. Nancy Martin, La Honda 94020-9738
3957. Nancy Oliver Flores, Esq, Valencia 91354-1838
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3962. Nancy Proto-Robinson, Carmel By The 93921
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3964. nancy reese, Westminster 92683-4143
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3966. Nancy Robinson, Ridgecrest 93555-3947
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3968. Nancy Saint John, San Diego 92111-4703
3969. nancy simon, Santa Barbara 93101-2352
3970. Nancy Willstatter, Santa Barbara 93105-2833
3971. Nanette Cronk, Truckee 96161-4923
3972. naomi sobo, San Diego 92103-1883
3973. Naomi Steinfeld, Long Beach 90815-3941
3974. Narayan Gopinathan, Berkeley 94705-2164
3975. Narayan Rajan, Los Altos 94024-4137
3976. Narcis Marshall, Malibu 90265-4011
3977. Natacha Lascano, Rocklin 95765-5480

3978. Natalia Aviles, Tarzana 91356-1158
3979. Natalia Swader, Torrance 90505-2255
3980. Natalie Ann Furlotte, Livermore 94550-4034
3981. Natalie Blasco, Anderson 96007-8901
3982. Natalie Dicostanzo, Eureka 95503-9533
3983. Natalie Kent, San Diego 92116-3344
3984. Natalie Price, San Francisco 94118-2185
3985. Natalie Wright, Santa Clara 95050-3262
3986. Natasha Arnoldi, Sherman Oaks 91411-3603
3987. Natasha Reeves, Monrovia 91016-4756
3988. Natasha Saravanja, San Francisco 94131-2013
3989. Natasha Zabriskie, San Leandro 94577-3131
3990. Nathan Bock, North Hollywood 91602-2714
3991. Nathan Coopwood, San Pedro 90731-3448
3992. Nathan Keller, San Diego 92117-4239
3993. Nathan Vogel, San Francisco 94117-3110
3994. Nathaniel Thomas, Brea 92821-4342
3995. Neal Cotter, Granada Hills 91344-1219
3996. Neal Mock, Truckee 96161-4925
3997. Neal Pardee, Los Angeles 90026-1112
3998. Neal Steiner, Los Angeles 90034-1841
3999. Ned Long, Los Osos 93402-4438
4000. Ned Reynolds, Solana Beach 92075-1550
4001. Neela Patel, Belmont 94002-1448
4002. NEIL WILSON, Alameda 94502-7011
4003. Neri Yabut, Novato 94947-4789
4004. Nerin Gonzalez, San Diego 92102-3041
4005. Nestor Mondok, Anaheim 92808-1909
4006. Neville Koch, La Mesa 91942-5210
4007. Nicholas Lenchner, Santa Rosa 95403-1543
4008. Nicholas Rulli, Los Angeles 90026-5644
4009. Nick Bell, Los Angeles 90068-3557
4010. nick jones, Richmond 94801-3436
4011. Nick Moidja, Gold River 95670-8108
4012. Nicki Mokhtari, San Jose 95123-2553
4013. Nickie Rousseau, Fort Bragg 95437-8282
4014. Nicole Amador, Sacramento 95818-3735
4015. Nicole Daspit, Sebastopol 95472-2460
4016. Nicole Echave, Ladera Ranch 92694-0711
4017. Nicole Fountain, Fremont 94536
4018. Nicole Fountain, Fremont 94536-4325
4019. Nicole Gaudenti, San Francisco 94121-2752
4020. Nicole Richards, Pacific Palisades 90272-2819
4021. Nicole Spagnola, Burbank 91506-1010
4022. nicole velasquez, Sacramento 95816-0803
4023. Nika RiqÃºerez, Grover Beach 93433
4024. Nikki Soich, Morro Bay 93442-1876
4025. Nikolaus Schneider, Lee Vining 93541-0032
4026. Nina Adel, San Diego 92131-2683
4027. Nina Bellak, Bolinas 94924
4028. Nina Minsky, Carpinteria 93013-3040
4029. Nina Miretsky, Sherman Oaks 91403-4515
4030. Nina Passariello, Chico 95928-8852
4031. Nina Utigaard, Richmond 94804
4032. Nishone Weymouth, Alameda 94501-1423
4033. NJ Carlile, Guadalupe 93434-1135
4034. Noah Evans, Mill Valley 94941-1933
4035. Noah Mercer, Los Angeles 90027-2918
4036. Noah Schillo, Sonora 95370-8586
4037. Noah Yougelson, Los Angeles 90066-4134
4038. Noel Desnoyer, Napa 94558-3320
4039. Noel Park, Rancho Palos Verdes 90275-4603
4040. Noelle Prince, San Diego 92111-3244
4041. Noreen Fulton, Pasadena 91104-2850
4042. Noreen Sullivan, Imperial Beach 91932-2231
4043. Noreen Weeden, San Francisco 94107-2325
4044. Norm Wilkinson, Whittier 90605-1122
4045. Norma J F Harrison, Berkeley 94702-1010
4046. Norman Gelbart, Berkeley 94702-1005
4047. Nurit Wilde, Studio City 91604
4048. Nuriya Janss, Redwood City 94063-4538
4049. Oliver Beqaj, Santa Monica 90404-4707
4050. Oliver Bock, Woodside 94062-4803
4051. Olivia Anderson, Long Beach 90802-5212
4052. Olivia Barrett, Los Angeles 90028-4968
4053. omar beqaj, Venice 90291-3957
4054. O'Neill Louchard, Visalia 93291-9713
4055. Ore Carmi, Berkeley 94702-1240
4056. P Mars, Walnut 91788-0253
4057. p mirfield, Stockton 95207-4405
4058. P Sandberg, Fort Bragg 95437-8503
4059. Pablo Herrero, Laguna Niguel 92677-3701
4060. Paige Macdonald, Huntington Beach 92646-3540
4061. Paige Ziehlermartin, Pasadena 91107-1304
4062. Pam Dillon, San Luis Obispo 93401-5420
4063. Pam Griffin, Camarillo 93012-5671
4064. Pam Johnson, San Jose 95119
4065. Pam Kozlowski, Truckee 96161-6908
4066. Pam Rasmussen, Los Altos Hills 94022-2564
4067. Pam Tanimura, Carmichael 95608-6609
4068. Pamela Bitterman, San Diego 92109-5212
4069. Pamela Burns, Walnut Creek 94596-4087
4070. Pamela Larue, Long Beach 90808-2417
4071. Pamela Lichtenwalner, Stinson Beach 94970
4072. Pamela Lin, Los Angeles 90019
4073. Pamela McAdoo, Truckee 96162-8278
4074. Pamela Merten, CA 90505
4075. Pamela Perryman, South Pasadena 91030-3423
4076. Pamela Sanchez, Shasta Lake 96019-0168
4077. Pamela Stewart, Clearlake Oaks 95423
4078. Pamela Wall, Lemon Grove 91945-1744
4079. Pamella Wood, San Luis Obispo 93405-1020
4080. paola accusani, Bishop 93514-3119
4081. Pari Wescott, Irvine 92604-2403
4082. Parrish Todd, Agoura Hills 91301-2534
4083. Pascale Macleod, San Francisco 94121-2507
4084. Pat Bryan, Lemon Grove 91945-2649
4085. Pat Cameron, OCEANSIDE 92057-1903
4086. Pat Carlone, San Geronimo 94963-0233
4087. Pat Casner, Mi Wuk Village 95346-1227

4088. Pat Davis, Woodland Hills 91364-1805
4089. Pat Dufau, San Clemente 92673-5669
4090. Pat Gilchrist, Fairfield 94534-4037
4091. pat gray, San Francisco 94118-1468
4092. Pat Hanscom, San Diego 92101-2547
4093. Pat Tobias, Los Angeles 90025-5924
4094. pat turney, Hayward 94542-1404
4095. Pat Yoder, Oceanside 92056-5423
4096. Patrciai Symkowick, Sacramento 95821-4131
4097. Patric Kearns, Sonoma 95476-3246
4098. Patrice Sena, Pasadena 91106-5344
4099. Patrice Woeppel, Oakland 94601-2135
4100. Patricia Bleha, Carlsbad 92009-7830
4101. Patricia Blevins, San Jose 95118-1808
4102. Patricia Bowen, Sebastopol 95472-2716
4103. Patricia Broemser, Sunnyvale 94087-3138
4104. Patricia Brutten, Del Mar 92014-2421
4105. Patricia Byrnes, Mill Valley 94941-3624
4106. Patricia Cachopo, Santa Clara 95050-4416
4107. Patricia Cohen, Toluca Lake 91602-2405
4108. Patricia Cole, San Francisco 94109-5818
4109. Patricia Dahlhoff, Atwater 95301-8371
4110. patricia Ellison-Overholt, Camarillo 93012-8587
4111. Patricia Fishtein, San Diego 92105-3548
4112. Patricia Gowder, Glendora 91741-3718
4113. Patricia Hacker, San Francisco 94121-1357
4114. Patricia Janes, Atascadero 93422-5542
4115. Patricia Jones, Berkeley 94707-1536
4116. Patricia K Little, Camarillo 93010-3002
4117. Patricia Kershaw, Clayton 94517-5050
4118. Patricia Kloss, Nipomo 93444-6666
4119. Patricia Law, San Diego 92102-1232
4120. Patricia Leonetti, Bakersfield 93306-7259
4121. Patricia Lewis, Santa Monica 90405-4608
4122. Patricia Lovelock, San Francisco 94109-0435
4123. Patricia Mann, Oakland 94611-2015
4124. Patricia Martindale, Martinez 94553-2738
4125. Patricia Masuda, Fountain Valley 92708-4608
4126. Patricia Mcveigh, Aptos 95003-3187
4127. Patricia Moreno, Goleta 93117-5821
4128. Patricia Nitsos, Westminster 92683-7315
4129. Patricia Porter, Sacramento 95820
4130. Patricia Savage, Mammoth Lakes 93546-0100
4131. Patricia Schmale, Corte Madera 94925-1515
4132. Patricia Scofield, Livermore 94550-5624
4133. Patricia Sharp, Grass Valley 95945-7212
4134. Patricia Summers, Simi Valley 93063-1070
4135. Patricia Tescher, Sacramento 95819-4046
4136. Patricia Weaver, Redway 95560-9709
4137. Patricia West, Long Beach 90814-2444
4138. Patricia Wiley, Ojai 93023-2814
4139. Patricia Winkle, Folsom 95630-8428
4140. Patricia Yeakley, Encinitas 92024-1740
4141. Patricia Zylius, Santa Cruz 95062-2428
4142. Patrick Barrows, San Diego 92106-2814
4143. Patrick Kelly, Victorville 92395-4966
4144. Patrick Manalio, Westlake Village 91361-2070
4145. Patrick McGinnis, Twain Harte 95383-0647
4146. Patrick Swift, Fresno 93710-8314
4147. Patrick Twomey, Oakland 94611-4924
4148. Patrik Rousselot, Fairfax 94930-2224
4149. Patsy Barba, Los Angeles 90026-5374
4150. Pattie Meade, San Clemente 92672-3628
4151. patty green, Carmichael 95608-6416
4152. Patty Grogan, Marina 93933-3556
4153. Patty Kim, San Jose 95120-5418
4154. Patty Weirich, Ramona 92065-6911
4155. Paul Adkins, Los Angeles 90020-1570
4156. Paul Andersen, Wildomar 92595-9775
4157. Paul Andrade, Santa Cruz 95060-2104
4158. Paul Antilla, Carmichael 95608-3913
4159. Paul Brandon, Cupertino 95014-2710
4160. Paul Cirulnick, La Jolla 92037-6147
4161. Paul Edwards, Mill Valley 94941-1369
4162. Paul Eklof, Petaluma 94952-2012
4163. Paul Eusey, Elk Grove 95758-1074
4164. Paul Felice, Long Beach 90815-2109
4165. Paul Grantham, San Diego 92101-1466
4166. Paul Greenberg, Cotati 94931-4272
4167. Paul Hennessy, Crescent City 95531-9326
4168. Paul Johnson, Santa Clara 95051-5701
4169. Paul Jokelson, Oakland 94606-1257
4170. Paul Judy, Van Nuys 91405-1547
4171. Paul Koehler, Oakland 94611-5825
4172. Paul LaBerge, Oakland 94608-3164
4173. Paul Leonard, Mill Valley 94941-2119
4174. PAUL LORD, Apple Valley 92307-5759
4175. paul macomber, San Anselmo 94939-1942
4176. paul mcintire, Laguna Hills 92656-3002
4177. Paul Nelson, Camarillo 93010-1027
4178. Paul Norup, Crescent City 95531-2710
4179. Paul P Soucek, Sherman Oaks 91401-5625
4180. Paul Rea, Newark 94560-1435
4181. Paul Runion, Ben Lomond 95005-9420
4182. Paul Sietsema, Los Angeles 90029-2105
4183. Paul Urquiaga, Vallejo 94591-7809
4184. Paul Vitagliano, Santa Monica 90403-1625
4185. Paul Welch, San Jose 95118-3902
4186. Paula Adams, Pasadena 91107
4187. Paula Adrian, Los Osos 93402-1855
4188. Paula Carrier, San Diego 92101
4189. Paula Clark, Arroyo Grande 93420-2102
4190. Paula DeFelice, Richmond 94803-2749
4191. Paula DiMuro, Petaluma 94952-2034
4192. Paula Duncan, Napa 94558-7002
4193. Paula Gonella, Rolling Hills Estates 90274-4113
4194. Paula gonzalez, Sherman Oaks 91401-5312
4195. Paula Hock, Lancaster 93534-1434
4196. Paula Hodgkiss, San Diego 92106-2449
4197. Paula Hollie, Laguna Woods 92637-8849

4198. Paula Jain, Nevada City 95959-2614
4199. Paula Johnson, Thousand Oaks 91360-5497
4200. Paula Ong, San Carlos 94070-4931
4201. Paula Pepin, San Clemente 92672-5814
4202. Paula Symonds, San Francisco 94114-3602
4203. Paula Tanksley, Sebastopol 95472-9220
4204. Paulette Schindele, San Marcos 92069-7501
4205. Pauline Bedford, Joshua Tree 92252-2754
4206. Pauline Brooks, Los Angeles 90039-2125
4207. pearl karon, Playa Del Rey 90293-8706
4208. Pearl Wheeler, Pasadena 91104-2453
4209. Pedro Candido, La Jolla 92037-7802
4210. Peggy Burns, Rowland Heights 91748-4718
4211. Peggy Cabrera, San Jose 95118-2834
4212. Peggy Goddard, La Jolla 92037-2808
4213. Peggy Jamieson, Placentia 92870-2135
4214. Peggy Leviton, Mckinleyville 95519-9435
4215. Peggy Loe, Magalia 95954-9540
4216. Peggy Lopipero-Langmo, San Francisco 94112
4217. Peggy Rebol, Cottonwood 96022-8501
4218. Peggy Richards-Pattie, Oceanside 92057-4916
4219. Peggy Stone, San Diego 92101-6736
4220. Peggy Young, Santa Cruz 95060-9706
4221. Pela Tomasello, Santa Cruz 95062-2543
4222. Penelope Baring, Aptos 95001-5114
4223. Penelope Holbrook, Berkeley 94703-1632
4224. Penelope Lynne, South Lake Tahoe 96150-4937
4225. Penelope Navone, Cloverdale 95425-5420
4226. Penelope Prochazka, Simi Valley 93063-1408
4227. Penny Hadfield, Santa Barbara 93105-4022
4228. Penny Luce, Santa Barbara 93111-1830
4229. Penny McKissick, Pleasant Hill 94523-2183
4230. Penny Sur, Redwood City 94062-1660
4231. Percy Hicks-Severn, Newbury Park 91320-5314
4232. Perry Fuehrer, Costa Mesa 92627-5553
4233. Perry Gx, Tustin 92780-7011
4234. Perry Padrta, Smartsville 95977-9754
4235. Perry Palmer, Fresno 93722-6378
4236. Pete Gang, Petaluma 94952-1703
4237. Pete Keay, Pleasant Hill 94523-5508
4238. Peter Altman, Davis 95616-3040
4239. Peter Anthony, Palm Springs 92264-7795
4240. Peter Block, Cupertino 95015-0453
4241. Peter Freedman, El Cerrito 94530-2575
4242. Peter Gaudette, Sunnyvale 94087-2455
4243. Peter Jardine, San Francisco 94115-2512
4244. Peter Jonas, Mount Shasta 96067-2745
4245. Peter Lee, San Francisco 94118-3556
4246. Peter Levine, Grass Valley 95945-4004
4247. Peter Linback, San Diego 92110-1208
4248. Peter P, Bakersfield 93306-2156
4249. Petrina Long, San Pedro 90732
4250. Phil Aldsworth, Napa 94558-5007
4251. Phil Hanneman, Oceanside 92056-6016
4252. Phil Hinkle, San Diego 92117-6548
4253. Phil Oberman Oberman, West Hills 91307-1829
4254. Phil Sherman, Sacramento 95811-7128
4255. Phil Wood, Citrus Hts 95621-5414
4256. Philip Chasmar, Coto de Caza 92679
4257. Philip Jupp, Rancho Santa Fe 92067
4258. Philip Lefcourt, Pasadena 91101-2465
4259. Philip Ohst, Oakland 94608-3716
4260. Philip Purpuri, Santa Cruz 95061
4261. Philip Simon, San Rafael 94912-9473
4262. Philip Snelling, Clearlake 95422-7906
4263. Phillip Hansen, Markleeville 96120-9547
4264. Phoebe Carpenter, Mission Viejo 92692-3239
4265. Phuong Nguyen, Milpitas 95035-3227
4266. Phyllis Bogartz, Tarzana 91335-6726
4267. Phyllis Butler, Menlo Park 94025
4268. Phyllis Chavez, Santa Monica 90405-5021
4269. Phyllis Ford, Martinez 94553-3603
4270. Phyllis Foster, Los Angeles 90046-4876
4271. Phyllis Hagmann, Rialto 92376-6622
4272. Phyllis Holliday, San Francisco 94102-1244
4273. Phyllis Lager, Livermore 94550-2342
4274. Pierre Del Prato, Sacramento 95831-2674
4275. Pierre Delong, Santa Barbara 93110-4036
4276. Pius Ng, Cupertino 95014-3554
4277. Pls cancel, Northridge 91325-2407
4278. Polly Savoie, Carlotta 95528-9641
4279. Pollyana Harmon, Torrance 90501-4107
4280. Prerna Jain, Los Altos 94024-6167
4281. Preston Vo, Livermore 94551-1039
4282. Priscilla Enderlin, Pismo Beach 93449-2817
4283. Qian Chen, Emeryville 94608-2421
4284. Qinghua Huang, Sunnyvale 94087-5476
4285. Quentin Hancock, Santa Cruz 95060-1201
4286. Querido Galdo, Oakland 94601-2733
4287. R Amari, Los Angeles 90025-3663
4288. R Levy, Santa Rosa 95409-5890
4289. R M Bear, Port Hueneme 93041-1909
4290. R Sharp, Alhambra dr 94002
4291. R Taylor, los angeles 90025-4027
4292. R Wells, Los Angeles 90020-2727
4293. Rachael Denny, Bradley 93426-9624
4294. Rachel Grainger Puryear, Hillsborough 94010
4295. Rachel Lockhart, Woodland Hills 91364-1610
4296. Rachel Rodriguez, Pasadena 91106-1938
4297. Rachelle Tuescher, Mill Valley 94941-2111
4298. Rae Ann Gustafson, Mill Valley 94941-3432
4299. RaeAnn Moldenhauer, Cupertino 95014-4122
4300. Raena Telles, Buena Park 90620-3534
4301. Raewyn Cummings, Oakland 94619-2703
4302. Ralph Bos, Sacramento 95825-3620
4303. Ralph Devoto, Kelseyville 95451-7050
4304. Ralph Lopez, Los Angeles 90012-5017
4305. Ralph Sanchez, Capitola 95010-0956
4306. Ralph Sinick, San Francisco 94118-4219
4307. Ramona coronado, Pasadena 91106-2019

4308. Ramsey Gregory, Elk Grove 95758-7315
4309. Randal MacDonald, Comptche 95427-0333
4310. Randall Boltz, San Diego 92111-6704
4311. Randall G, Berkeley 94703-2400
4312. Randall Woodbury, Sebastopol 95472
4313. Randell Caffejian, Fresno 93704-5445
4314. Randy Alberti, Temecula 92591-1862
4315. Randy Larson, Novato 94947-2882
4316. Randy Montesano, Martinez 94553-2426
4317. Randy Nelsen, Lancaster 93536-6442
4318. Randy Stevens, Roseville 95678-1104
4319. Randy Vaughn-Dotta, Fresno 93710-6413
4320. Raquel A, Redondo Beach 90278-2606
4321. Raven Davis-King, Orangevale 95662-5434
4322. Ray Knauss, Rancho Palos Verdes 90275-2455
4323. Ray Marc-Aurele, Poway 92064-2408
4324. Rayline Dean, Ridgecrest 93555-3622
4325. Raymond Fitzsimons, Alameda 94501-5236
4326. Raymond Marshall, Foresthill 95631-9201
4327. Raymond Morales, Azusa 91702-6273
4328. Rebecca Booth, San Diego 92110-1542
4329. Rebecca Casas, Watsonville 95076-3782
4330. Rebecca Egger, Berkeley 94705-2739
4331. Rebecca Gomez Zussin, Los Olivos 93441-0740
4332. Rebecca Gottowski, Paradise 95969-6676
4333. Rebecca Guinn, Placerville 95667-9698
4334. Rebecca Holzer, Huntington Beach 92646-6272
4335. Rebecca Jean Emigh, Los Angeles 90024-4558
4336. Rebecca Jensen, Mountain View 94043-4880
4337. Rebecca Koo, San Diego 92108-2630
4338. Rebecca McGrew, Altadena 91001-4841
4339. Rebecca Parks, Hayward 94544-7696
4340. Rebecca Roth, Santa Cruz 95062-2590
4341. Rebekah Myers, Claremont 91711-3452
4342. Rebekah Pickard, Berkeley 94702-1621
4343. Reese Holser, Oakland 94611-5913
4344. Reggie Odom, Northridge 91325-1905
4345. regina bressler, Wilmington 90744-1326
4346. Regina Flores, Lake Elsinore 92532-2508
4347. Reina Robinson, Castro Valley 94546-5533
4348. relf star, Montclair 91763-2959
4349. Rena Zaman-Zade, Escondido 92027-3408
4350. Renata Boyle, Palo Cedro 96073-9782
4351. Renate Dolin, Malibu 90265-5347
4352. Rene Huerta, Montclair 91763-3433
4353. rene Lambert, Berkeley 94703-2105
4354. Renee Boteilho, Los Angeles 90046-4276
4355. Renee Daley, Redondo Beach 90277-6627
4356. Renee Darner, San Francisco 94115-1717
4357. Renee Krueger, Pacific Grove 93950-5515
4358. Renee Locks, Mill Valley 94941-4051
4359. Renee McKenzie, Apple Valley 92308-5724
4360. Renee Robles, Garden Grove 92843-2741
4361. Rev. Alice Ann Glenn, Monterey 93940-6143
4362. Reva Damir, Modesto 95350-3903
4363. rex franklyn, Tiburon 94920-1325
4364. Rex Rysewyk, Temecula 92592-7108
4365. Rhiannon Gillespie, El Cerrito 94530-1503
4366. Rhoda Becker, Greenbrae 94904-2407
4367. rhoda howard, West Hills 91304-5228
4368. Rhonda Oxley, San Francisco 94122-3603
4369. Rhys Atkinson, San Rafael 94903-2625
4370. Ricardo Ferrer, Northridge 91325-3904
4371. Ricardo Gabaldon, Santa Maria 93455-5011
4372. Ricardo Hofer, Oakland 94618-1256
4373. RICARDO TRINIDAD, San Diego 92114-7729
4374. Ricco Bonelli, Redondo Beach 90277-6379
4375. Rich Agren, North Hollywood 91605-5744
4376. Rich C, Chula Vista 91911-4836
4377. Rich Hughes, San Francisco 94112-2036
4378. Rich Martini, San Francisco 94123-5143
4379. Rich Perez, Torrance 90510-4197
4380. Richard Barck, Coronado 92118-3352
4381. Richard Bay, Novato 94949-5345
4382. Richard Belding, Santa Rosa 95404-6801
4383. Richard Bernal, Galt 95632-2642
4384. Richard Birch, Carmel Valley 93924-9656
4385. richard byfield, Woodland 95695-5458
4386. Richard Cardella, Hydesville 95547-9416
4387. Richard Chamberlain, Concord 94518-3251
4388. Richard Desantis, Palm Desert 92260-6120
4389. Richard E Reed, Bakersfield 93308-3444
4390. Richard Engle, Winnetka 91306-4319
4391. Richard Falls, San Francisco 94132-2316
4392. Richard Ferry, San Jose 95112-1911
4393. Richard Haynes, Sebastopol 95472-5715
4394. Richard Heimanson, Sherman Oaks 91423-3476
4395. Richard Huss, Richmond 94804-5617
4396. Richard Jones, San Diego 92130-2463
4397. Richard L Cowart, San Luis Obispo 93405-1768
4398. Richard Lyman, Redwood City 94061-3663
4399. Richard Massery, Walnut Creek 94597-2955
4400. Richard Mercer, San Rafael 94901-4022
4401. Richard O'Connor, Walnut Creek 94598-4915
4402. Richard Perez, Los Angeles 90045-3816
4403. Richard Saunders, Oakland 94609-1124
4404. Richard Schwager, Santa Barbara 93105-2140
4405. Richard Siquig, Carmel Valley 93924-9404
4406. Richard Stearns, Soquel 95073-3014
4407. Richard Takagi, Fullerton 92831-2929
4408. Richard Thoele, Berkeley 94703-2033
4409. Richard Tietz, Lafayette 94549-5110
4410. Richard Valencia, South Pasadena 91030-3146
4411. Richard Whaley, Eureka 95503-8913
4412. Richard Wightman, Arcadia 91006-2501
4413. Richard Zoah-Henderson, Eureka 95503-6249
4414. Rick Boston, Santa Cruz 95062-4845
4415. Rick Edmondson, Danville 94526-3934
4416. Rick Kanter, Riverside 92501
4417. Rick Koury, Los Gatos 95032-1136

4418. Rick Posten, Los Angeles 90049-3046
4419. Rick Shreve, Weott 95571-0011
4420. Rick Sparks, Toluca Lake 91602-1002
4421. Rick Wilson, Oceanside 92054-2267
4422. Riley Racer, Sherman Oaks 91411-3826
4423. Rita Carlson, Eureka 95502-3753
4424. Rita Fisher, Los Gatos 95030-7509
4425. Rita Mccue, Oakland 94606-1322
4426. Rita McKissick, San Jose 95132-2202
4427. Rita Ohriner, Carlsbad 92009-1722
4428. Rita Santos-Oyama, Long Beach 90803
4429. RJ cooper, Lake Forest 92630-6201
4430. RJ Padiernos, Tustin 92780-6800
4431. rob christiansen, Laguna Beach 92651-3103
4432. Rob Firmin, Kensington 94708-1118
4433. Rob Gallinger, Los Angeles 90042-3228
4434. Rob Mulligan, Fountain Valley 92708-7251
4435. Rob Myers, ANAHEIM 92804
4436. Rob Yenney, Ventura 93004
4437. Robert Applebaum, San Jose 95135-1424
4438. Robert Berend, Fresno 93726-4439
4439. Robert Burk, Los Angeles 90024-2544
4440. Robert Callahan, Santa Cruz 95060-9784
4441. Robert Chacon, Beaumont 92223-3392
4442. Robert Chirpin, Northridge 91324-2906
4443. robert claesson, El Cajon 92020-1765
4444. Robert Clyde, Joshua Tree 92252-3126
4445. ROBERT COX, Fort Bragg 95437-2341
4446. Robert Cushman, Lotus 95651-9717
4447. Robert Danelski, Venice 90291-4973
4448. Robert Deering, Watsonville 95076-1353
4449. Robert DeGraff, San Luis Obispo 93401-5735
4450. Robert Dorenstreich, San Francisco 94109-5954
4451. Robert Drey, Monterey Park 91754-4708
4452. Robert Elder, Los Angeles 90027-1308
4453. Robert Fromer, Palmdale 93550-4214
4454. Robert Glover, Fresno 93726-2313
4455. Robert Godes, Berkeley 94705-2517
4456. Robert Gondell, Woodacre 94973-0172
4457. Robert Gore, Los Gatos 95032-2516
4458. Robert Gustafson, National City 91950-2053
4459. Robert Hall, Oakland 94618-2123
4460. Robert Harrison, Forestville 95436-9694
4461. Robert Hofer, Carson 90746-1159
4462. Robert Hyodo, Sunnyvale 94087-1581
4463. Robert Johnson, El Segundo 90245-3259
4464. Robert Johnson, Placerville 95667-4660
4465. Robert Jump, Ukiah 95482-6642
4466. Robert Keller, San Diego 92119-1403
4467. Robert Kornet, Simi Valley 93065-3901
4468. Robert Kurz, Laguna Niguel 92677-2343
4469. Robert Kvaas, Goleta 93117-1623
4470. Robert L Oman, Sylmar 91342-1339
4471. Robert Lindey, Rancho Cordova 95670-5624
4472. Robert Lonnquist, San Diego 92128-2956
4473. Robert Mayer, San Francisco 94131-2640
4474. Robert McCombs, Bayside 95524-9333
4475. Robert Mcdonnell, Westminster 92683-7844
4476. Robert Meier, Los Angeles 90042-2104
4477. robert meyer, San Jose 95111-1805
4478. Robert Mize, Inyokern 93527-0021
4479. ROBERT MORGAN, San Francisco 94114-3131
4480. Robert Moriarty, Portola Valley 94028-7427
4481. Robert Moss, Palo Alto 94306-3136
4482. robert paton, Inverness 94937-0531
4483. robert petersen, Salinas 93908-1205
4484. Robert Petitpas, Guerneville 95446-9529
4485. Robert Phillips, Simi Valley 93063-3236
4486. robert raven, Novato 94945-1686
4487. Robert Reed, Laguna Beach 92651-1870
4488. Robert Rhein, San Diego 92124-1219
4489. Robert Sargent, Torrance 90502-3023
4490. Robert Seltzer, Malibu 90265-5630
4491. Robert Slavik, San Diego 92120-4808
4492. Robert Smith, Van Nuys 91409
4493. Robert SooHoo, Sacramento 95818-3949
4494. Robert Sullivan, MD, Sacramento 95816-3426
4495. robert t bogart, San Diego 92129-3022
4496. Robert Taine, San Francisco 94131-2554
4497. Robert Taylor, Clearlake 95422-9173
4498. Robert Tran, Milpitas 95035-8649
4499. Robert Wallace, Whittier 90602-2547
4500. Robert Wedemeyer, Palo Alto 94301-2906
4501. Robert Whitehead, Sacramento 95822-5143
4502. Roberta Bristol, Capitola 95010-2303
4503. Roberta Heist, Fort Bragg 95437-7743
4504. Roberta LaFrance, San Leandro 94579-1958
4505. Roberta Landers, Redwood City 94061-3686
4506. Roberta Morrow-Jones, Fort Bragg 95437-9207
4507. Roberta Orlando, San Francisco 94108-3194
4508. Roberta Reed, Huntington Beach 92648-4411
4509. Roberta Schear, Oakland 94618-1730
4510. Roberta Smith, Hemet 92543-8114
4511. Roberta Stern, Oakland 94618-1532
4512. Roberta Thompson-Hopkins, Anaheim 92802
4513. Robin Graham, San Francisco 94121-1004
4514. Robin Karp, San Diego 92106-1977
4515. Robin Lande, Los Angeles 90036-2542
4516. Robin Lane, San Diego 92126-1152
4517. Robin Masciocchi, Saratoga 95070-6296
4518. Robin Mulligan, Fountain Valley 92708-7251
4519. Robin Polse, Capitola 95010-1728
4520. Robin Pratt, Berkeley 94702-1761
4521. Robin Reinhart, San Diego 92104-4907
4522. Robin Russell, Beverly Hills 90210-1612
4523. Robin Schoenfeld, Tarzana 91356-5114
4524. Robin Steudle, Laguna Woods 92637-2765
4525. Robin West, Atherton 94027-4058
4526. Robyn Miles, San Francisco 94110-5403
4527. Robyn Raymer, Albany 94706-2121

4528. Rochelle La Frinere, San Diego 92114-6723
4529. Rocio Miranda, Oakland 94619-1833
4530. Rodney Hill, Grass Valley 95949-8333
4531. rody stains, alturas 96101
4532. Roger Adams, Ventura 93001-3519
4533. Roger Cook, Bakersfield 93312-6244
4534. Roger Gloss, Rancho Santa Margarita 92688
4535. Roger Harrell, Hermosa Beach 90254-2617
4536. Roger Hull, Torrance 90504-1733
4537. Roger Lebow, Sierra Madre 91024-2053
4538. Roger Reading, Huntington Beach 92649-4921
4539. Roger Robles, Petaluma 94954-5627
4540. Roger Runnoe, Oakland 94611-2039
4541. Roger Sadler, Highland 92346-5843
4542. Roger Seapy, Los Alamitos 90720-4153
4543. Roger Steel, Chico 95928-8201
4544. Roger Taylor, Sausalito 94965-1819
4545. Roger Vortman, Santa Cruz 95060-6329
4546. Rogers Turrentine, Oceanside 92054-3271
4547. Roland Leong, Pleasant Hill 94523-4235
4548. Roland Press, Redondo Beach 90278-2019
4549. Roman Anton, San Francisco 94158
4550. Ron Cachopo, Santa Clara 95051-3842
4551. Ron DeStefano, Mill Valley 94941-3434
4552. Ron Fransz, Hermosa Beach 90254-3454
4553. Ron Goldman, Los Altos 94024-6902
4554. Ron Jacob, San Jose 95117-2501
4555. Ron Kresch, Martinez 94553-6217
4556. Ron Melin, Trinidad 95570-9673
4557. Ron Metheny, Cardiff By The Sea 92007
4558. Ron Price, Ontario 91762-4311
4559. Ron Vogel, San Jose 95131-2402
4560. Ronald & June Bonn, San Diego 92124-3424
4561. Ronald Blond, Rch Palos Vrd 90275-6606
4562. Ronald Bogin, El Cerrito 94530-1424
4563. Ronald Cheng, San Jose 95112-3668
4564. Ronald Gothberg, Long Beach 90815-3026
4565. Ronald Lukasiewicz, Carlsbad 92011-3425
4566. Ronald Partridge, Simi Valley 93063-6409
4567. Ronald Rediger, Newhall 91321-2406
4568. Ronald Trost, Winchester 92596-8259
4569. Ronen Hartfeld, San Francisco 94117-3334
4570. Roni Depue, Fremont 94538-1030
4571. Rory Alden, Berkeley 94704-3130
4572. rosa Lucas, Palm Desert 92260-2665
4573. Rosalie Salvato, Burbank 91506-3318
4574. Rosalind Bresnahan, San Bernardino 92405-2318
4575. Rosalind Milliken, Indio 92203-9778
4576. Rosalyn Christianson, Davis 95616-2915
4577. Rosalyn Rivkin, Berkeley 94708-1232
4578. Rose An, Arcadia 91007
4579. Rose Chapman, San Rafael 94903
4580. Rose Geddes, Studio City 91604-1526
4581. Rose Henderson, Los Angeles 90044-2419
4582. Rose Marie Jacobs, Davenport 95017-9708
4583. Rose Messina, Ventura 93001-2427
4584. rose shuck, San Francisco 94114-3146
4585. Rose Vierling, San Anselmo 94960-2815
4586. Rosemary Kimber, Berkeley 94705-2042
4587. Rosemary Meert, Foster City 94404-3562
4588. Rosemary Silva, San Diego 92105-3508
4589. Rosie Keller, Kenwood 95452
4590. Roslyn Jones, Riverside 92506-5365
4591. Roslyn Raney, Menlo Park 94025-1843
4592. Ross Stromberg, Healdsburg 95448-9790
4593. ROVEDA Kaarina, Beverly Hills 90210
4594. Rowena Carlson, San Diego 92106-1842
4595. Rowena Finegan, Sausalito 94965-2146
4596. Roxanna Sullivan, La Mesa 91941-6340
4597. Roxanne Navarro, Thousand Oaks 91362-3022
4598. Roxanne Navarro, Thousand Oaks 91362-3067
4599. Roy Campanella II, Beverly Hills 90211-2811
4600. Roy Childs, Stockton 95219-6515
4601. roy rosenblatt, Sherman Oaks 91403-5053
4602. Roz Gayler, Rancho Mirage 92270-2532
4603. Roz Goldstein, Greenbrae 94904-1106
4604. Rozanne Miller, San Diego 92110-5180
4605. Ruben Cuevas, Altadena 91001-2414
4606. Ruben Willis, Stanton 90680-1813
4607. Ruben, Carol Saenz, Riverside 92504-5650
4608. Rubina Khilnani, Redwood City 94063-5516
4609. Ruby Tyus, La Mesa 91942-8199
4610. Rudy Stefenel, Milpitas 95035-2533
4611. Rudy Zeller, Berkeley 94702-1127
4612. Rueenfang Wang, El Dorado Hls 95762-5428
4613. Russell Sperry, Ventura 93003-0218
4614. Russell Symonds, Costa Mesa 92627-2268
4615. Russell Tunder, Woodacre 94973-0882
4616. Ruth Blackman, Los Angeles 90094-3000
4617. Ruth Eileen Leatherman, San Rafael 94903-1130
4618. Ruth Finkelstein, Santa Barbara 93111-1510
4619. Ruth Levy, Santa Rosa 95409-5890
4620. ruth sinfuego, Palm Springs 92263-4872
4621. Ruth Smiler, Alameda 94501-3223
4622. Ruth Stoner Muzzin, Montara 94037-0761
4623. Ruth Valdez, Aptos 95001-2142
4624. Ruthanne Hartman, La Quinta 92247-0867
4625. Ryan Acebo, Oakland 94602-3444
4626. Ryan Davis, Burbank 91502
4627. Ryan Koons, Los Angeles 90034-6904
4628. Ryan McKenzie, Apple Valley 92308-5724
4629. Ryan Moore, Santa Barbara 93105-3448
4630. Ryan Plume, Panorama City 91402-4059
4631. Ryan W , Fontana 92336-0148
4632. S Bennin, Redondo beach 90277
4633. S Feiven-Alleston, Los Gatos 95032-1210
4634. S Jones, Huntington Beach 92605-3862
4635. S Nico, Los Angeles 90019-3826
4636. S Thompson, Los Angeles 90026-1425
4637. S Zonia, Beverly Hills 90210

4638. Sabrina Elizondo, Santa Monica 90404-7108
4639. Sabrina Kemeny, Los Angeles 90027-1365
4640. Sabrina Sarne, Danville 94526-5132
4641. Sabrina Wolby, Long Beach 90814-1156
4642. Sally Allen, Citrus Heights 95621-7330
4643. Sally Arnold, Santa Cruz 95060
4644. Sally Arscott, LOS ANGELES 90065
4645. Sally Arscott, Los Angeles 90065-3413
4646. Sally Driscoll, Laguna Woods 92637-0305
4647. Sally Haberlin, Laguna Niguel 92677-7402
4648. Sally Harman, San Francisco 94102-3256
4649. Sally Madigan, Meadow Vista 95722-9575
4650. Sally Nelson, Temecula 92591-2033
4651. Sally Smith, Sacramento 95841-3013
4652. Sally Stone, Calimesa 92320-1706
4653. Sam Madison-Jammal, San Diego 92104-4936
4654. Sam Monkarsh, Los Angeles 90021-2300
4655. Sam Stephens, Orange 92869-4377
4656. Samantha Beumaher, Lakeside 92040-5000
4657. Samantha Honowitz, Los Angeles 90045-1825
4658. Samantha Knight, Vacaville 95687-6137
4659. Sammuel Licea, Lemon Grove 91945-2739
4660. Samuel Durkin, Fairfield 94534-7400
4661. Samuel Forest, San Diego 92103-4803
4662. Sandi Covell, San Francisco 94112-1401
4663. Sandra A McLaughlin, Oceanside 92057-7013
4664. Sandra Arthur, Camarillo 93012-6904
4665. Sandra Blackburn, La Puente 91744-3517
4666. Sandra Briggs, Riverside 92506-5124
4667. Sandra Buck-Moyer, Atascadero 93422-6128
4668. sandra butler, Los Angeles 90045-2753
4669. Sandra Christopher, Burbank 91505-1856
4670. Sandra Cope, Irvine 92612-8621
4671. Sandra Fernandez, Los Angeles 90004-2532
4672. Sandra Gamble, Ridgecrest 93555-5118
4673. Sandra Gather, Roseville 95747-4606
4674. Sandra Hayden, San Jose 95112-7422
4675. Sandra K Legan, Brentwood 94513-6356
4676. Sandra McPherson, Davis 95616-5918
4677. sandra neveras, Royal Oaks 95076-9138
4678. sandra schachter, Carmel Valley 93924-9618
4679. Sandra Schlesinger, Sausalito 94965-1439
4680. Sandra Stauffacher, Mission Viejo 92692-3505
4681. Sandra Taylor, Paradise 95969-5760
4682. Sandra Wilson, Clayton 94517-9767
4683. Sandra Zwemke, Los Gatos 95033-8514
4684. Sandy D'Annunzio, Piedmont 94611-3909
4685. Sandy Funk, El Segundo 90245-4814
4686. Sandy Kasper, Hemet 92544-5019
4687. Sandy Paganucci, Santa Rosa 95404-1764
4688. Sandy Parbury, Concord 94518-4106
4689. Sandy Parker, Yorkville 95494-9204
4690. Sandy Vernon, Visalia 93292-1457
4691. Sandy Young, Huntington Beach 92646-3419
4692. Sandy Zelasko, Valley Center 92082-7635
4693. Santana Cantu, Redding 96003-4335
4694. Sara Compean, Chino 91710-2639
4695. Sara David-Feyh, Ventura 93003-7349
4696. Sara Fogan, Valencia 91385-0552
4697. Sara Fung, Santa Rosa 95405
4698. sara golden, San Diego 92105-5624
4699. Sara Hayes, Long Beach 90814-2369
4700. Sara Hayes, Long Beach 90814-7531
4701. Sara Katz, Manhattan Beach 90266-4838
4702. Sara Kay Emerson, 29 Palms 92277
4703. Sara Niccolls, Larkspur 94977-0524
4704. Sara Rockabrand, Goleta 93117-6214
4705. Sara Smith, San Luis Obispo 93401-2621
4706. Sara Tanke, Menlo Park 94025-3473
4707. Sara Templeton, San Francisco 94112-2459
4708. Sara Williams, Reseda 91335-6429
4709. Sara Woodburn, Santa Barbara 93101-4916
4710. Sarah Bellem, Felton 95018-9432
4711. Sarah Bender, Encinitas 92024-3052
4712. Sarah Brady, Los Angeles 90026-2906
4713. Sarah Brandt, Redwood City 94063-1554
4714. Sarah BURNS, Valley Glen 91401-3033
4715. Sarah Cahill, Berkeley 94705-2305
4716. Sarah Dorrance, San Francisco 94110-3333
4717. Sarah Dupree, Carlsbad 92009-3035
4718. Sarah Friedman, Downey 90241-4379
4719. Sarah Hearon, Santa Barbara 93103-1933
4720. Sarah Kales, Orange 92868-1738
4721. Sarah Kass, Mill Valley 94941-1549
4722. Sarah Letoile, San Francisco 94129-2815
4723. Sarah Simpson, Los Gatos 95033-9409
4724. Sarah Smith, Rancho Santa Margarita 92688-
4725. Sarah Sparks, Nevada City 95959-8559
4726. sarah stevens, Martinez 94553-3592
4727. Sarah Valentine, Saratoga 95070
4728. Sarah Yang, Long Beach 90813-3259
4729. Saran Kirschbaum, Los Angeles 90035-4110
4730. Sarosh Patel, Sunnyvale 94087-4610
4731. Satish Kandisetty, Sacramento 95829-9573
4732. Saul Hernandez, San Jose 95110-3013
4733. Sauw Ng, Irvine 92623-9307
4734. Savannah Blackwell, San Francisco 94117-3735
4735. Schuyler Kent, Los Angeles 90020-4731
4736. Scott Amundson, Oakland 94602-4006
4737. Scott Barlow, Sunnyvale 94087-4456
4738. Scott Bravmann, San Francisco 94115-4207
4739. Scott Burns, Venice 90291-4619
4740. Scott Clements, Davis 95616-2168
4741. Scott Coahran, Los Banos 93635-4055
4742. Scott Dunn, Santa Cruz 95060-4434
4743. Scott Gabel, Aliso Viejo 92656-1800
4744. Scott Gerow, San Leandro 94577-2421
4745. Scott Jung, South Pasadena 91030-4134
4746. Scott Kinaman, Castro Valley 94546-1402
4747. Scott Lorigan, Elk Grove 95624-2015

4748. Scott Mason, Tarzana 91356-1326
4749. Scott Miller, Oakland 94608-2810
4750. Scott Morrison, Oakland 94611-2703
4751. Scott Schlachter, San Jose 95118-2110
4752. Scott Shulimson, Scotts Valley 95066
4753. Scott Smith, Corona 92879
4754. Scott Sveinson, Woodland 95695-6813
4755. Sean Bishop, San Diego 92116-2204
4756. Sean Cosgrave, Victoria 23400
4757. Sean Curtice, San Diego 92109-1325
4758. Sean Egan, Campo 91906-3169
4759. Sean Lagonegro, Burbank 91501
4760. Sean Wayland, Rohnert Park 94928-1879
4761. Senta Raper, Santa Paula 93060-2435
4762. Sepi Yagoobian, Esq, West Hollywood 90069-
4763. Seren Bradshaw, Westwood 96137
4764. Sergi Goldman-Hull, Oakland 94601-3823
4765. Sets Furuike, Summerland 93067
4766. Severita Trujillo, San Jose 95128-1107
4767. Severita` Trujillo, San Jose 95128-1107
4768. Seychelle Cannes, Newport Beach 92660-6147
4769. Sha Davies, Redding 96001
4770. Shahin Rad, Laguna Niguel 92607-6573
4771. Shahrokh Mirjahangir, Huntington Beach 92646-
4772. Shana Garcia, San Dimas 91773-7115
4773. Shandon Schmeiske, Applegate 95703-0676
4774. Shane Coburn, Los Angeles 90066-4801
4775. Shane Yellin, Carlsbad 92008-4218
4776. Shani Casella, Oxnard 93035-1060
4777. Shani Murray, Placentia 92870-2102
4778. Shannon Brown-Stayer, Gualala 95445-8705
4779. Shannon Flynn, Temecula 92592-2423
4780. Shannon Healey, San Carlos 94070-2334
4781. Shannon Littrell, Carlsbad 92008-1888
4782. Shannon Patty, Riverside 92509-6277
4783. Shannon Schneble, San Francisco 94110-5710
4784. Shanovia Escoe, La Canada Flt 91012-5231
4785. shanovia 'navee' escoe, La Canada Flt 91012
4786. Sharan Magnuson, Thousand Oaks 91362-4929
4787. Shari Amos, Sacramento 95815-1531
4788. Shari Canete, San Diego 92128-6254
4789. Shari Forbes, Redlands 92374-6276
4790. Sharla Dashew, San Francisco 94131-3129
4791. Sharon Afamson, Roseville 95747-7297
4792. Sharon archibald, Fairfield 94533-7085
4793. Sharon Brogan, Bakersfield 93304-1351
4794. Sharon Byers, Downey 90242-4831
4795. Sharon Camhi, San Francisco 94121
4796. Sharon Feissel, Santa Rosa 95409-4358
4797. Sharon Fitzgerald, Novato 94945-3284
4798. Sharon Ford, Orange 92866-1513
4799. Sharon Greco, Palm Springs 92262-2945
4800. Sharon Griffin, San Diego 92110-1225
4801. Sharon Hafner, Eureka 95503-9773
4802. Sharon Hull, Santa Cruz 95062-2857
4803. Sharon Kaplan, Santa Cruz 95060-4304
4804. Sharon Kocher, Sebastopol 95472-6411
4805. sharon lacy, Sebastopol 95472-4261
4806. Sharon Lieberman, Annapolis 95412-9752
4807. Sharon Lombard, Redondo Beach 90277-3407
4808. sharon mulkey, Oceano 93445-8961
4809. Sharon Nicodemus, Sacramento 95821-5642
4810. Sharon Rodrigues, Fremont 94539-3738
4811. Sharon Rollins, Bellflower 90706-7035
4812. Sharon Scull, Pasadena 91103-1141
4813. Sharon Steuer, San Francisco 94110
4814. Sharon Sullivan, South Lake Tahoe 96150-3059
4815. Sharon Turney, Hayward 94542-1404
4816. Sharon Tuttle, Arcata 95521-9699
4817. Sharon Walsh, Lotus 95651
4818. Sharon Wolfe, Oakland 94607-2454
4819. Sharyl Swink, Granada Hills 91344-4805
4820. Shaula Walko, Hemet 92544-9294
4821. Shaun Mulhall, Rocklin 95765-5419
4822. shawn heiser, Daly City 94015-4630
4823. Shawn Johnson, Encinitas 92024-4552
4824. Shawn Jones-Bunn, Avila Beach 93424
4825. Shawn Lindahl, San Francisco 94131-2739
4826. Shawn Robertson, Oakland 94619-3020
4827. Shawnis Tinker, Redwood City 94061-1913
4828. sheila blake, Pismo Beach 93449-2439
4829. Sheila Carnegie, San Rafael 94901-2127
4830. Sheila Desmond, Cameron Park 95682-9130
4831. Sheila Martinez, Santa Maria 93455-1687
4832. sheila mickelson, Westchester 90045-1465
4833. Sheila Satin, Oakland 94618-1800
4834. Sheila Silan, Somerset 95684-9280
4835. Sheila Willens, Los Angeles 90046-1235
4836. Sheila Wolff, Hemet 92543-6823
4837. Shelby Kinney-Lang, Irvine 92617-4355
4838. Sheldon Kasdan, Los Angeles 90035-3217
4839. Shellee Davis, Cotati 94931-9629
4840. Shelley Snow, Paso Robles 93446-2821
4841. Shelley Strohm, Los Angeles 90025-3087
4842. Shellie Vermeer, Laguna Hills 92653-4481
4843. Shereen Hawkins, Huntington Beach 92648-1423
4844. Sheri Fogarty, Encinitas 92024-5603
4845. Sheri Hill, Santa Maria 93458
4846. Sheri Watson, Roseville 95661-3674
4847. Sherman Lewis, Hayward 94542-1616
4848. Sherra Picketts, San Francisco 94117-2520
4849. Sherrie Lee, Covelo 95428-9741
4850. sherry breitigam, Yountville 94599-3052
4851. sherry conable, Santa Cruz 95060-2734
4852. Sherry Ortega, Mariposa 95338-8536
4853. Sherry Scorer, Los Angeles 90046-2849
4854. Sherry Vatter, Los Angeles 90034-8105
4855. Sherryl Beamon, Oakland 94605-4824
4856. Sherwin Chew, Oakland 94610-2214
4857. Sheryl Dunn, San Diego 92128-4079

4858. Sheryl Hamblin, Santa Ana 92704-7076
4859. Sheryl Peters, Scotts Valley 95066-2645
4860. shianna hardy, Barstow 92311-2735
4861. Shiela Cockshott, Belmont 94002-3019
4862. Shireen Nickel, Weed 96094-2582
4863. Shirley Baird, Atascadero 93422-6833
4864. Shirley Cofresi, Applegate 95703-0468
4865. Shirley Drush, JAMESTOWN 95327
4866. Shirley Harris, Upland 91784-2006
4867. Shirley Harris, Willits 95490-8536
4868. Shirley Jensen, Santa Maria 93454-5304
4869. Shirley Le Garde, Pacoima 91331-7605
4870. Shirley Maclean, Santee 92071-3100
4871. Shirley McNeal, Berkeley 94703-1110
4872. Shirley Mercado, Concord 94518-1826
4873. Shirley Sheffield, Oakland 94601-2007
4874. Shirley Stroup, Los Osos 93402-6057
4875. Shirley Wildanger, Roseville 95747-5827
4876. Shondeya Betari, Santa Cruz 95060-6039
4877. Shoshannah Stern, Los Angeles 90068-2168
4878. Siamak Vossoughi, San Francisco 94115-2138
4879. Siena Watson, San Jose 95124-4933
4880. Silva Harr, Concord 94521-2205
4881. Silver Hartman, Tahoma 96142
4882. Silvia Newhall, Chico 95926-2914
4883. Simone Alves, Hermosa Beach 90254-0287
4884. Simone Haslam, Petaluma 94952-9542
4885. simone Siebert, Cardiff 92007-2002
4886. Singer, Oakland 94607
4887. Siobhan Field, Oakland 94611-4869
4888. Sister Gloriamarie Amalfitano, San Diego 92111
4889. Sivan Siman-Tov, Sherman Oaks 91403-5631
4890. Skot McDaniel, Novato 94947
4891. Skye Peace, Sherman Oaks 91403-2021
4892. Smiley Simental, Rialto 92376-7241
4893. Socrates Calderon, Spring Valley 91977-4723
4894. sofia Okolowicz, Temecula 92592-9686
4895. Sondra Boes, Campbell 95008-5123
4896. Sondra Cummings, Ripon 95366-2630
4897. Sonia Chavez, Canoga Park 91303-1127
4898. Sonia Lotfabadi, Glendale 91208-1664
4899. Sonia Moscardon, San Francisco 94112-2233
4900. Sonia Nuño, Coachella 92236-6824
4901. Sonja DeRose, Foresthill 95631-0279
4902. Sonja Malmuth, Santa Ynez 93460-9675
4903. Sonny Chen, San Gabriel 91776-1890
4904. Sophia Pelafigue, Arcata 95521-4803
4905. Sophia Smith, San Jose 95127-1319
4906. Soraya Dosaj, Valley Glen 91401-2429
4907. Stacey Han, Oakland 94610-1107
4908. Stacey McDonald, Thousand Oaks 91361-5004
4909. Stacey Rohrbaugh, Willits 95490-8722
4910. Stacey Torigian, Fresno 93704-6027
4911. Stacy Cornelius, Laguna Beach 92651-1846
4912. Stacy Hall, San Diego 92104-2926
4913. Stacy Rouse, Malibu 90265-4754
4914. Stacy Thompson, Rancho Cucamonga 91701
4915. Stan Fitzgerald, San Jose 95135-2129
4916. Stanley Stefancic, San Rafael 94901-1748
4917. Stefanie Kaku, Carmel 93922-0554
4918. Steffanie Gee, Los Angeles 90064-2484
4919. Stella Smith, Norwalk 90650-4924
4920. Stephan Silen, San Anselmo 94960-1134
4921. Stephanie Beezley, Livermore 94551-6726
4922. STEPHANIE CALOIA, Oakland 94612-3101
4923. Stephanie Chen, Gardena 90247-2922
4924. Stephanie Cheng, San Francisco 94158-2305
4925. Stephanie Darling, San Francisco 94133-3910
4926. Stephanie davis mcwilliams, Milpitas 95035-5206
4927. Stephanie Fazzare, Placentia 92870-6445
4928. Stephanie Gale, Van Nuys 91401
4929. Stephanie Greenwald, Long Beach 90808-1435
4930. Stephanie Herron, Fair Oaks 95628-3817
4931. Stephanie Hillman, Arcata 95518-4166
4932. Stephanie Nelson, Victorville 92392-8637
4933. Stephanie Nunez, Van Nuys 91405-3142
4934. Stephanie Reader, Los Altos 94024-4028
4935. Stephanie Rexing, San Francisco 94109-7011
4936. Stephanie Richards, Los Angeles 90036-5218
4937. Stephanie Swain, Santa Rosa 95404-8805
4938. Stephen Andersen, San Mateo 94404-2052
4939. Stephen Bohac, Twain Harte 95383-1730
4940. Stephen Donahue, Carmel 93923-9332
4941. Stephen Fitch, Thousand Oaks 91362-2051
4942. Stephen Fugita, San Jose 95136-1434
4943. Stephen Hams, Los Altos 94022-2220
4944. Stephen Hendricks, Kelseyville 95451-7072
4945. Stephen Hufstader, El Sobrante 94803-1142
4946. Stephen Julich, Berkeley 94702-1002
4947. stephen pucci, Richmond 94804-7478
4948. Stephen Rosenblum, Palo Alto 94301-3939
4949. Stephen Sharnoff, Berkeley 94708-1602
4950. Stephen Snyder, Ukiah 95482-5634
4951. Stephen Stockman, Cathedral City 92234-4042
4952. stephen Yelich, Arcadia 91006-1913
4953. Stevan Bosanac, Petaluma 94952-7504
4954. Steve Baker, Foster City 94404
4955. Steve Bianchi, Newcastle 95658-9302
4956. Steve Bollock, Mount Shasta 96067-9606
4957. Steve Brown, Moss Beach 94038-9761
4958. Steve Burtch, Ventura 93001-3311
4959. Steve Cohen, Valencia 91354-1819
4960. Steve Crase, Antioch 94509-1843
4961. Steve Eklund, Salinas 93901-1337
4962. Steve Finnegan, Sebastopol 95472-5757
4963. Steve Fleming, Gualala 95445
4964. Steve Hanlon, Los Angeles 90049-2336
4965. Steve Iverson, Newport Beach 92660-7330
4966. Steve Johnson, San Rafael 94903-3318
4967. Steve Linton, San Ramon 94583-3311

4968. Steve Ozoa, Milpitas 95035-3170
4969. Steve Sato, Los Angeles 90042-5108
4970. Steve Sketo, Bakersfield 93312-5144
4971. Steve Smith, Santa Barbara 93101-4929
4972. Steve Sugarman, Malibu 90265-0923
4973. Steve Swihart, Walnut Creek 94595-1635
4974. Steve Walsh, Mill Valley 94941-1803
4975. Steve Walters, San Diego 92117-1111
4976. Steve Wexler, Camarillo 93010-6631
4977. Steve Wittig, Roseville 95678-6405
4978. Steve Wright, Sunnyvale 94089-5847
4979. Steve Zera, Vista 92081-5477
4980. SteveLoe Loe, Yucaipa 92399-2337
4981. Steven Berman, Berkeley 94703-1663
4982. Steven Collins, San Francisco 94107-5526
4983. Steven Cook, Big Bear Lake 92315-3037
4984. Steven Cruz, San Jose 95126-4821
4985. Steven Dungan, Lodi 95242-9186
4986. Steven Eliscu, Palo Alto 94306-3144
4987. Steven England, San Ramon 94582-5060
4988. Steven Glynn, San Francisco 94102-1704
4989. Steven Hernandez, Long Beach 90802-3640
4990. Steven Hibshman, Foster City 94404-2751
4991. Steven Korson, Riverside 92503-4264
4992. Steven Lamers, San Bernardino 92404-3015
4993. Steven Millard, Grass Valley 95945-9015
4994. Steven Nielsen, Santa Rosa 95403-1594
4995. Steven Plank, San Miguel 93451-0085
4996. Steven Roesch, Fresno 93703-1729
4997. Steven Schlam, San Diego 92104-4145
4998. Steven Smith, Atascadero 93422
4999. Steven Twohy, San Jose 95139-1143
5000. Steven Verschoor, Newbury Park 91320-2836
5001. Steven Wallis, Carnelian Bay 96140
5002. Steven Wallis, Carnelian Bay 96140-0164
5003. Steviann Yanowitz, Van Nuys 91406-6219
5004. Stoney Hooker, San Diego 92121-1522
5005. Sudeep Johnson, Menlo Park 94025-1841
5006. Sudia Paloma, Berkeley 94705-1805
5007. Sue Fox, Sausalito 94965-1463
5008. Sue Habegger, Grass Valley 95949-9140
5009. Sue Hansen, San Anselmo 94960-1341
5010. sue harrington, martinez 94553-3635
5011. Sue Harrison, Sunnyvale 94087-5825
5012. sue stokeld, San Francisco 94103-3395
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5016. Sue Zipp, Novato 94948-1206
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5018. sunny powell, Rohnert Park 94928-2601
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5020. Susan Ashlock, Santa Barbara 93101-1224
5021. Susan Booras, San Carlos 94070-3439
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5023. susan cayco, Fresno 93722-5256
5024. Susan Ceriani, Valley Village 91607-4325
5025. Susan Chancey, Sacramento 95821-5632
5026. Susan Chandler, South Lake Tahoe 96158-1528
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5045. Susan Lord, Tarzana 91356-4417
5046. Susan Lynch, Pacific Palisades 90272-3909
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5069. Susan Wittenberg, El Cerrito 94530-1815
5070. susan zalon, Santa Barbara 93110-2426
5071. Susann Taylor Shier, Santa Monica 90405-4348
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5073. Susanne Isom, Santa Rosa 95404-7625
5074. Susi Higgins, Glendale 91203-1221
5075. Susie and Ken Vanderlip, Orange 92869-4302
5076. Susie Duff, Malibu 90264-6314
5077. Susie Lee, La Habra 90631-7018

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5087. Suzanne Kuba, Danville 94506-2060
5088. suzanne lande, Sebastopol 95472-3530
5089. Suzanne Levin, Santa Clara 95051-4719
5090. Suzanne McGee, Berkeley 94705-1632
5091. Suzanne Miller, San Diego 92109-3660
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5101. Sydney Berner, Covina 91722-3337
5102. Sydney Lee Berner, Covina 91722-3337
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5110. Sylvia Sanchez, San Jose 95116-4201
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5118. Tamara Gates, San Diego 92128-2095
5119. Tamara Hulsey, El Cajon 92020-2353
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5122. Tamara Persky, Ojai 93023-2707
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5166. Terry Brejla, Sonora 95370-9652
5167. Terry Church, Petaluma 94952-1647
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5195. Thomas Carnesi, Torrance 90501-3109
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5197. Thomas Filip, Moorpark 93020-1332
5198. Thomas Gould, Cambria 93428-2913
5199. Thomas Gourley, Richmond 94804-4555
5200. Thomas Hazelleaf, Seal Beach 90740-3056
5201. thomas jones, Berkeley 94708-1549
5202. Thomas Knecht, MD, PhD, Avila Beach 93424
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5204. Thomas Lilienthal, Richmond 94804-7413
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5209. Thomas Rummel, San Diego 92104-2562
5210. Thomas Savino, Burbank 91506-1329
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5212. Thorin Tabor, Temecula 92591-3752
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5219. Tim Barrington, San Jose 95126-3273
5220. Tim Bentley, Los Angeles 90022-3402
5221. Tim Butler, San Francisco 94109-5317
5222. Tim Callahan, Orange 92867-6838
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5224. Tim O'Brien, Belmont 94002-1932
5225. Tim Segal, San Jose 95118-2144
5226. Tim Wescott, Turlock 95380-4741
5227. Timothy Barkwill, Buena Park 90621-1206
5228. Timothy Becher, San Luis Obispo 93406-0096
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5230. Timothy Hopwood, Mountain View 94043-6588
5231. Timothy Larkin, San Francisco 94109-5337
5232. Timothy Michel, Walnut 91789-1237
5233. Timothy Moder, Berkeley 94703-1268
5234. Timothy Nelson, Silverado 92676-0804
5235. Timothy Scott, Norco 92860-1844
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5244. Tina Seifert, Aptos 95003-3519
5245. Tinka Friend, Riverside 92503-5317
5246. Tisha Douthwaite, Ukiah 95482-1386
5247. Tobias Mehler, Topanga 90290-3251
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5251. Todd Fisk, San Diego 92131-3573
5252. Todd Kalionzes, Signal Hill 90755-2148
5253. Todd Peterson, Anaheim 92805-7516
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5255. Tom Burt, Santa Barbara 93110-1251
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5260. Tom Hollenbeck, Carlsbad 92009-7713
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5263. Tomiko Edmiston, Royal Oaks 95076-9020
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5270. Tracey Sands, Newbury Park 91320-4144
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5273. Tracy Gilbert, Rialto 92377-8831
5274. Tracy Harwell, Rancho Cordova 95670-2275
5275. Tracy Morris, San Rafael 94903-3048
5276. Tracy Turner, Los Alamitos 90720-5243
5277. Tracy Wade, Browns Valley 95918-9609
5278. tracy watada, Los Angeles 90066-7003
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5280. Travis Buck, San Diego 92107-2526
5281. Trevor Long, Visalia 93292-7070
5282. Tricia Fortina, Ventura 93002-0300
5283. Trillion Donahue, Concord 94520-5452
5284. Trina Aurin, Foothill Ranch 92610-2305
5285. Trina Snow, Temecula 92592-9246
5286. Trisha Hillier, Beverly Hills 90210
5287. Trisha Pahmeier, Tarzana 91357-1704
5288. Tristan Valliant, San Jose 95117-1652
5289. Troy Huff, Turlock 95382-7363
5290. Trudy Hartman, MD. , Menlo Park 94025-4750
5291. Trudy Morgan, Ukiah 95482-5436
5292. TRUSE PRETTO, Richmond 94805-1106
5293. Tsipoa Peskin, Berkeley 94707-2311
5294. twyla myers, Santa Barbara 93101
5295. Tyleen Paige, Cherry Valley 92223-4463
5296. Tyler Price, Davis 95616-4703
5297. U Burton and FAMILY, Santa Monica 90405

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5300. V Madsen, San Leandro 94577-4027
5301. V R Wallace, Whittier 90602-2547
5302. Va Johnstone, Santa Barbara 93105
5303. Val Sanfilippo, San Diego 92111-5057
5304. Valarie Stengle, San Francisco 94112-1916
5305. Valerie Beard, Sacramento 95820-3021
5306. Valerie Justus-Rusconi, Watsonville 95076-0129
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5308. Valerie Lizarraga, Montebello 90640-2563
5309. Valerie Ortega, Hollister 95023-5705
5310. Valerie Ryden, Camarillo 93010-3221
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5315. Vaughn Hosmann, Bellflower 90706-6574
5316. Velene Campbell, Ukiah 95482-9228
5317. Velene Campbell, Van Nuys 91401-4200
5318. Vera Brown, Redwood City 94065-1338
5319. Vera Loewer, Pacifica 94044-4027
5320. vera martinez, Cathedral City 92234-2427
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5337. vicki smith, Walnut Creek 94595-2630
5338. vicki tate, Napa 94558-2401
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5342. Victor Magana, Fresno 93710-3717
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5345. Victoria Brandon, Northridge 91325-2407
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5350. Victoria Spiers, Berkeley 94703-1572
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5380. Walter Zelnick, Novato 94945-2523
5381. wanda louise, Irvine 92604-3103
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5383. Warren Gold, Mill Valley 94941-5080
5384. Warren Hageman, Carmichael 95608-1484
5385. Warren Haskell, Chico 95926-2422
5386. Warren Salyer, Calexico 92232-9011
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5388. Wayne Gibb, Forestville 95436-9378
5389. Wayne Heckman, Ukiah 95482-0846
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5391. Wayne Miller, Newark 94560-2119
5392. Wayne Steffes, Redding 96001-2906
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5394. Wendi Marafino, Culver City 90232-3225
5395. Wendy Bauer, San Francisco 94112-1835
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5397. Wendy Denton, Oakhurst 93644-5026
5398. Wendy Hansen, Aromas 95004-9615
5399. Wendy Larson, Turlock 95380-4933
5400. Wendy Lewis, Brentwood 94513-6133
5401. Wendy Monterrosa, Covina 91722-0408
5402. Wendy Oser, Berkeley 94702-1027
5403. Wendy Roberts, Livermore 94550-5451
5404. Wendy Seto, Chino Hills 91709-2852
5405. Wendy Weikel, Berkeley 94707-2526
5406. wendy wilke, Fresno 93720-1856
5407. wendy wu, Laguna Niguel 92677-1824

5408. Whitney Van Herpe, Temecula 92592-1440
5409. Wilfredo Rodriguez, Campbell 95008-6266
5410. Wiliam Wollner, Stockton 95202-1512
5411. Will Lebeau, Newport Beach 92661-1422
5412. Will Schein, Santa Cruz 95060-2948
5413. Willa Davis, Chula Vista 91913-2608
5414. William And Sabrina Parham, Irvine 92623-4338
5415. William Baker, Los Angeles 90042-3523
5416. William Boosman, Pacific Grove 93950-2619
5417. William D Couch, Orinda 94563-3234
5418. William Dahnke, Poway 92064-2362
5419. William Dudley, Menlo Park 94026-7495
5420. William Foxall, San Rafael 94901-1210
5421. William Gammill, San Francisco 94134-1608
5422. William Graham, Burbank 91502
5423. William Herman, Petaluma 94952-3023
5424. William Heuser, Arcadia 91007-6425
5425. William Hildebrand, Hayward 94541-2605
5426. William Josephs, Encino 91436-1955
5427. William Marsh, San Diego 92106-1716
5428. William Mc Guire, San Francisco 94118-2209
5429. William McHenry, Anaheim 92804-3303
5430. William Mcrae, San Diego 92109-4114
5431. william mittig, Mariposa 95338-8701
5432. William Musser IV, San Jose 95125-4610
5433. William Ninde, Concord 94521-5020
5434. william nowell, Los Angeles 90012-1920
5435. William Oliver, Glendora 91741-3071
5436. William Schlesinger, Los Angeles 90046-6810
5437. William Schoene, Santa Monica 90405-4847
5438. William Shepard, San Francisco 94121-1203
5439. William Sosa, Oxnard 93033-3359
5440. William Sullenberger, Santa Cruz 95060-5210
5441. William Talbott, Monrovia 91016-2509
5442. William Tauck, Ventura 93003-5503
5443. William Turley, Oceanside 92057-4441
5444. William Vail, Sonora 95370-8423
5445. William Wallin, Richmond 94805-2413
5446. William Weaver, Lincoln 95648-2631
5447. William Willis, Costa Mesa 92627-2937
5448. Willlliam Bell, Sunnyvale 94087-3348
5449. Winfield Carson, Poway 92064-4839
5450. Winston Tormos, Apple Valley 92308-5876
5451. Wolfgang Rougle, Cottonwood 96022-8205
5452. Wynn Sasaki, Scotts Valley 95066-3914
5453. xochilt aviles, Duarte 91010-3118
5454. Y Chen, Albany 94706-1133
5455. Yana Stoyanova, Santa Monica 90404-2714
5456. Yazmin Gonzalez, Bellflower 90706-5820
5457. Yefim Maizel, San Francisco 94131-1621
5458. Yen Chou, San Diego 92101-5945
5459. Yen Pham, El Monte 91732-2896
5460. Yolanda Moreno, Fresno 93720-4093
5461. Yuki Nishinaka, El Dorado Hills 95762-5944
5462. yuko conniff, Los Angeles 90036-4061
5463. Yuri Yamane, Walnut 91789-1601
5464. Yves Decargouet, Lucerne 95458-8502
5465. Yvonne Davis, San Diego 92111-3245
5466. Yvonne Fisher, Playa Del Rey 90293-8296
5467. Yvonne Flagg, Riverside 92506-3157
5468. Yvonne Oelkers, V Isalia 93292
5469. Yvonne peck, Orangevale 95662-3723
5470. Yvonne Quilenderino, Seaside 93955-4249
5471. Zanne deJanvier, San Francisco 94131-3006
5472. Zeinob Burnham, Capitola 95010-3461
5473. Zoe Vavrek, Fairfax 94930-2209
5474. Zorine Rinaldi, Santa Monica 90405-3923
5475. Zsanine Alexander, Burbank 91504-2702
5476. C B, Los Angeles 90028-8107
5477. D G Sifuentes, Mammoth Lakes 93546
5478. Ms. Lilith, Ventura 93003
5479. R. Zierikzee, San Francisco 94118-2520
5480. V & B Jones, City 90510-5090
5481. V. Grubbs, San Diego 92126-3509
5482. William Harvey, San Diego 92103-4382

0G-F-6-SS

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We Provide Solutions to Better the World through Innovation

Monday, February 20, 2017

Elizabeth Scheehle, Branch Chief, Oil and Gas and GHG Mitigation Branch
California Air Resources Board
1001 "I" St., Sacramento, CA, 95814

Via Electronic Submittal:
https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=oilandgas2016&comm_period=1

Ref.: CARB Oil & Gas Methane Rulemaking - Available Technologies for Monitoring Methane Fugitive Emissions

Dear Elizabeth,

Since we last had contact for my testimony at the CARB hearing in Sacramento on July 2016 very exciting new technologies for products and services became commercially available in the US at a very affordable price points !

Safety Scan as a solution provider for the industry is proud to announce that we became authorized reseller and authorized field service provider for such new technologies that the industry already is showing clear signs that they will adopt:

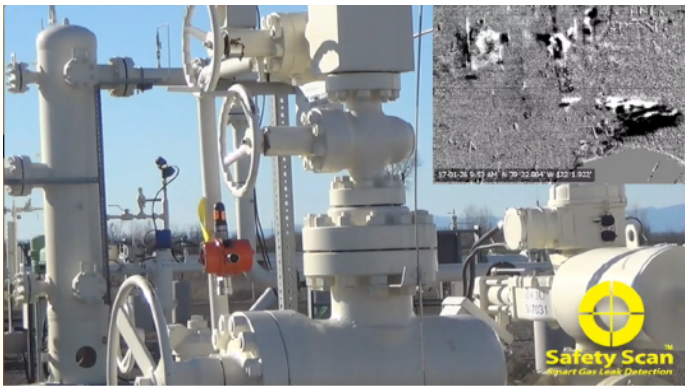
United Electric Vanguard Wireless Hart Methane Leak Detector for 24x7 fugitive Emissions monitoring. UE is an American company with almost 100 years based in Boston, MA. Vanguard is a 100% made in the USA

More details ?

http://safetyscan.org/contact/

Each Vanguard detector has a *Wireless*HART transceiver, an antenna, a display, a long life power module, a gas sensor, and a signal processor for the gas sensor. Vanguard uses a sensor architecture trademarked “Flexsense”, which allows the sensor to identify its target gas and range to a Vanguard transmitter upon connection. It is currently available with either a Methane NDIR sensor or an electrochemical and H_2S sensor. Current ranges are 0-100% LEL of methane and 0-100 ppm of H_2S. It is the methane sensing capability that is deployed for detection of greenhouse gases.

Industry challenge addressed



Reducing methane is a challenge for the oil & gas industry, as is compliance with emerging regulation. The U.S. Environmental Protection agency has estimated that the U.S. petroleum and natural gas industry contribute 24.1 percent of the methane into the atmosphere. They also designate methane as a significantly more powerful greenhouse gas as carbon dioxide – 25 more potent per molecule over a 100-year period and 84-87 times more potent over a 20-year period.

Other governmental bodies are following suit. **The State of California**, for example, has enacted legislation (SB1383) requiring business to take measures to help reduce methane emissions by 40 percent the year 2020

Increased monitoring can help meet such challenges, but can be expensive. The cost of adding just one new gas measurement point, including obtaining ‘hot’ work permits, running conduits for wires, burying them, and so on, can be in the neighbourhood of $10,000 for land-based systems and as much as five times that for offshore applications. **Wireless technology can reduce the cost of adding a monitoring point by up to 90 percent.**

Benefits

The Vanguard monitor then reduces greenhouse gas emissions by removing cost barriers to increasing the density of monitoring devices. This helps reduce greenhouse gases, first by

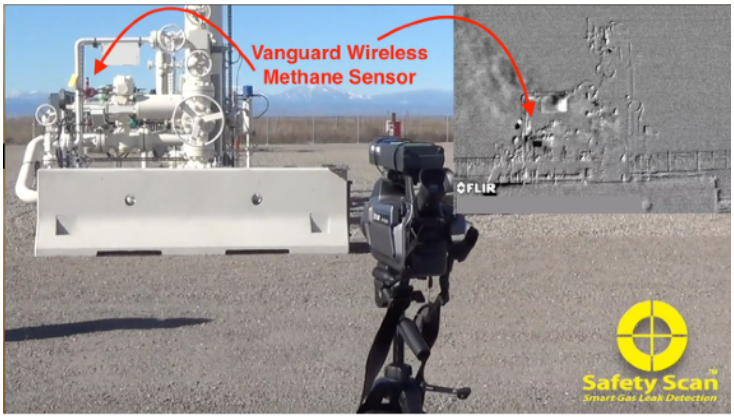
enabling identification of leaks across a much broader area than would be possible with wired devices, and secondly, by monitoring when and whether the leaks have been corrected. This contributes to a cleaner, safer environment for everyone, while at the same time avoiding fines and penalties that might arise from non-compliance.

The Vanguard provides producers with a maintenance benefit as well. By aiding early identification of assets that may be malfunctioning, it helps correct minor equipment performance issues before they become costly or may require total replacement and its unrivalled five-year battery life keeps additional maintenance costs to a minimum.

Best practices enabled

Mitigation of methane as a greenhouse gas is relatively recent. **California's** many legislations and regulations, that were enacted recently. Best practices for automating monitoring are only now forming. United Electric Controls has been conducting tests that will eventually inform best practices. Using Optical Gas Imaging cameras and LASER Quantification instrumentation provided by **Safety Scan**, we monitor the diffusion of trace amounts of methane from a simulated leak, factor in wind and other environmental conditions, and project the number of sensors that might be required to provide best coverage for an area.

Contribution to reduction of greenhouse gases



Wireless gas monitoring can contribute to the reduction of greenhouse gases on many fronts. The EPA has identified hundreds of thousands of potential leakage sites in the U.S. alone. These include 365,000 oil wellheads, 100,000 oil storage facilities, 555,000 natural gas wellheads, 400,000 miles of natural gas gathering pipelines, and 300,00 miles of natural gas pipelines. Most of these locations are aging, increasing the risk of leakage.

Detecting and monitor leaks on so many facilities would not be economically feasible with wired stations. Affordable, easy to use wireless technology could, however, have a significant impact.

Safety Scan USA & United Electric Controls are already conducting a monitoring study in a Gas Storage Facility in California

Wellhead Methane Monitoring Case Study:

Purpose of Study:

Evaluate the Vanguard self-powered *Wireless* HART Methane Gas detection system for wellhead monitoring. The goal is to look at low level "fugitive emissions" and determine best practices for deployment to provide reliable detection. Part I of this study started this year and it will continue with ongoing monitoring, the Vanguard Units are on Beta Test and being monitored continually. The Vanguard is moving from the beta phase and go into full sales phase in March of 2017

Want to read the details of this Part 1 ?

http://safetyscan.org/contact/

Conclusion

Continuous Monitoring for fixed sources such as Wellheads, crude storage tanks, Compressor stations, regulator stations etc. is preferable to intermittent Monitoring using hand operated technologies (sniffer, hand held Open path radar), as a small leak can develop into a large leak in a short period of time. Handheld leak detection is costly due to high labor costs and is not timely unless deployed on a continuous basis. Traditional NDIR point detection is effective but costly due to high installation costs associated with wired (signal and power)

The best solution is self-powered wireless communicating gas detectors using a robust, open source, self-organizing wireless mesh network such as *Wireless*HART.

The Flir GF 320: Optical Gas Imaging Camera, although is not being pushed by this rulemaking I strongly believe this solution is more cost effective than method 21 due to the speed that we can perform leak inspections in a ratio about 20 to 1 compared to the sniffer and its related cost is way bellow this ratio. Plus consider the quality of the deliverable that will produce an infrared video image of the gas leaks (or the lack) with embedded GPS and time and date stamp encrypted into the files to produce due diligence proof of the inspections. This solution replaces paper records according to the new US EPA NSPS Quad-O

Another alternative to mobile methane leak inspections is a pocket size device called: Laser Mini by Pergam Technical Services, a company with a US office in Seattle, WA headquartered in Zurich Switzerland

The Laser Methane mini (SA3C32A) Intrinsically Safe and Laser Methane mini-G (SA3C50A) are laser-type detectors, capable of safely and quickly detecting gas leaks from a distance. The Laser Methane mini-G guarantees best visibility through green laser and capable to communicate with mobile devices! By linking to an Android device, you can view your recordings as a graph, the measurement history and measured locations on a map.
The laser allows inspections in bright outdoor environments to a distance up to 100 ft. And the technology even allow for measurements works through glass and it is very easy to use

Safety Scan used a combination of these 2 technologies to perform its pre assessment engineering services to make sure the Vanguard sensors were installed and positioned correctly on the study referred above on a natural gas underground storage facilities in northern **California,** that it is in progress now

More details ?

http://safetyscan.org/contact/

I want to add the inspections for natural gas leaks on the streets of the many California communities, this is a very effective technology that can me mounted on vehicles. Since this solution has options for bumper mounted devices and a roof based equipment that can be used to inspect any natural gas leak source that is close to where people live. The inspection team just have to drive by and point its laser beam using a joystick type remote control inside the vehicle that together with a computer onboard to record everything with GPS information to produce a very detailed report of the findings. Or just driving by the bumper sensor will detect methane leaks coming from underneath the road that it is driving over

This solution is called SELMA and it is provided by Pergam Technical Services based in Seattle and headquartered in Switzerland. It is important to note that this can be provided as a full solution including hardware, installation and training or as a service only to make it very affordable to natural gas utilities companies. It is important to note that the full solution is less than a third of the price of a solution that is being tested in the California market since last year

SELMA – the abbreviation for **S**treet **E**valuating **L**aser **M**ethane **A**ssessment – is one of the most advanced diagnostic tools for the detection of methane emissions from leaks or other sources. It detects and documents methane gas in the driving path of the vehicle.

Two independent laser systems monitor the driveway (SELMA MPB – bumper laser) and the sidewalk (SELMA Roof). SELMA MPB and SELMA Roof can operate simultaneously as well as separately.
SELMAs main application is leak

detection on natural gas transmission and distributions pipelines, inspections of natural gas storage tanks, compressor stations and other potential sources of methane emissions to the atmosphere.

More details ?

http://safetyscan.org/contact/

Thank you for seriously considering the latest available and affordable technologies in the United States to keep our communities safe, to maintain and monitor the quality of our environment and at the same time maintaining a vibrant industry moving forward creating safe jobs and progress in California.

F-6-1

Sincerely,

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OG-F-7-
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W. James Wagoner
Air Pollution Control Officer

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Asst. Air Pollution Control Officer

February 21, 2017

Elizabeth Scheehle, Chief
Oil and Gas and GHG Mitigation Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95814

RE: Comments on Proposed 15-Day Modifications

Dear Ms. Scheehle:

The Butte County Air Quality Management District (District) thanks you for the opportunity to comment on the proposed 15-day modifications to the regulation to address Greenhouse Gas emissions from the Oil and Gas industries. We also appreciate the opportunities to provide feedback as these modifications were being developed.

On the proposed regulation posted February 3, 2017, we offer the following comments:

Enforcement and Permitting: As noted in our earlier comments for the ARB Board meeting, the proposed regulation's ISOR has been termed "optional" for Districts to enforce and implement the regulation but we still read Section 95674(b)(1) as mandatory for a permitted source to apply to include the regulation requirements in a local permit and, since no changes were proposed to this section, we are still unclear on what occurs if a district chooses not to implement all portions of the regulation. F-7-1

Underground Storage Monitoring: As we have previously commented on the Section addressing underground natural gas storage facilities, we are unsure of how the proposed monitoring will be used to determine the "baseline monitoring conditions" (undefined term). The proposed regulation does not indicate that "baseline" is the ambient/upwind concentration, some average or ratio of the downwind and upwind concentrations, or all or a fraction of the downwind concentration. If the "baseline" includes some combination of acceptable fugitive emissions from the facility, it appears that monitoring a higher background without an upper limit would limit the effectiveness of the regulation, i.e. would set higher alarm levels, etc. F-7-2

Alarm Reporting: The wording on the thresholds and notification requirement in several sections appears awkward. How can a facility report an alarm notice within 24 hours of an initial leak measurement for a 5-day reading above 10,000 ppm? The initial leak measurement would have occurred 4 days prior. Previous sections of the regulations use "alarm" as the event that triggers the notification not the specific thresholds. The regulation notes when the monitoring system must trigger an alarm, so the language could be revised F-7-3

to: *"Any time the monitoring system triggers an alarm, the owner or operator shall confirm the alarm condition has occurred and notify ARB within 24 hours of the alarm."*

Several sections of the proposed changes to the Regulation (i.e. Section 95668(h)(5)(B)6.) requires the owner or operator to notify ARB, DOGGR and the air district in case of alarms or other notification events. This is a mandatory requirement for the regulated facilities and the local district may or may not be implementing the program and may not require such notifications. Although the proposed requirement is conservative, it is unnecessary since those districts implementing the regulation are required to write such requirements into the air permit. These notification requirements should have a caveat that allows for districts to opt out of receiving notifications. Suggested language to allow district the option of receiving notifications: "*...then notify ARB, DOGGR, and, upon request, the local air district...*".

The California Department of Conservation Division of Oil, Gas, and Geothermal Resources is used in the regulation sufficient times to warrant inclusion in the definitions with the appropriate acronym (DOGGR).

F-7-3 cont.

Consistency: The repair requirement for instrumentation in Section 95668(h)(5)(B)1.e. should include the same phrase as Section 95668(h)(5)(A)1.b. "*... 14 calendar days from the date of calibration or the discovery of the malfunction*".

F-7-4

Thank you again for the opportunity to comment. We look forward to working with ARB staff on the final regulation. If there are any questions regarding these comments, please contact David Lusk on my staff or me.

Sincerely,

W. James Wagoner
Air Pollution Control Officer
Butte County Air Quality Management District

0G-F-8-ISP

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Ann L. Trowbridge
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February 21, 2017

VIA WEBSITE (COMMENT SUBMITTAL)

Clerk of the Board
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Re: Independent Storage Provider Comments Regarding Proposed 15-Day Modifications to Proposed Regulation – Subarticle 3: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

Dear Chair Nichols and Members of the Board:

The Independent Storage Providers (Central Valley Gas Storage, LLC, Gill Ranch Storage, LLC, Lodi Gas Storage, L.L.C., and Wild Goose Storage, LLC, collectively the "ISPs") appreciate the opportunity to provide these comments regarding the California Air Resources Board's ("CARB") Proposed 15-Day Modifications to the Proposed Regulation, Subarticle 3: Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities ("Proposed Regulations"). The ISPs support California's ongoing efforts to reduce Greenhouse Gas ("GHG") emissions. Through these comments, the ISPs seek to ensure that the Proposed Regulations facilitate meaningful GHG emission standards, in an efficient, cost-effective manner.

Following are the ISPs' specific comments.

Section 95667. Definitions

- Section 95667(a)(4)

The definition of "blowout" refers broadly to the "uncontrolled flow of gas, liquids or solids (or a mixture thereof) from a well onto the surface." Because a blowout may give rise to other required action or potentially a violation (*see, e.g.* section 95668(h)(5)(B)5.), it is important to have more clarity regarding what would constitute a blowout versus minor instances of uncontrolled flow (*e.g.*, small leaks). The ISPs believe CARB intends the definition of "blowout" to cover situations like the recent incident at the Aliso Canyon facility, but not leaks from above ground well equipment. Accordingly, the ISPs recommend that the definition of "blowout" be modified to clarify that such leaks do not constitute a "blowout", through establishing a leak threshold that results in an event being

F-8-1

classified as a "blowout", or defining a process for determining a blowout through case-by-case consultation with CARB staff. Alternatively, section 95668(h)(5) could be revised to clarify that the criteria or process for determining a blowout at a particular facility may be set forth in a natural gas underground storage facility monitoring plan. F-8-1 cont.

- Section 95667(a)(66)

The ISPs appreciate the proposed revisions to the definition of "well". The revised definition provides greater consistency between CARB definitions and Public Resource Code definitions, which in turn will provide greater certainty to operators who must implement the CARB regulations.

Section 95668. Standards

- Section 95668(a) Separator and Tank Systems

Section 95668(a)(2)(B) provides that the requirements of section 95668(a) for separator and tank systems do not apply to systems used in non-associated gas production that receive an average of less than 200 barrels[1] of produced water per day. "Non-associated gas" is "natural gas that is not produced as a byproduct of crude oil production but may or may not be produced with condensate." (Section 95667(a)(36).) Wells used in gas storage operations are substantially similar to non-associated gas production. During discussions with CARB staff, the ISPs understood that storage water production would be similarly exempt, however that is not how the Proposed Regulations are drafted. In fact, the ISPs cannot find any section 95668(a)(2) exemption that would clearly apply to an ISP produced water tank, unless the tank contains water for 45 days per year or less. The ISPs recommend that CARB clarify that gas storage wells are included in the exemption for non-associated production, by revising section 95668(a)(2)(B) as follows: F-8-2

> Separator and tank systems used in non-associated gas production, <u>including production of non-associated gas from underground natural gas storage,</u> that receive less than 200 barrels of produced water per day.

The ISPs also propose revisions to the data to be used to calculate average daily production, based on natural gas storage reporting. Natural gas storage facilities do not file the annual production certified reports which section 95668(a)(2)(B) currently relies on to establish average daily production. Instead, natural gas storage facilities file quarterly SB 1281 reports with the Division of Oil, Gas, and Geothermal Resources ("DOGGR" or the "Division"). To address this fact, the ISPs propose the following revision to section 95668(a)(2)(B): F-8-3

> The average daily production shall be determined using the annual production certified reports <u>or, for natural gas storage, the SB 1281 quarterly reports</u> submitted to … .

[1] Alternatively, the definition of "non-associated gas" could be similarly modified.

- Section 95668(h) Natural Gas Underground Storage Facility Monitoring Requirements
  - Section 95668(h)(5)(A) should be revised to make clear that one upstream and one downstream monitoring point is the standard for an underground natural gas storage facility. It would be costly and inefficient for facilities with geographically disperse assets, and/or non-contiguous compressor stations, well pads, and other equipment, to install continuous monitoring at each location. Additionally, each storage field is different and, therefore, individual monitoring plans will be tailored to take into account their unique characteristics. F-8-4
  - The ISPs appreciate the revision to section 95668(h)(5)(A)1.a. to increase the measuring sensitivity of upwind and downwind instruments to a minimum 250 ppb accuracy. However, the ISPs continue to have some concern about the availability of cost-effective, durable, and reliable equipment that will meet even the revised requirement. Accordingly, the ISPs recommend that this requirement be revised to apply when cost-effective, durable, and reliable equipment is available, or that section 95668(h)(2) be revised to provide that the January 1, 2018 monitoring plan submittal deadline is subject to the availability of cost-effective, durable, and reliable equipment capable of achieving the requirements of section 95668(h)(5)(A)1. F-8-5
  - The ISPs appreciate the revised requirement in section 95668(h)(5)(A)7. to trigger alarms at 4 times baseline; this concept is more realistic than what had appeared in prior versions of the Proposed Regulations. However, because ISP facilities are generally located in rural areas with naturally occurring methane from agricultural sources, development of an understanding of the magnitude of variability in methane levels will occur after monitoring is in place and a baseline is established. Along with adjusting baseline levels to account for local conditions, it may also be necessary to adjust trigger multiples to account for the variability associated with local conditions. F-8-6
  - Section 95668(h)(5)(B) appears to include requirements for daily or continuous leak screening that substantially overlap the requirements in section 95668(h)(5)(A). As currently drafted, it is unclear what the daily monitoring in subdivision (B) is intended to find. If the purpose is to augment the continuous monitoring required under subdivision (A) with additional screening near the wellheads, then an additional daily monitoring requirement is excessive and unduly burdensome, especially in light of its costs. The ISPs recommend replacing the proposed daily monitoring requirement with a weekly wellhead inspection protocol. F-8-7

CARB's Revised Cost Estimates for Natural Gas Storage Facility Monitoring Requirements[2] provides a reasonable cost estimate for ambient air monitoring based on the costs that are currently used for existing CARB monitoring stations. This analysis estimates a capital cost of $350,000 and ongoing costs of $179,000 per year. Using CARB's Capital Recovery Factor (as revised in the February 17 Errata to the Proposed Regulations), the combined burden on each ISP would be a minimum of $259,500 per year.

With regard to daily or continuous monitoring, DOGGR prepared a Standardized Regulatory Impact Assessment regarding pending proposed new regulations for underground storage. This Assessment included an estimate of the cost entailed in daily monitoring efforts: "the Division estimates that, on average, each facility will have to hire one to three staff at $80/hr. for approximately 40 hours per week to conduct daily monitoring."[3]

Even if an ISP needs only one additional staff member to conduct this monitoring, requiring extensive daily monitoring would result in substantial costs for the ISPs *(e.g., $80/hr.*40 hrs./week*52 weeks/yr. = $166,400/yr*).*Using the same factors but reducing the monitoring frequency to weekly as the ISPs recommend would reduce the cost of well monitoring to $33,280/yr.* Based on the Division's cost estimates, an ISP would spend more than $130,000 per year on additional (daily vs. weekly) monitoring labor costs that could more effectively be used for other safety and maintenance related items. If daily monitoring has to be done by Method 21 or Optical Gas Imaging ("OGI") equipment, that will further drive up the expense of this monitoring. The same Assessment shows the cost of an OGI instrument to be $95,000, and states that "operators will purchase at least one and up to three units per field for this monitoring activity."

F-8-7 cont.

Regarding the possibility of meeting the well monitoring requirement using an automated system, as contemplated by CARB in its Revised Cost Estimates, for even the smallest of the ISP facilities, there is no scenario where the estimated costs (including labor costs and annualized capital costs) for operating the equipment would cost less than $100,000 per year. When the annualized costs for both continuous air monitoring and daily/continuous well monitoring requirements are added, no ISP will be able to comply without incurring annual expenses in excess of $350,000 per year. Notably, unlike the major transmission and distribution utilities, the ISPs do not have monopoly customer bases and do not charge California Public Utilities Commission ("CPUC")-approved cost-of-

[2] CARB, Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information (February 3, 2017), Attachment 2, page 12.

[3] California Department of Conservation, Division of Oil, Gas and Geothermal Resources Underground Gas Storage Regulations Standardized Regulatory Impact Assessment, Direct Costs to California Businesses, Section d, iii, Leak Detection Protocols, p. 24.

service based rates. This means that they are not assured recovery of the costs to implement these new monitoring requirements.

A properly designed continuous air monitoring system should detect any wellhead leak. Taking this fact into account, and to avoid imposing substantial costs without corresponding benefits, the ISPs propose that section 95668(h)(5)(B) be modified to call for weekly wellhead inspections with portable leak detection equipment, instead of daily monitoring. F-8-7 cont.

- The use of the term "leak" in section 95668(h)(5)(B)3. is unclear. For example, there is no detection level specified for determining when a leak must be measured using EPA Reference Method 21 within 24 hours of detection. The ISPs recommend that CARB revise section 95668(h)(5)(B)3. as follows, to provide further guidance: F-8-8

  > All leaks <u>with measured total hydrocarbon concentrations above the threshold concentrations specified in section 95669 of this subarticle</u> identified during daily leak screening…

- Section 95669 Leak Detection and Repair

  - As discussed in the ISPs' July 15, 2016 comments (at page 3), the requirements in this section appear duplicative and burdensome considering the extensive monitoring required under section 95668 of the Proposed Regulations. The ISPs reiterate that their facilities are de minimus sources of statewide GHG emissions. In fact, emissions reported to the CPUC for 2015 demonstrate that ISP emissions are less than one-half of one percent of gas utility methane emissions in California, and less than three-hundredths of one percent of all methane emissions in the state.[4] Through the design of their facilities and implementation of various operating measures, the ISPs already are taking action to limit GHG emissions. It is not clear how imposing duplicative, costly, and burdensome leak detection and repair requirements on storage facilities would further California's GHG reduction goals. Given other applicable monitoring requirements, and the de minimus nature of ISP GHG emissions, the ISPs request that CARB revise section 95669 to provide that the additional leak screening contemplated in sections (e) and (g) does not apply to underground natural gas storage facilities subject to monitoring pursuant to section 95668(h)(5). F-8-9

  - Section 95669(o)(5) provides that "[e]xcept for the fourth ("4th") quarterly inspection of each calendar year, leaks discovered during an operator conducted inspection shall not constitute a violation if the leaking components are repaired F-8-10

[4] Comments of the ISPs Regarding Administrative Law Judge's Ruling Entering California Air Resources Board and California Public Utilities Commission Joint Staff Annual Report on Analysis of June 17, 2016 Utilities' Reports and Commission Staff Proposal on Best Practices Into the Record and Seeking Comments (R.15-01-008), p. 3.

within the timeframes specified in this subarticle." No explanation is provided as to why leaks discovered during the 4th quarterly inspection constitute "automatic" violations, apparently regardless of whether they are repaired within the timeframes specified in Section 95669, while leaks discovered during other times of the year are not "automatic" violations. Notwithstanding the ISPs' general comment above regarding Section 95669, the ISPs recommend that CARB rectify this discrepancy by eliminating the "automatic" violation for leaks that are discovered in the 4th quarter and repaired within applicable timeframes. F-8-10 cont.

The ISPs appreciate CARB's consideration of these comments, and respectfully request that the recommendations set forth herein be adopted.

Sincerely,

Ann L. Trowbridge
Attorney for Gill Ranch Storage, LLC

cc: John Boehme, Central Valley Gas Storage, LLC
Lawna Hurl, Senior Legal Counsel, Lodi Gas Storage, L.L.C.
and Wild Goose Storage, LLC

OG-F-9-SCG

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February 21, 2017

Joe Fischer
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Sacramento, CA 95812

Re: SoCalGas and SDG&E Comments on the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities Proposed 15-Day Modifications

Dear Mr. Fischer,

Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) appreciate the opportunity to review and submit comments on the California Air Resources Board's (ARB) Proposed 15-Day Modifications to the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities.

We would like to thank staff for working with stakeholders throughout the rulemaking process. This Proposed 15-Day version incorporates most of the feedback that SoCalGas and SDG&E have provided, and reflects the hard work that staff have put into the rule since 2014. In this letter we provide feedback on remaining rule items that have not yet been addressed in this version.

1. **Enforcement Provisions Should Be Clarified to Achieve Regulatory Objectives and Incentivize GHG Reduction Efforts**

SoCalGas and SDG&E strongly support ARB's objective to establish a comprehensive program of regulatory and market mechanisms to achieve real, cost-effective, and quantifiable GHG reductions and acknowledge that enforcement provisions are an essential element of an effective regulatory program. In order for enforcement provisions to achieve regulatory objectives in a cost effective manner and incent the desired behavior, it is critical that the enforcement provisions take into account the efforts of regulated entities to comply and do not penalize entities for activities that could not reasonably have been prevented. F-9-1

Section 95674(a)(1) of the Proposed Regulation provides that "[a]ny penalties secured by a local air district as the result of an enforcement action that it undertakes to enforce the

provisions of this subarticle may be retained by the local air district." This clause passes up on an opportunity to invest penalties toward further GHG reductions. Moreover, Section 95674(a)(1) creates an incentive for local air districts to strictly construe the regulations, find noncompliance, and seek penalties, even where extenuating circumstances may exist (*e.g.*, leak detection technology malfunction). SoCalGas and SDG&E encourage ARB to remove this provision to avoid creating this incentive and develop a regulatory framework that invests penalties toward greater GHG reductions. As an alternative, if ARB declines to remove Section 95675(c) from the Proposed Regulation, SoCalGas and SDG&E recommend the insertion of a clause to encourage regulated entities to offset excess emissions, to further the objective to reduce GHG emissions, as follows:

> § 95675. Enforcement. … (c) Each metric ton of methane emitted in violation of this subarticle constitutes a single, separate, violation of this subarticle **unless such metric ton or its carbon dioxide equivalent is fully offset (for example but without limitation, via the surrender of Cap-and-Trade Program compliance instruments to ARB)**.

F-9-1 cont.

In addition, SoCalGas and SDG&E urge ARB to clarify that Section 95675(f) requires intentional conduct and does not impose strict liability for inadvertent errors. Section 95675(f) of the Proposed Regulation provides that "Submitting or producing inaccurate information required by this subarticle shall be a violation of this subarticle." The operation of such an enforcement provision, if read literally and without consideration of intent or willfulness, would be excessively harsh as inaccurate information may reasonably be "produced" by currently-available monitoring technologies. Indeed, emission reports are generally prepared and submitted using spreadsheet programs that sometimes round off entries by default. It is also possible inaccurate information inadvertently could be "submitted" in good faith to ARB or local air districts implementing the Proposed Regulation. Moreover, the first clause in Section 95675(g) covers falsification of information, so subsection (f) is unnecessary. Accordingly, SoCalGas and SDG&E recommend deletion of Section 95675(f).

F-9-2

As an alternative, if ARB declines to remove Section 95675(f) from the regulations, then SoCalGas and SDG&E recommend that ARB clarify that the regulation is directed at knowing or intentional conduct:

> § 95675. Enforcement. … (f) **Knowingly** submitting or producing inaccurate information required by this subarticle shall be a violation of this subarticle.

For both our primary recommendation (deleting Section 95675(f)) and alternative recommendation (inserting knowledge qualifier into Section 95675(f)), the second clause of subsection (g) ("or submitting or producing inaccurate information") should be deleted as it is duplicative.

Finally, in furtherance of ARB's cost-effective GHG reduction objectives, the Proposed Regulation should be revised to provide a reasonable opportunity to cure the production or submission of inaccurate information before enforcement authority is activated.

2. Compliance with Leak Detection and Repair Requirements Makes Unsubstantiated Quarterly Distinction

In general, the Proposed 15-Day version's edits to Section 95669(o) better incentivize operators to locate and repair leaks by providing a limited safe harbor from enforcement for self-discovered leaks. We appreciate ARB's willingness to work with stakeholders to address this important incentive structure. However, Section 95669(o)(5) would exclude from this safe harbor leaks discovered during the 4th Quarter of each calendar year. As such, leaks discovered during the last three months of a year would be treated in a radically different way than leaks discovered during the first nine months of a year, with leaks discovered in October – December constituting violations.

This temporal distinction is nonsensical, is inconsistent with the objective of LDAR programs, and there is no rational basis in the administrative record supporting it. LDAR requires periodic leak surveys because leaks in pressurized systems will occur *periodically* regardless of calendar quarter or operator diligence (e.g., due to thermal cycling, vibration, etc. associated with typical operations of the affected components). If finalized, the Proposed 15-Day version's edits to Section 95669(o)(5) would undercut ARB Staff's expressed intent for the Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities Oil: "This modification was necessary to provide operators with the ability to find and repair leaks throughout the calendar year without a penalty which is consistent with the intent of the proposed regulation."[1] F-9-3

Further, we recommend clarifying that leaks discovered during an Air District inspection similarly enjoy the limited safe harbor. Accordingly, we recommend the revision of Section 95669(o)(5) as follows:

> (5) ~~Except for the fourth (4th) quarterly inspection of each calendar year, leaks~~Leaks discovered during an operator or Air District conducted inspection shall not constitute a violation if the leaking components are repaired within the timeframes specified in this subarticle.

3. Method 21 Concentration-Based Rule Provisions Are Not Supported

As discussed in our previously submitted comments, annual surveys using a Method 21 gas leak concentration measurement (i.e., screening value) of 10,000 ppmv or more as a leak definition would result in emission reductions commensurate with or greater than the assumptions used by ARB that are the basis for the proposed rule. F-9-4

EPA Method 21 gas leak concentration measurements (i.e., screening values) have a very large uncertainty, are extremely poor predictors of gas leak *rates*, define a minimum leak definition concentration of 4,000 ppmv for many detectors, and should not be the basis for leak repair thresholds and schedules, and rule compliance determinations. The Proposed

[1] ARB, Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information – Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities, at 18 (February 3, 2017).

Rule's LDAR provision should consider (1) the limitations of Method 21 and (2) that over 98% of gas leak mass emissions are from leaks from components with Method 21 screening values greater than 10,000 ppmv. ARB should adopt a leak definition of Method 21 gas leak concentration measurement of 10,000 ppmv and remove Method 21 measured concentration-based rule requirements [e.g., §95669(h), (i), and (o)]. F-9-4 cont.

Further, the ARB report "Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities" posted to the rule docket provides additional documentation to support the above assertions[2]. The ARB study results are presented graphically in Figure 2-7 of the report, and correlation equations are provided that allow calculation of leak emission rate estimates for different component types based on the EPA Method 21 screening value (SV) measured. In §§95669(h) and (i), the ARB proposed rule includes LDAR criteria and repair actions based on Method 21 concentration screening values of 1,000 ppmv, 10,000 ppmv, or 50,000 ppmv. Summary observations regarding the estimated leak emissions rates from the ARB report follow. A more detailed analysis is provided in Attachment A.

- An average component leak with a SV of 1,000 ppmv leaks a negligible amount of gas, less than 1 (one) scf of natural gas per year with a value of less than one cent per year (assuming a gas price of $3.44 per MCF).
- An average component leak with a SV of 10,000 ppmv leaks less than 20 scf of per year with a value of less than 10 cents per year. The average mass emissions rate for 10,000 ppm leaks is less than 0.03 metric tons CO_2e per year[3]. ARB has not justified why leaks of this magnitude or smaller warrant regulatory control. F-9-5
- An average component leak with a SV of 50,000 ppmv leaks about 200 scf of natural gas per year (or about 0.3 metric tons CO_2e per year) with a value of less than $1.00 per year. This relatively low emission rate is significant because the proposed rule requires aggressive action for leaks with a SV above 50,000 ppmv and requires such leaks to be eliminated after 2020. As discussed in previous SoCalGas comments, the Method 21 screening value is not indicative of a very large leak, and the proposed measures associated with 50,000 ppmv leaks are not warranted.
- These very small emission rates demonstrate that rule provisions that require leak repairs in a short prescribed time period [e.g., 2 or 5 calendar days in §95669(i)] cannot be cost-effective if the repair cannot be completed immediately (i.e., successful immediate repair is not possible). Daily leak emissions are negligible (e.g., about 1 gram per day for a 10,000 ppm leak) and do not justify the labor cost for an operator to repair such leaks outside their normal maintenance schedule. As discussed in Attachment A, if repairing the leak within the prescribed time includes actions such as additional vehicle trips (e.g., for parts or special services) or de-pressuring the system, the associated emissions will exceed the leak repair reduction in many cases.

[2] "Enhanced Inspection & Maintenance for GHG and VOCs at Upstream Facilities," SAGE Environmental Consulting, December 2016

[3] CO_2e emissions based on global warming potential of 72.

This information supports previous SoCalGas comments recommending a leak concentration threshold of 10,000 ppm (rather than lower values), and identifying the inability to equate a leak that screens at 50,000 ppm as an especially large emitter. F-9-5 cont.

4. 2020 LDAR Requirement Are Not Achievable

SoCalGas and SDG&E remain very concerned with the allowable leak thresholds set for 2020 and beyond and believe that it is not practical or meaningful to prescribe the proposed 2020 leak thresholds, nor achievable to reach such levels. As we explain above, a high concentration measurement does not always correlate to a high-emission leak and there is a strong likelihood that low-emission but high concentration leaks could trigger violations.

We recommend that ARB allow time to evaluate collected data from the LDAR program to assess program efficacy before committing to the limits set beginning January 2020 (Tables 3 and 4). Further, as explained in the Proposed Regulation Staff Report, the allowable number of leaks in Tables 1 and 2 were modeled after existing local air district regulations, which also allowed quarterly inspections to be reduced to annual inspections if a facility maintained compliance for five consecutive quarters[4]. As the revised rule no longer allows quarterly inspections to be reduced to annual, the allowable number of leaks are not appropriate and should be removed. F-9-6

Accordingly, we recommend the removal of the 2020 allowable number of leaks and repair time periods, and the revision of section 95669(i) as follows:

(i) On or after January 1, 2020, **ARB will evaluate the reported leak data to determine if the thresholds and associated repair time periods should be adjusted**.

5. ARB Should Consider Safety Concerns with Vapor Collection

Section 95668(d)(4)(C) provides an option for rule compliance for reciprocating compressors, and requires that gas emissions from compressor vent stacks used to vent rod packing or seal emissions be controlled with the use of a vapor collection system as specified in section 95668(c). This option is not always viable from a safety standpoint, and, therefore, the rule should be revised to consider the operational requirements of available external combustion equipment used to control emissions. This control requirement would be the only viable option for compressors where the captured emissions have the potential for entrained air (e.g., from a reciprocating compressor distance piece into which rod packing vents) and cannot be compressed into an existing sales gas or fuel gas system due to safety considerations. F-9-7

As previously discussed with staff, a delay of repair provision should be added to §95671(f)(1)(b) to allow time to address technical and safety issues or to obtain permits. We recommend the addition as follows: F-9-8

[4] ARB Staff Report: Initial Statement of Reasons. May 31, 2016.

§95671(f)(1)(b) **A delay of repair shall be granted by the ARB Executive Officer if the owner or operator can provide proof that the parts or equipment required to make necessary repairs have been ordered.**

***i.* A delay of repair to obtain parts or equipment shall not exceed 30 calendar days, or 60 days from the date from of the initial measurement, unless the owner or operator notifies the ARB Executive Officer to report the delay and provides an estimated time by which the repairs will be completed.**

F-9-8 cont.

6. Rule Should Provide Flexibility for Storage Monitoring Plans

The natural gas underground storage facility monitoring requirements entail multiple layers of redundancy: 1) continuous ambient monitoring; 2) daily or continuous wellhead monitoring; 3) quarterly LDAR; and 4) daily audio-visual inspection under LDAR. As explained in our previous comment letter, ARB must consider how the high costs of implementing these redundant measures would not provide any meaningful emissions reduction benefits, nor even prevent a large leak[5]. In addition, the Division of Oil, Gas, & Geothermal Resources (DOGGR) has proposed regulations that already require real-time well pressure monitoring for each wellhead[6], which would detect operating anomalies that trigger investigation before a major leak occurs.

SoCalGas and SDG&E also recommend that the plan allow for more flexibility to allow operators to use technology and processes best suited to the unique characteristics of a storage field location, such as size, terrain, etc. This is consistent with previous staff comments on avoiding an overly prescriptive regulation, and allowing operators to design a plan that meets regulatory objectives.

We provide the following specific comments on the revised monitoring requirements:

A. Monitor specifications should be flexible. ARB has added specific requirements for upwind and downwind sensors at storage facilities. While SB 887 language requires monitoring "at sufficient locations" throughout the facility, it does not specify anything further. We, therefore, recommend that the rule allow flexibility for the operator to determine the configuration of the monitoring system, as part of the plan submittal.

- §95668(h)(5)(A): Measurements by the upwind monitor are not considered for the alarm system referenced in §95668(h)(5)(A)7 and the measurements have no utility. ARB does not justify the need for the upwind monitors, and they are an unsupported and unwarranted expense and should be removed from the rule.

F-9-9

[5] SoCalGas and SDG&E Comments on Proposed Regulation, filed July 18, 2016.
[6] DOGGR Draft Regulations section 1726.7 (a)

- If the requirement is retained, monitoring should be limited to one upwind and one downwind monitor, as reflected in ARB's cost estimates. ARB Attachment 2 analysis assumes two ambient monitoring stations for each facility. The continuous air monitoring requirements in the proposed rule are ambiguous. The rule text should reflect ARB's associated support analysis, and codify this monitoring approach:

  "Continuous air monitoring to measure upwind and downwind ambient concentrations of methane ~~at sufficient locations throughout the facility to identify methane emissions in the atmosphere~~."

  1. The monitoring system must have ~~at least~~ one sensor located in a predominant upwind location and ~~at least~~ one sensor located in a predominant downwind location with the ability to continuously record measurements."

F-9-9 cont.

- The 250 ppb accuracy requirement for ambient monitors is ambiguous and requires a measurement concentration or range to provide context. In addition, since methane monitoring technology continues to be developed, the proposed requirement could exclude viable technologies. Additional flexibility is warranted, and the accuracy requirement should be reflected as a relative accuracy rather than absolute accuracy. The following context is based on the average ambient methane concentration in California, which is about 2 ppmv, and includes flexibility for new technologies that may become available. We propose the following changes:

§95668(h)(5)(A)1.a: "The upwind and downwind instruments shall have the capability to measure ambient concentrations of **2 ppmv** methane within minimum 250 ppb accuracy to determine upwind and downwind emissions baselines**, or other performance criteria approved by the ARB Executive Officer**."

F-9-10

B. Alarm system requirements should be revised. Section 95668(h)(5)(B) requires notification to regulatory agencies any time a leak above 50,000 ppmv is identified or above 10,000 ppmv is identified for more than five continuous days. Leak rate / Method 21 concentration correlations from ARB's recently released Enhanced I&M Report (discussed above and in Attachment A) indicate that:

- Average 10,000 ppmv leaks from connectors, flanges, and valves in natural gas service emit less than 0.2 pound of methane per year (or less than 0.25 gram per day), and
- Average 50,000 ppmv leaks from connectors, flanges, and valves in natural gas service emit about 1 to 2 pounds of methane per year (or about 1 to 2 grams per day).

ARB has not justified why such small leaks warrant regulatory notification. Further, as noted above, an alarm is required if instrumentation detects "a leak" above 10,000 ppmv for more than 5 continuous days. Then, §95668(h)(5)(B)(6) requires notification to state and local agencies if a leak is identified based on a subsequent Method 21 survey. As discussed in the previous item, and discussed further below and presented in Attachment A, Table 2, leaks can be very small at this concentration level and notifications may not be warranted.

F-9-11

Implementation is also not clear – e.g., it is not clear if a single instantaneous measurement above 10,000 ppmv once per day for 6 days would result in the conclusion that the, "10,000 ppmv leak persists for more than 5 continuous calendar days." SoCalGas recommends a revision to the response required if continuous instrumentation persistently detects a leak larger than 10,000 ppmv. If the leak is investigated and repaired per §95668(h)(5)(B)(3) and (4), and recorded and reported per §95668(h)(5)(B)(7) and (8), notifications should not be required. Based on the leak rates noted in Attachment A, Table 2 (e.g., ARB report correlation equations show average emission rates of 0.2 to 2 grams per day), notifications to several state and local agencies are not warranted. F-9-12

C. More time is needed for revisions of monitoring plan. We appreciate that ARB allows 180 days for operators to implement monitoring plans after approval, as we had requested. However, the rule still only provides 14 days for revisions if ARB disapproves the operator plan. 14 days is not sufficient time to revise a storage facility monitoring plan, particularly when it is considered these will be the initial plans and that ARB will be approving or disproving the plans just prior to the July 4th holiday. A minimum 60-day time period is needed. We provide the following edits: F-9-13

§95668(h)(3)(A): "Revisions to monitoring plans must be submitted to ARB within ~~14~~ **60** calendar days of ARB notification"

§95668(h)(3)(B) "ARB will approve in full or in part, or disapprove in full or in part, the revisions to the monitoring plan within 14 calendar days of submittal to ARB. **If ARB does not respond with the 14 calendar days the monitoring plan is approved in full.**"

D. Well blowout - Assuming ARB retains Section 95675(c), we recommend that a well blowout not be considered a violation and that new Section 95668 (i)(5)(B)(5) be deleted in its entirety. In that scenario, the rule would fully cover the climate impact of a well blowout and operators would be fully incentivized to avoid well blowouts. F-9-14

SoCalGas and SDG&E would like to thank ARB staff for considering our feedback. Please contact me if you have any questions or concerns about these comments.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
SoCalGas and SDG&E

Attachment A: ARB's Enhanced I&M Report data supporting SoCalGas comments, including additional examples and analysis

On February 3, 2017, ARB released a report prepared by Sage Environmental, "Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities – Final (Revised)." As discussed in the comments and further explained below, the ARB report supports previous SoCalGas comments questioning the leak definition (i.e., based on an EPA Method 21 screening value (SV) of 1,000 ppmv versus 10,000 ppmv) and related requirements for repair schedules and other criteria associated with those two screening values and a SV of 50,000 ppmv.

The report presents results from an ARB field study that measured mass emissions from leaking components in natural gas service, and correlated emission rates with EPA Method 21 screening values (SVs). This is consistent with historical studies that have developed "correlation equations" for leaks where the estimated leak rate is a function of the Method 21 screening value.

In previous comments, SoCalGas has provided examples of very low mass emissions associated with some leaks, and the ARB Enhanced I&M Report provides additional documentation to support those assertions. The ARB study results are presented graphically in Figure 2-7 of the report, and correlation equations are provided that allow emission rate calculations for different component types.

Emission rates can be calculated using the correlation equations and analysis can consider associated proposed rule benefits based on those results. For example, in §§95669(h) and (i), the ARB proposed rule includes LDAR criteria and repair actions based on SVs of 1,000 ppmv, 10,000 ppmv, or 50,000 ppmv. The associated emission rates can be calculated and implications assessed.

Overview of Emission Levels based on ARB Enhanced I&M Report Screening Value Correlations

Tables 1 through 3 present calculated hourly or annual emission rates for key proposed rule SV thresholds. The value of the gas saved presented in the tables is based on a natural gas price of $3.44 per MCF[1].

- An average component leak with a SV of 1,000 ppmv leaks a negligible amount of gas, less than 1 (one) scf of natural gas per year with a value of less than one cent per year.
- An average component leak with a SV of 10,000 ppmv leaks less than 20 scf of natural gas per year with a value of less than 10 cents per year. The average mass emissions rate for 10,000 ppm leaks is less than 0.03 metric tons CO_2e per year. ARB has not justified why leaks of this magnitude or smaller warrant regulatory control.
- An average component leak with a SV of 50,000 ppmv leaks about 200 scf natural gas of per year with a value from saved gas of less than $1.00 per year. This relatively low emission rate is significant because the proposed rule requires aggressive action for leaks with an SV above 50,000 ppmv and requires such leaks to be eliminated after 2020. As discussed in previous SoCalGas comments and demonstrated in Table 3, the Method 21 screening value is not necessarily indicative of a very large leak, and the measures associated with 50,000 ppmv leaks are not warranted.
- These very small emission rates demonstrate that rule provisions that require leak repairs in a short prescribed time period [e.g., 2 or 5 calendar days in §95669(i)] cannot be cost-effective if the repair cannot be completed immediately (i.e., successful immediate repair is not possible). Daily leak emissions are negligible (e.g., about 1 gram per day for a 10,000 ppm leak) and do not justify the labor cost for an operator to repair such leaks outside their normal maintenance schedule.

  For example, the incremental emissions associated with repairing a 10,000 ppmv leak after 30 days rather than 5 days is about 4 lbs (or 0.002 metric tons) of CO_2e (based on a GWP of 72). If an operator was required to make a designated trip to repair the leak to meet a 5 day repair time period,

[1] $3.44 per MCF is the natural gas value used by ARB in its economic analysis.

and the repair required one hour at $60/hr, the cost-effectiveness associated with the incremental leak reduction would be about $30,000 per metric ton. Further, and as discussed below and shown in Figure 1, a light duty truck emits about one pound of CO_2 per mile. Thus, if the designated trip to repair the leak to meet the 5 day repair time period required more than 4 miles of driving, rule compliance would cause a net increase in GHG emissions.

Tables 1 – 3 present average leak emission rates based on correlation equations from the ARB study. Averages are based on the emission rates for the four component types. Weighted averages presented in the tables consider the number of each type of component included in the study. That last column in each tables presents the value of gas saved based on a natural gas price of $3.44 per MCF.

Table 1. Average Leak Rate Emissions, Method 21 Screening Value = 1,000.

	TOC (as CH4) Leak Rate for M21 Screening Value of 1,000 ppmv							
Component	**kg/hr**	**gram/ day**	**lb CO2e/ day**	**lb/yr**	**mt CO2e/ yr**	**scf/hr**	**scf/yr**	**$/yr**
Valves	4.6E-7	1.1E-2	1.7E-3	8.9E-3	2.9E-4	2.4E-5	0.21	$0.001
Connectors & Flanges	9.7E-7	2.3E-2	3.7E-3	1.9E-2	6.1E-4	5.0E-5	0.44	$0.002
OELs	3.0E-6	7.1E-2	1.1E-2	5.7E-2	1.9E-3	1.5E-4	1.35	$0.005
Other components	1.2E-6	2.8E-2	4.4E-3	2.3E-2	7.4E-4	6.1E-5	0.53	$0.002
Average	**1.4E-6**	**3.3E-2**	**5.3E-3**	**2.7E-2**	**8.8E-4**	**7.2E-5**	**0.63**	**$0.00**
Weighted Average	**1.3E-6**	**3.2E-2**	**5.1E-3**	**2.6E-2**	**8.4E-4**	**6.9E-5**	**0.61**	**$0.00**

Table 2. Average Leak Rate Emissions, Method 21 Screening Value = 10,000.

	TOC (as CH4) Leak Rate for M21 Screening Value of 10,000 ppmv							
Component	**kg/hr**	**gram/ day**	**lb CO2e/ day**	**lb/yr**	**mt CO2e/ yr**	**scf/hr**	**scf/yr**	**$/yr**
Valves	9.9E-6	0.24	0.04	0.19	0.006	5.1E-4	4.50	$0.02
Connectors & Flanges	7.7E-6	0.18	0.03	0.15	0.005	4.0E-4	3.50	$0.01
OELs	8.0E-5	1.93	0.31	1.55	0.051	4.2E-3	36.70	$0.13
Other components	6.6E-5	1.59	0.25	1.28	0.042	3.5E-3	30.30	$0.10
Average	**4.1E-5**	**0.99**	**0.16**	**0.79**	**0.026**	**2.1E-3**	**18.75**	**$0.06**
Weighted Average	**3.6E-5**	**0.86**	**0.14**	**0.70**	**0.023**	**1.9E-3**	**16.46**	**$0.06**

Table 3. Average Leak Rate Emissions, Method 21 Screening Value = 50,000.

	TOC (as CH4) Leak Rate for M21 Screening Value of 50,000 ppmv							
Component	**kg/hr**	**gram/ day**	**lb CO2e/ day**	**lb/yr**	**mt CO2e/ yr**	**scf/hr**	**scf/yr**	**$/yr**
Valves	8.4E-5	2.02	0.32	1.62	0.05	4.4E-3	38	$0.13
Connectors & Flanges	3.3E-5	0.78	0.12	0.63	0.02	1.7E-3	15	$0.05
OELs	8.1E-4	19.35	3.07	15.57	0.51	4.2E-2	368	$1.27
Other components	1.1E-3	26.81	4.26	21.58	0.70	5.8E-2	510	$1.76
Average	**5.1E-4**	**12.24**	**1.94**	**9.85**	**0.32**	**2.7E-2**	**233**	**$0.80**
Weighted Average	**4.4E-4**	**10.51**	**1.67**	**8.46**	**0.28**	**2.3E-2**	**200**	**$0.69**

Related Analysis and Comments: Emission rates and proposed storage monitoring and LDAR criteria

- Screening Value-based Notification Criteria in §95668(h)(5)(B): This section requires notification to regulatory agencies any time a leak above 50,000 ppmv is identified or above 10,000 ppmv is identified for more than five continuous days. Leak rate / Method 21 concentration correlations from ARB's recently released Enhanced I&M Report (discussed further below) indicate that: F-9-15

    - Average 10,000 ppmv leaks from connectors, flanges, and valves in natural gas service emit less than 0.2 pound of methane per year (or less than 0.25 gram per day), and
    - Average 50,000 ppmv leaks from connectors, flanges, and valves in natural gas service emit about 1 to 2 pounds of methane per year (or about 1 to 2 grams per day).

  ARB has not justified why such small leaks warrant regulatory notification.

- Emissions Implications from Repair Schedules in §§95669(h) and (i): These two sections define repair schedules based on SVs. SoCalGas recommends revisions to allow more appropriate repair schedules. For example, GHG emissions from driving to repair leaks may be *higher* than the emissions that are reduced if unscheduled trips are required.

  Example scenarios are provided to compare and contrast emissions from actions that would result from proposed rule requirements. For example, the cited rule sections list schedules for repairing leaks based on the SV, and leaks must be successfully repaired or removed from service within as little as 2 calendar days of initial leak detection. In some cases (e.g., when a first attempt at repair is not possible or not successful), this may require an expedited response including personnel working weekends and holidays. It does not appear that ARB has considered the GHG emissions caused by such an expedited response, the associated environmental benefit (or dis-benefit), or the cost-effectiveness of such an expedited response. F-9-16

  The following examples illustrate potential emissions reductions from leak repair and related emission increases from vehicle travel if unplanned trips are required. The emissions dis-benefit discussed below can be further compounded if equipment de-pressurization is required to safely perform the repair. That analysis is not presented here, but could be completed to demonstrate additional emission dis-benefits from prescribed repair schedules that do not consider operational and logistical factors. Emission rates from correlation equations in ARB's Enhanced I&M Report can be used to assess and compare emission levels from the leak and from vehicle travel:

    - GHG emissions from additional driving caused by an expedited response can exceed incremental GHG emission reductions. Figure 1 shows cumulative GHG emissions (as CO_2e, GWP = 72 for methane) for two average leak rates for **50,000** ppm leaks (leak concentration as methane measured by EPA Method 21). Such leaks will be rare, and leak rates (and emissions reductions) will typically be *much lower* than presented in Figure 1. The 2 grams methane per day leak rate applies to connectors, flanges, and valves, and the 25 grams methane per day leak rate applies to OELs and other components (refer to ARB's Enhanced DI&M Report and Table 3 above). Light duty trucks emit about 1 pound of CO_2 per mile[2].
        - In Figure 1, the red line estimates the CO_2 emissions if an employee drove 40 miles (roundtrip) to repair a leak. For example if they had to work on a weekend and make a special trip to repair the component, or if an unplanned trip was required to meet the repair schedule. The vehicle emissions would exceed the GHG emissions for 10 days of gas leakage at 25 grams of methane per day and *months* of GHG emissions for gas leakage at 2 grams of methane per day. The employees may drive further than 20 miles (one way) to address the required leak repair schedule.

[2] Based on CO_2 emissions from motor gasoline combustion of 20 pounds per gallon, with the truck averaging about 20 mpg.

- In Figure 1, the blue line estimates the CO_2 emissions if an employee drove 10 miles (roundtrip) to repair a leak, for example if they had to make a special trip within a large gas storage facility to repair the component. This would equal the GHG emissions for about 3 days of gas leakage at 25 grams of methane per day and about 25 days of GHG emissions for gas leakage at 2 grams of methane per day.

The leak repair reductions are further offset by vehicle methane emissions, which are not presented in Figure 1. For example, based on an EPA report,[3] gasoline fueled trucks emit 0.02 to 0.05 grams of methane per mile. For a 10 miles trip, this is 0.2 to 0.5 grams of methane emissions (versus a very conservatively high leak rate of 2 or 25 grams per day shown in Figure 1). For a 40 mile trip, this equates to 0.8 to 2.0 grams of methane emissions – or a similar magnitude as the daily leak rate.

The approximate cost-effectiveness (i.e., $ / metric ton of incremental CO_2e emission reductions) can also be considered, independent of the emissions dis-benefit discussed above. The cost for an expedited leak repair is well above $10,000/metric ton, which is a very high value for GHGs. For example, personnel working two hours on a weekend or over-time at a fully burdened cost of $60/hr to specifically repair a 2 gram methane per day leak (e.g., to meet a 2 calendar repair time schedule), that could have been repaired during a normal rounds ten days later, would cost about $100,000 per incremental metric ton CO_2e emission reductions.

F-9-16 cont.

In sum, repair time periods should be of sufficient duration that repairs can be conducted during a normal and organized repair schedule that would not require unnecessary site visits (i.e., driving) that will result in excess GHG emissions, as well as to avoid extremely disproportionate costs relative to the incremental emission reductions. The rule should allow a minimum of 10 business days. If equipment venting is required to complete the repair, then the repair schedule should allow additional time, as warranted. Repair at the next scheduled process shutdown may be appropriate.

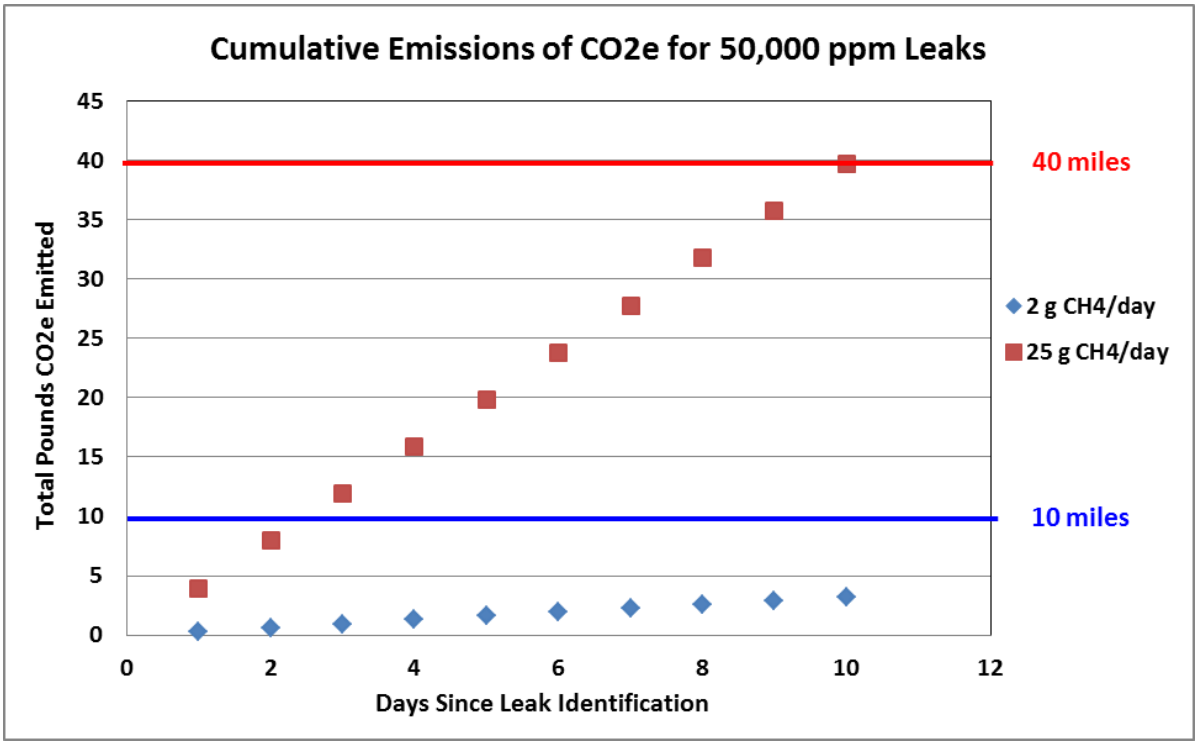

Figure 1. Compare cumulative CO_2e emissions by day (for average 50,000 ppm leaks) to emissions from vehicles mileage to address leak repair. Methane GWP = 72.

[3] EPA420-P-04-016, "Update of Methane and Nitrous Oxide Emission Factors for On-Highway Vehicles," Table 10, (November 2004).

- Screening value for leak definition: §95669(h) – (i) include leak definitions for 2018 through 2019, and starting January 1, 2020. The emission rates presented above indicate very low average emissions from leaks at 10,000 ppmv or 1,000 ppmv, and the emissions information supports previous SoCalGas comments recommending a leak concentration threshold of 10,000 ppm (rather than lower values). Or, at a minimum, SoCalGas has recommended that ARB evaluate the program after two years rather than presuming more stringent criteria are warranted in 2020. F-9-17

- Repair schedules and maximum allowed screening value: The same two sections of the proposed rule define repair schedules based on the SV as well as the number of leaks allowed. In addition to very low emission rates at SVs of 1,000 or 10,000 ppmv presented in Tables 1 and 2, Table 3 also demonstrates the inability to equate a leak with an SV of 50,000 ppm as an especially large emitter. For currently proposed criteria based on SV tiers, analysis of the emissions benefit and costs of required actions do not withstand scrutiny when considering emission rates based on ARB study results. F-9-18

Uncertainty from EPA Method 21 Instrumentation

The ARB report also demonstrates the arbitrary nature of leak concentration thresholds by comparing the response of Method 21 instruments. The study evaluated three different leak detection instruments that meet EPA Method 21 Performance criteria. Leaking components were monitored by each instrument in close succession. Table 4 compares measured concentrations for three instruments for leaks in the 1,000 to 10,000 ppmv range.

Table 4. Data from Table 3-9 of the Sage Study Report "Comparative Monitoring Results for Method 21 Compatible Instruments"

Item #	Component Description	Leak Concentration			Max / Min
		TVA (ppm)	RKI Eagle (ppm)	COSMOS (ppm)	
39	Level Controller	1,200	1,200	1,400	117%
40	Connector	3,100	2,390	3,400	142%
41	OEL	3,200	3,450	8,900	278%
42	Controller	5,000	5,400	5,800	116%
43	Pressure regulator	6,100	4,900	7,300	149%
44	Connector	6,900	3,400	10,100	297%

F-9-19

Measured hydrocarbon concentrations differed for every leak, with differences as large as a factor of 3. Comment 15 in the SoCalGas/SDG&E comments dated July 18, 2016 regarding the proposed ARB methane rule discusses why EPA Method 21 gas leak concentration measurements (i.e., screening values) have a very large uncertainty, and should not be the sole basis for leak repair thresholds, schedules, and rule compliance determinations. Separate from the discussion above regarding the emission rates in Tables 1 through 3, the data in Table 4 demonstrate additional ambiguity and uncertainty that can occur from instrumentation-based differences in defining and assessing the significance of a leak. Collectively, this information supports SoCalGas comments that a leak definition of 10,000 ppmv is more appropriate than 1,000 ppmv.

Attachment B: Costs Estimates for LDAR and Storage Monitoring

ARB documents released on February 3, 2017 include updates to cost and emission estimates, posted on the ARB website as "Attachment 2." Tables below summarize ARB cost estimates for LDAR and storage monitoring, and present cost estimates from SoCalGas for comparison. A summary of key points follow.

LDAR Economic Analysis

Table 1 compares the ARB analysis to SoCalGas cost estimates for LDAR programs. As discussed in previous SoCalGas comments, available documentation indicates that ARB's targeted emission reduction can be achieved with annual rather than quarterly survey frequency. Thus, the SoCalGas analysis includes costs for quarterly or annual surveys, and considers two values for methane global warming potential (GWP). The gray rows highlight *parameter assumptions* that differ significantly for ARB and SoCalGas. The yellow rows highlight the two primary results: total annual LDAR cost and LDAR cost effectiveness. The comparisons indicate: F-9-20

- ARB's LDAR cost estimate for quarterly surveys is similar to SoCalGas costs for *annual* surveys. The SoCalGas costs indicate quarterly surveys are about 4 times more costly than ARB's estimate.
- The SoCalGas estimate assuming quarterly surveys and the commonly used GWP based on a 100-year time horizon (GWP = 21) shows a cost effectiveness value over 8 times higher than ARB's estimate (i.e., $193.78 per metric ton CO_2e reduced versus $23.48 per metric ton).

Storage Monitoring Economic Analysis

Table 2 compares several storage monitoring scenarios from the ARB analysis to the SoCalGas cost estimate for continuous monitoring. This includes ambient monitoring requirements and well-related monitoring requirements in §98668(h) of the proposed rule. The yellow rows highlight total costs for different components of the storage monitoring program.

For ambient monitoring, the costs for ARB and SoCalGas are similar. However, as discussed in SoCalGas comments, the cost estimate is based on two total monitors, which is not clearly indicated in the proposed rule. If additional ambient monitors are required, costs (relative to Table 2 estimates) would increase approximately 50% for each additional monitoring location. F-9-21

Similar to the comment below for wellhead monitoring, these costs do not include costs for infrastructure. It is unlikely that relatively remote ambient monitor sites will have power access, and significant costs could be incurred to provide power, and develop access roads, instrumentation pads, etc.

For wellhead monitoring, ARB assumes that continuous monitoring instruments will be employed with 10% or less of the wells monitored manually. Table 2 presents comparisons assuming continuous wellhead monitoring. ARB has not adequately considered costs for *manual* wellhead monitoring:

- SoCalGas anticipates that manual monitoring will be employed at some or all sites, at least in initial years of the program. As discussed in previous SoCalGas comments, additional evaluation is needed to assess the viability of continuous monitoring systems to meet proposed requirements. Many methane monitoring technologies are still experimental or developmental, such as those being developed under the DOE ARPA-E research program. F-9-22
- For daily manual monitoring, SoCalGas experience is that costs are approximately $20,000 per well per year. For example, approximately $2.4 million per year at one facility. This is an *ongoing annual cost.*

- The Table 2 costs are total statewide estimates for 14 storage facilities. The total continuous wellhead monitoring costs for the 14 facilities are $3.5 to $7.8 million, so the average annual costs are $250,000 to $560,000 per facility. This estimate is significantly lower than the annual $2.4 million cost for manual monitoring based on SoCalGas experience.
- Since manual monitoring is likely to be much more prevalent than forecast by ARB, the wellhead monitoring costs are significantly underestimated.

In addition, for *continuous* wellhead monitoring, cost estimates do not include infrastructure needed to implement the program. For example, power (electricity) will not be readily available at all locations, and costs to provide power and develop pads and access roads could be significant, depending upon the location.

F-9-22 cont.

Table 1. Comparison of ARB and SoCalGas Economic Analysis for Proposed LDAR.

		ARB 2017	SCGas Quarterly (GWP = 72)	SCGas Annual (GWP = 72)	SCGas Quarterly (GWP = 21)	SCGas Annual (GWP = 21)	Notes
LDAR Inspections Costs							
Number of Components	A	1,585,653	1,565,168	1,565,168	1,565,168	1,565,168	ARB component count includes 20,485 well casings (excluded from SCGas analyses). Well casings require gas emission rate measurements, not Method 21 leak concentration measurements, and should not be included in this total. These costs should be determined separately.
LDAR survey team labor Rate ($/hr)	B	$60	$142.06	$142.06	$142.06	$142.06	ARB Labor rate based discussions with contractors. SCGas Labor rate from ICF 2016 (2-person team with travel and other ODC). A 2-person team is needed for this rule because survey requirements include carry OGI camera, recordkeeping, component counts (§95669(n)), and initial attempt at leak repair. In addition, 2-person teams is standard procedure due to safety considerations when working at remote locations (e.g., O&G production, storage fields)
Labor hours per survey team year	C	2,080	2,080	2,080	2,080	2,080	
Inspections per year	D	4	4	1	4	1	
Components per survey team year	E	70,720	70,720	70,720	70,720	70,720	Based on inspection rate of 34 components per hour (includes preparation and travel)
Annual LDAR Inspection Cost ($/yr)	F=A*B*C*D/E	$11,192,845	$26,158,561	$6,539,640	$26,158,561	$6,539,640	
		$11,192,845	*$26,158,561*	*$6,539,640*	*$26,158,561*	*$6,539,640*	*Calculation check*
Set up Cost							
Cost per Facility ($/Facility)	G	$1,500	$1,500	$1,500	$1,500	$1,500	
Number of Facilities	H	799	799	799	799	799	Number of Facilities at the time when the survey was conducted.
Number of Components from Survey	I	1,339,185	1,339,185	1,339,185	1,339,185	1,339,185	
Total One-time Set up Cost ($)	J=G*H*A/I	$1,419,076	$1,400,743	$1,400,743	$1,400,743	$1,400,743	
Capital Recovery Factor (CRF)	K	0.23	0.244	0.244	0.244	0.244	Based on experience, SCGas assumes LDAR vendors are periodically changed, assume after 5 years on average for all facilities and discount rate of 7%
Annualized Set-up Cost ($/year)	L=J*K	$326,387	$341,781	$341,781	$341,781	$341,781	
Recordkeeping & Reporting Cost							
R&R Cost per Person (Survey Team)Year	M	$15,000					
Total R&R Costs ($)	N=M*D*A/E	$1,345,294					Revised ARB Costs based on ICF document estimates.
Total R&R Costs ($)	N1=P*A/I		$2,486,032	$677,888	$2,486,032	$677,888	"P" from SCGas comments dated 7/18/16 (see Attachment A, row T). Number of facilities and businesses increased by ratio of "Number of Components" and "Number of Components from Survey," which is assumed to account for new facilities added since the survey was conducted.
Facility Support Cost							
Facility personnel support ($/Facility-yr)	Q=A*80*C*D/E	$0	14,730,993	3,682,748	14,730,993	3,682,748	SCGas estimates one hour of storage facility rep time (at $80/hr) required for every hour survey team on site , based on historical support for leak surveys at storage facilities (e.g., training, scheduling, safety orientation, survey team escort and support, M21 measurement of detected and repaired leaks, leak repair, etc.) - ARB assumes no facility support costs. ""Following the methodology from the ICF report, the capital cost of larger repairs is not included based upon the assumption that these repairs would need to be made regardless of an LDAR program; because the operator would repair these parts regardless of the LDAR program, the program serves to identify equipment failures sooner, benefiting the operator above and beyond business as usual. Thus only those repairs that are made on a first attempt are accounted for in this estimate, and are reflected in the 34 components per hour value."
Total Annual LDAR Inspection Cost	R=F+L+N+N1+Q	$12,864,526	$43,717,367	$11,242,058	$43,717,367	$11,242,058	
Annual Leak Emissions (mt CH4/yr)	S	11,407	11,407	11,407	11,407	11,407	From Tables A-1, A-2, and A-3 of Attachment 2.
LDAR Control Efficiency	T	60%	90%	80%	90%	80%	
Emission reductions by LDAR (mt CH4/yr)	U=S*T	6,844.28	10,266	9,126	10,266	9,126	
Global Warming Potential	V	72	72	72	21	21	GWP of 21 based on 100 year horizon and GWP of 72 based on 20 year horizon.
Annual Leak Emissions (mt CO2e/yr)	W=S*V	821,314	821,314	821,314	239,550	239,550	
Emission reductions by LDAR (mt CO2e/yr)	X=W*T	492,788.45	739,182.67	657,051.26	215,594.95	191,639.95	
LDAR Cost Effectiveness							
LDAR Cost Effectiveness ($/mt CO2e)	Y=R/X	$26.11	$59.14	$17.11	$202.78	$58.66	
Value of Recovered Gas	Z	$1,293,380					
	Z1=Z*T/60%		$1,940,070	$1,724,507	$1,940,070	$1,724,507	
LDAR Cost Effectiveness with Recovered Gas Savings ($/mt CO2e)	AA=(R-Z)/X	$23.48	$56.52	$14.49	$193.78	$49.66	

Table 2. Comparison of ARB and SoCalGas Economic Analysis for Proposed Storage Monitoring – Ambient and Wellhead Monitoring.

Parameter	Parameter ID	ARB Scenario 1 (SCGas, IR 5500 at each well)	ARB Scenario 2 (ultrasonic and IR at each well)	ARB Scenario 3 (Fixed OGI at Wells)	SCGas	
Continuous Ambient Air Monitoring Costs						
Capital Cost per Facility ($/Facility)	A	$400,000	$350,000	$350,000	$400,000	Costs based on ARB assumption of 2 monitors per facility. - SCGas EA: Estimated facility capital cost for multiple units (Boreal TDL based-technology) for 360 degree coverage. Actual capital costs will depend on requirements for "ambient" and "facility" monitoring, and instrument sensitivity requirements.
Capital Recovery Factor	B	0.13	0.13	0.13	0.142	10 year amortization, ARB at 5% discount rate, SCGas at 7% discount rate.
Capital Costs for Meteorological Station required by §95668(h)(5)(A)2. ($/Facility)	C	$0	$0	$0	$20,000	Assume 2 met stations, $10,000 each.
Annualized Capital Costs ($/Facility-yr)	D=B*(A+C)	$52,000	$45,500	$45,500	$59,640	
Annual O&M costs ($/Facility-yr)	E	$52,000	$179,000	$179,000	$52,000	SCGas EA: estimated costs for maintenance, calibration, spare parts, etc. Estimate 5% of monitors is replaced each year + $10,000 annual O&M per monitor
Annual O&M costs for Meteorological Station ($/	F	$0	$0	$0	$7,680	Assume 2 met stations, 4 hours maintenance and calibrations a month per station.
Number of Facilities	G	14	14	14	14	
Total Annual Cost	H=G*(D+E+F)	$1,456,000	$3,143,000	$3,143,000	$1,670,480	
Daily or Continuous Wellhead Monitoring Costs						
Capital Cost per Well ($/Well)	I	$77,000	$94,500	$30,000	$77,000	ARB Scenario 3, $90,000 to cover three wells. Assumption not supported. SC Gas EA: 2 pair IR 5500 at each well + 10% contingency.
Annualized Capital Costs ($/Well-yr)	J=I*B	$10,010	$12,285	$3,900	$10,934	
Annual O&M Costs ($/Well-yr)	K	$5,000	$5,000	$0	$5,000	ARB Scenario 3, no O&M costs. Assumption not supported. SCGas EA: estimates costs for maintenance, calibration, reporting, data review, and data compilation for external audiences. Estimate 5% of equipment is replaced each year + $3,500 annual O&M per well.
Number of Wells	L	452	452	452	452	
Annual OGI camera inspections ($ / Facility)	M	$0	$0	$123,839	$0	ARB Scenario 3, 10% of wells require OGI. This cost is about $38,500 per well per year. Would be less expensive to install the Fixed OGI at each well.
Total Annual Cost ($/yr)	N=L*(J+K)+M*G	$6,784,520	$7,812,820	$3,496,546	$7,202,168	ARB Scenario 3 has a calculation error, the Fixed OGI costs should only apply to 90% of the wells.
Recordkeeping & Reporting						
Monitoring Plan (MP) Development ($/Facility)	O	$20,000	$20,000	$20,000	$20,000	
Capital Recovery Factor	P	0.142	0.142	0.142	0.142	Adjusted ARB CRF to match ARB total cost. ARB used SCGas CRF.
Annualized MP Development Costs ($/Facility-yr	Q=O*P	$2,840	$2,840	$2,840	$2,840	
Annual MP Updates ($/Facility-yr)	R	$4,000	$4,000	$4,000	$4,000	
Annual Reporting Cost ($/Business-yr)	S	$20,800	$20,800	$20,800	$20,800	
Number of Businesses	T	6	6	6	6	
Annual Recordkeeping Cost ($/Facility-yr)	U	$83,200	$83,200	$83,200	$83,200	
Total Annual Cost ($/yr)	V=S*T+G*(Q+R+U)	$1,385,360	$1,385,360	$1,385,360	$1,385,360	
Screen and Repair Detected Leaks						
Annual repairs ($/Facility)	W	$134,682			$134,682	Annual cost to screen and repair Method 21 detected leaks in accordance with §95668(h)(5)(B)3. & 4. SCGas cost estimate from SCGas comments dated 7/18/16 (see Attachment A1, row G6).
Total Annual Cost	X=G*W	$1,885,548			$1,885,548	
Total Annual Monitoring Cost	Y=H+N+V+X	$11,511,428	$12,341,180	$8,024,906	$12,143,556	

Attachment C: Additional Comments and Rule Language Modifications

Suggested Language modifications: **additions** and ~~deletions~~

1. §95667(a) Definitions

The thresholds specified in this article are associated with a concentration measurement (ppmv) not a rate (scf/hr).

(27) "Leak or fugitive leak" means the unintentional release of emissions at a ~~rate~~ **concentration** greater than or equal to the leak thresholds specified in this article.

F-9-23

2. §95668(d)(3) – Centrifugal Natural Gas Compressors

The Centrifugal Compressors section needs the same clarification language that was added to Section 95668(c)(4)(A) Reciprocating Compressors to prevent duplicative testing of seals.

F-9-24

- §95668(d)(3) Beginning January 1, 2018, components on driver engines and compressors that use a wet seal or a dry seal shall comply with the leak detection and repair requirements specified in section 95669; **except for components subject to section 95668(d)(4)**; and,

F-9-25

- §95669(b)**(15) A compressor wet seal which is subject to the requirements specified in section 95668(d)(4) of this subarticle**.

3. Delay of Repair

Language was added to provide a means for extending the repair timeframe. Using "may" implies an approval is required.

F-9-26

- §95668(c)(3)(D)1; §95668(c)(4)(D)1; and §95668(d)(6)(A):
  "A delay of repair ~~may~~ **shall** be granted by the ARB Executive Officer if the owner or operator can provide proof that the parts or equipment required to make necessary repairs have been ordered."

F-9-27

- §95668(h)(4); and §95668(i)(5)
  A delay of repair ~~may~~ **shall** be granted by the ARB Executive Officer under the following conditions:

4. §95669 – Leak Detection and Repair

F-9-28

- §95669(b)(1)
  Clarification is needed that LDAR is applicable to the aboveground components of wells, unless they are currently being inspected under an LDAR program. Are components currently exempt from inspection under an existing LDAR regulation exempt from this section of the proposed regulation? (ex: SCAQMD Rule 1173(l)(1)(C) "Components exclusively handling commercial natural gas.")

    - §95669(b) (1) Components, including components found on tanks, separators, **the aboveground components of** wells, and pressure vessels that are subject to local

air district leak detection and repair **inspection** requirements if the requirements were in place prior to January 1, 2018. F-9-28 cont.

- §95669(c) Beginning January 1, 2018, all components, including components found on tanks, separators, **the aboveground components of** wells, and pressure vessels not identified in section 95669(b) shall be inspected and repaired within the timeframes specified in this section. F-9-29

- §95669(b)**(15)** – see #2 above

- Clarification is needed to ensure that components with no ability to produce emissions are not subject to this regulation.
  - §95669(b)**(16) Components on utilities and plant systems which do not contain natural gas: potable and non-potable water (cooling water, fire water, etc.), engine oil, cooling water, gasoline and diesel, septic and sewage systems, fire extinguishing systems, etc.** F-9-30
  - §95669(b)**(17) Compressed Gas cylinders** F-9-31

- §95669(e):
  The rule should clarify that personnel should not be required to drive daily to remote locations at a facility that are not otherwise visited solely for the purpose of an inspection. ARB has not demonstrated that this would cost-effectively reduce emissions and the associated accumulated vehicle emissions would greatly exceed the reduction from the occasional early detection of a very small leak. The following edits are recommended:
  - §95669(e): "Except for inaccessible or unsafe to monitor components, owners or operators shall audio-visually inspect (by hearing and by sight) all hatches, pressure-relief valves, well casings, stuffing boxes, and pump seals for leaks or indications of leaks at least once every 24 hours for ~~facilities~~ **locations** that are visited daily, or at least once per calendar week for ~~facilities~~ **locations** that are not visited at least once every 24 hours **or at least monthly if a facility has not operated more than 200 hours in a month. The operator shall keep sufficient operating records to support the inspection frequency**," F-9-32

- As written, leaks detected on a Friday could require personnel to work on the Saturday to measure the leak concentration. The very small emission rates associated with the vast majority of leaks (refer to ARB Enhanced I&M Report leak rate data) does not warrant such action. For example, ARB has not demonstrated that such a requirement would be cost-effective (i.e., considered the cost for personnel to work a weekend (possibly at over-time labor rates) relative to the difference in potential emission reductions from identifying the leak a few days faster). ARB also has not considered that the GHG emissions emitted when the personnel drove to and from work (see Attachment A). The following edits are recommended: F-9-33
  - §95669(f)(1): "For leaks detected during normal business hours, the leak **concentration** measurement shall be performed ~~within 24 hours~~ **by the end of**

the next normal business day. For leaks detected after normal business hours or on a weekend or holiday, the deadline is shifted to the end of the next normal business day." F-9-33 cont.

- §95669(g)(1)(A) "**The concentration of** ~~A~~**a**ll leaks detected with the use of an OGI instrument shall be measured using **U.S.** EPA **Reference** Method 21 within two calendar days of initial OGI leak detection or within 14 calendar days of initial OGI leak detection of an inaccessible or unsafe to monitor component to determine compliance with the leak thresholds and repair timeframes specified in this ~~section~~ **subarticle**. **For leaks detected after normal business hours or on a weekend or holiday, the deadline is shifted to the end of the next normal business day.**" F-9-34

- §95669(g)(3) Requiring inaccessible or unsafe to monitor components to be inspected per method 21 annually with no screening option could result in either placing personnel in an unsafe situation or a facility shut down. We propose adding language consistent with the CARB GHG Mandatory Reporting Rule
  - CARB GHG Section 95154
    (1) *Optical gas imaging instrument*
    (2) *Method 21* "Owners or operators must use alternative leak detection devices as described in paragraph (a)(1) or (a)(2) of this section to monitor inaccessible equipment leaks or vented emissions."
    (4) Optical gas imaging instrument. An optical gas imaging instrument must be used for all source types that are inaccessible and cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
  - §95669(g)(~~3~~**2**) All inaccessible or unsafe to monitor components shall be inspected at least once annually using US EPA Reference Method 21 **or screened with Optical Gas Imaging instruments**.

F-9-35

- The ARB Notice of Public Availability indicates that "scheduled" was added to Section 95669(h)(3) ,Table 2 and Table 4, but it is missing from 95669(h)(3). For consistency, "scheduled" should also be added to section 95669(i)(4)
  - 95669(h)(3) Critical components or critical process units shall be successfully repaired by the end of the next **scheduled** process shutdown or within 12 months from the date of initial leak detection, whichever is sooner.
  - 95669(i)(4) Critical components or critical process units shall be successfully repaired by the end of the next process **scheduled** shutdown or within 12 months from the date of initial leak detection, whichever is sooner.

F-9-36

- A best practice proposed by the CPUC in the SB 1371 Leak Abatement OIR proceeding is to "require bundling of work whenever possible to prevent multiple venting of the same piping". Rule language is needed to prevent a conflict between regulatory proceedings. During discussions with ARB staff, the question of when a shut-in or blowdown is necessary was discussed. Safety of personnel and the public are of primary concern. If repairs are required on high pressure systems, it is unsafe to perform even a

F-9-37

simple task such as tightening a flange without first reducing the pressure. An analogy would be adjusting a fitting on a garden hose (low pressure water) vs. a fire hose (high pressure).

- 95669(h)(4)**(C) A delay of repair will result in a net decrease in emissions when consideration is given to bundling the repair with other, planned future work. The owner or operator can provide documentation of the planned future work to support the consideration of net emissions benefit.**

  1. The delay of repair shall not exceed the end of the next scheduled process shutdown or within six months, whichever is sooner.

F-9-37 cont.

- 95669(h) and 95669 (i) Previous comments have been submitted regarding the technical basis for Table 1 and Table 3. Originally this table was referenced as an incentive to step-down from a required quarterly inspection to annual. With the removal of the step-down inspection frequency, these tables and associated references should be deleted.
  - **Table 1 - Allowable Number of Leaks**

January 1, 2018 through December 31, 2019 Leak Threshold	**200 or Less Components**	**More than 200 Components**
10,000-49,999 ppmv	5	2% of total inspected
50,000 ppmv or greater	2	1% of total inspected

  - **Table 3 - Allowable Number of Leaks**

On or After January 1, 2020 Leak Threshold	**200 or Less Components**	**More than 200 Components**
1,000-9,999 ppmv	5	2% of total inspected
10,000-49,999 ppmv	2	1% of total inspected
50,000 ppmv or greater	0	0

F-9-38

- 95669(o) The sections limiting the number of leaks should be deleted. Studies, including the ARB Enhanced I&M Report, have shown that a leak concentration measured by EPA Reference Method 21 is a very poor predictor of the leak's mass flow rate. Further, as discussed below, the sections limiting the number of leaks imply that leaks can be prevented, which is inconsistent with a basic, common understanding of leak emissions and LDAR program objectives.
  - (1) Between January 1, 2018 and December 31, 2019, no facility shall exceed the number of allowable leaks specified in Table 1 during any an ARB Executive Officer inspection period as determined by the ARB Executive Officer or by the facility owner or operator in accordance with US EPA Reference Method 21, excluding the use of PID instruments.
  - (2) On or after January 1, 2020, no facility shall exceed the number of allowable leaks specified in Table 3 during any an ARB Executive Officer inspection period as determined by the ARB Executive Officer or by the facility owner or operator

F-9-39

~~in accordance with US EPA Reference Method 21, excluding the use of PID instruments.~~

F-9-39 cont.

- 95669(o)(5) The notice of public availability states that this section is necessary to ensure that facilities are maintained in compliance with the standards. This is inconsistent with the objective of LDAR programs, where leak surveys are intended to discover and repair leaks. If leaks did not occur over time, repairs could be completed once and no further actions would be required. LDAR requires periodic leak surveys because leaks in pressurized systems will occur regardless of operator diligence – e.g., due to thermal cycling, vibration, etc. associated with typical operations of the affected components. This section implies that all leaks can be prevented, which is inconsistent with a basic, common understanding of leak emissions and LDAR program objectives, therefore this section should be deleted.
    - 95669(o)~~(5) Except for the fourth (4th) quarterly inspection of each calendar year, leaks discovered during an operator conducted inspection shall not constitute a violation if the leaking components are repaired within the timeframes specified in this subarticle~~

F-9-40

5. **95671(f)(1)(b) Vapor Collection Systems and Vapor Control Devices.**
For consistency and to reduce potential conflict with other section of this regulation, the delay of repair language should be added to this section. This allows for instances where additional time may be required to address technical and safety issues, long lead times, or to obtain permits.

§**95671(f)(1)(b) <u>A delay of repair shall be granted by the ARB Executive Officer if the owner or operator can provide proof that the parts or equipment required to make necessary repairs have been ordered.</u>**

***i.* <u>A delay of repair to obtain parts or equipment shall not exceed 30 calendar days, or 60 days from the date from of the initial measurement, unless the owner or operator notifies the ARB Executive Officer to report the delay and provides an estimated time by which the repairs will be completed.</u>**

F-9-41

6. **§95673- Reporting Requirements**

- §95669 (9): The reporting requirement to report an alarm 4 times the baseline conditions (8 ppm if 2 ppm is baseline) does not take into account any time weighted integrated average (such as a 20 minute average).
- This alarm limit does not consider if it is a leak from the facility versus external sources (e.g., biogenic or other sources).
- Alarm reporting should be revised to only include those incidents confirmed to be from the facility and should be based on a defined averaging period rather than an instantaneous measurement, which could be caused by any number of perturbations.

F-9-42

7. **Appendix C**

- Appendix C Test Procedure for Determining Annual Flash Emission Rate of Gaseous Compounds from Crude Oil, Condensate, and Produced Water, §10.3: The bubble point pressure and sample integrity check is flawed:
    - Transferring the sample from a floating piston cylinder to a double valve cylinder may compromise the sample (e.g., loss of volatile hydrocarbons and/or addition of air). Further, water-soluble species (e.g. CO_2, methane) could be transferred from the hydrocarbon phase in the double valve cylinder.
    - The graphing procedure in sub-section (g) appears to assume the bubble point pressure is the same or very close to the sample collection pressure. If the actual bubble point pressure is much less than or much greater than the sample collection pressure, then all six data points could be in a straight line. Or, the bubble point pressure could be between two of the three pressures below or above the sample collection pressure.

F-9-43

0G-F-10-EJ

February 21, 2017

Elizabeth Scheehle, Branch Chief, Oil and Gas and GHG Mitigation Branch
California Air Resources Board
1001 "I" St., Sacramento, CA, 95814

Via Electronic Submittal:
https://www.arb.ca.gov/lispub/comm/bcsubform.php?listname=oilandgas2016&comm_period=1

Re: Letter of Support and Suggested Improvements for the Revised Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities

Dear Ms. Scheehle,

Please accept this letter on behalf of 32 environmental justice, public health, and public interest institutions representing millions of Americans in support of the proposed rule to regulate greenhouse gas emissions from oil and gas facilities in California.

We commend the California Air Resources Board ("CARB") staff for drafting a proposal that directly regulates methane and associated emissions from a diverse suite of new and existing oil and gas sources. The provisions contained in the draft represent a model for the nation, including the quarterly baseline inspection requirement for facilities, the use of continuous ambient air quality monitoring along the fencelines of natural gas storage facilities, and the prioritization of natural gas capture over combustion requirements for a suite of equipment. This draft demonstrates the public health and welfare benefits of the rule, and showcases California as the foremost leader in tackling serious clean air and environmental issues. F-10-1

While we applaud the agency's effort to enact a strong rule, we are concerned that the timeframe for adopting the rule and implementing its provisions continues to slip – with the implementing timeframe delayed at least a year from the initial regulatory proposals. Additionally, we urge the Board to enumerate a well-developed implementation plan that lays out a detailed roadmap for how CARB and local air pollution districts will work together to effectively and efficiently implement the new regulations, including the timetable for periodic government audits of newly regulated facilities. Since the air pollution from oil and gas operations is a global problem, it is imperative for California to take strong action in ensuring the best leak-detection and repair technology is being used and inspections are being enforced – only then will a clear example be set for the rest of the nation and the world demonstrating what is possible. F-10-2

As a growing body of evidence demonstrates, there are significant negative public health and environmental impacts associated with pollution from oil and gas, with many of the worst impacts falling on communities adjacent to oil and gas operations. Short-lived pollutants like methane are warming the planet in ways that impact us at the local level. Studies show that along with the release of strong climate pollutants like methane, oil and gas production releases harmful co-pollutants like volatile organic compounds that contribute to ozone formation, impacting lung health, and toxic chemicals like benzene, which is a known human carcinogen. In fact, CARB's recently published report, titled "Enhanced Inspection & Maintenance for GHG & VOCs at Upstream Facilities," verifies the presence of toxic compounds in many of the identified leaks within the 39 oil and gas facilities sampled throughout California in 2015. It is clear from this data that the need to diminish leaks for economic, climate and health reasons is pressing.

Unfortunately, but not surprisingly, the communities most impacted by oil and gas pollution are often low-income communities and communities of color that are already disproportionately vulnerable to socio-economic and environmental hazards. Residents of the most impacted communities throughout California, some of which live fewer than 30 feet away from active production facilities, have experienced firsthand the harmful effects of oil and gas pollution. Reported symptoms from residents living near oil and gas operations have included onset of asthma and other respiratory problems, nausea, dizziness, loss of smell, and frequent migraines. These reports have been corroborated by studies showing, among other things, that increased residential oil and gas production increases the risk of asthma exacerbations. Additionally, science shows that our most vulnerable and defenseless populations - children, pregnant women, and the elderly - are most susceptible to experiencing negative health impacts from oil and gas pollution. To address these concerns, we recommend the rule roll-out, both by the state and local air districts, prioritize implementation, consistent and timely oversight, and regulatory enforcement at facilities in close proximity to disadvantaged communities and low-income communities of color identified in the top 25% of CalEnviroScreen 3.0.

In order to ensure that the proposed regulation results in maximum reductions in emissions that harm community health, we support CARB in its efforts to maintain stringent leak detection and repair requirements applicable to facilities with the potential to leak or inadvertently vent harmful pollutants. For these reasons, we applaud CARB for remaining committed to requiring quarterly inspections - without a step down. As the rule is implemented, leaks should become less prevalent due to the increased inspection, repair and oversight requirements – this is a beneficial and intended result. However, data shows that the industry has F-10-3

a long way to go before frequent inspections lose their benefits. Studies show the way to combat the problem of super-emitters and oil and gas leaks is frequent inspection and maintenance – such requirements must remain in place even as emissions decline. For these reasons, CARB's decision to reject a step-down provision for leak inspections is critical toward ensuring that the rule is sufficiently protecting the health and welfare of nearby communities.

Thank you for taking seriously the concerns of our communities.

Sincerely,

Vinai Decena RN, PHN
Northern California Program Coordinator, Alliance of Nurses for Healthy Environments

Bonnie Holmes-Gen
Senior Director, Air Quality and Climate Change, American Lung Association in California

Catherine Garoupa-White
Californians Against Fracking

Jane Williams
Executive Director, California Communities Against Toxics

Diana Vazquez
Policy Advocate, California Environmental Justice Alliance (CEJA)

Jena Price
Legislative Affairs Manager, California League of Conservation Voters (CLCV)

Bill Magavern
Policy Director, Coalition for Clean Air

Keith Nakatani
Oil and Gas Program Manager, Clean Water Action

Michele Hasson, MPP
Policy Director, Center for Community Action & Environmental Justice (CCAEJ)

Sue Chiang
Pollution Prevention Director, Center for Environmental Health

Madeline Stano
Staff Attorney, Center for Race Poverty and the Environment

Nayamin Martinez
Director, Central California Environmental Justice Network

Dolores Weller
Director, Central Valley Air Quality (CVAQ) Coalition

Paul Ferrazzi
Executive Director, Citizens Coalition for a Safe Environment (CCSE)

Darin Schroeder
Associate Attorney, Clean Air Task Force

Jonathan Parfrey
Executive Director, Climate Resolve

Jennifer Krill
Executive Director, Earthworks

Taylor Thomas
Research and Policy Analyst, East Yard Communities for Environmental Justice

Dan Jacobson
State Director, Environment California

Timothy O'Connor
Director of California Oil and Gas, Environmental Defense Fund

Bill Allayaud
California Director of Government Affairs, Environmental Working Group

Patricia McPherson
President, Grassroots Coalition

Jeff Kuyper
Executive Director, Los Padres ForestWatch

Loni J. Cortez Russell
Deputy Field Manager, Western States, Moms Clean Air Force

Briana Mordick, Senior Scientist
Meleah Geertsma, Senior Attorney
Natural Resources Defense Council

Joel Ervice
Associate Director, Regional Asthma Management and Prevention (RAMP)

Matt Pakucko
President and Co-Founder, Save Porter Ranch

Elly Benson
Staff Attorney, Sierra Club

Dan York
Vice President, The Wildlands Conservancy

Jason Barbose
Western States Policy Manager, Union of Concerned Scientists

Sandra Fluke
California State Director, Voices for Progress

Dr. Elizabeth Dougherty
Director, Wholly H20

Attachment A

WSPA Comments on 15-day Modifications to draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations (February 2017)

Circulation Tanks

Issue 1: Proposed section 95668(b)(2)(A) allows owners or operators of circulation tanks to comply with the requirement to conduct technology assessments in three different production fields by either (1) conducting assessments in three fields individually or (2) being part of a group of owners or operators who conduct assessments in three different production fields. In order to meet (2), section 95668(b)(2)(A)1 allows an owner or operator to conduct a technology assessment in one or more fields and submit it to ARB, to be combined with technology assessments from other owners or operators, in order to reach the required three different production fields. WSPA requests that ARB clarify that the option in subsection 95668(b)(2)(A)1. is a method by which to meet the requirement in section 95668(b)(2)(A). F-11-1

> **Recommendation 1:** WSPA recommends that ARB clarify proposed section 95668(b)(2)(A) as follows:
>
> *(A)1. In order to comply with section 95668(b)(2)(A), individual owners or operators may conduct a technology assessment and emissions testing within one or more production fields and submit the results to ARB, which will be combined with technical assessments performed by other owners or operators.*

Issue 2: Proposed section 95668(b) requires owners or operators of circulation tanks to conduct a technology assessment which includes the information listed in section 95668(b)(2)(C). The proposed regulation refers to the "technology assessment and emissions testing" in some places and only the "technology assessment" in others. Because section 95668(b)(2)(C) currently lists the information that must be included in a technology assessment, including test results, WSPA believes that the proposed regulation should simply reference the "technology assessment," whose requirements are specified in section 95668(b)(2)(C).

WSPA's requested changes and clarifications to section 95668(b)(2)(C) (Issue 3 below) also support this suggested modification.

> **Recommendation 2:** WSPA recommends that ARB clarify proposed section 95668(b) as follows:
>
> *(2)(A) Each owner or operator, individually or as part of a group of owners and operators, must conduct a technology assessment ~~and emissions testing~~ in at least three different production fields from wells with different characteristics, such as depth of well or API gravity of crude oil or condensate.*
> *(2)(A)1. Individual owners or operators may conduct a technology assessment ~~and emissions testing~~ within one or more production fields and submit the results to ARB, which will be combined with technical assessments performed by other owners or operators.*
> *(3) The ARB Executive Officer will review the results of the technology assessment ~~and emissions testing~~ specified in section 95668(b)(2) and provide a determination on the installation of vapor collection and control equipment by no later than July 1, 2019.*

F-11-2

Issue 3: As stated previously in our comments dated July 18, 2016, WSPA's primary concern with the proposed control measures for circulation tanks is safety of the technology when used in practice. WSPA appreciates ARB's consideration of our comments and incorporation of a safety evaluation in the proposed regulation. WSPA believes that a comprehensive safety evaluation of the capture and control technologies must be conducted to determine if they can be installed and operated safely. Please see Attachment B for an evaluation of the safety concerns, performed by an independent safety expert, associated with the operation of capture and control equipment that has been considered to date. F-11-3

WSPA also requests that ARB clarify that the listed requirements for a technology assessment in section 95668(b)(2)(C), including emissions testing, only apply in so far as they can be completed in a safe and feasible manner. For instance, WSPA believes that should a technology be shown to be infeasible or unsafe in the field, no further test results or data, such as those listed in (C)5 or (C)6, should be collected. WSPA recommends that ARB clarify, either by amending section 95668(b)(2)(C) as suggested below or in its response to comments, that each category of information listed in that subsection is not required for every technology assessment and that the technology assessment may end when a technology is found to be infeasible or unsafe in practice.

Recommendation 3: WSPA recommends that ARB clarify the proposed section 95668(b)(2)(C) as follows:

(C) The technology assessment shall include as applicable, but is not limited to, the following information relating to vapor collection and control equipment:

1. *List of vapor collection and control equipment evaluated;*
2. *Test results demonstrating the functionality, emissions results, and technical feasibility of the equipment with written statements provided by equipment manufacturers;*
3. *Costs of the equipment;*
4. *Safety aspects related to the installation and operation of the equipment;*
5. *Test results that provide the fuel flow rate and Higher Heating Value of gas collected; and*
6. *Test results that provide the report shall include the results of testing conducted by the owner or operator or equipment manufacturers that demonstrate the vapor collection and control efficiency and methane, criteria pollutant, and toxic air contaminant emissions before and after installation of the equipment.*

F-11-3 cont.

Issue 4: As currently drafted, section 95668(b)(4)(A) does not specify whether it applies only to technology assessments already submitted, or whether it means that ARB can require owners or operators to continue to complete technology assessments beyond January 1, 2019. ARB's "Notice of Public Availability of Modified Text and Availability of Additional Public Documents and/or Information" p. 7 suggests that ARB intended this section to apply only to the scenario in which ARB had received a technology assessment by January 1, 2019, but was unable to make a determination on that assessment by July 1, 2019. WSPA requests that ARB clarify whether this section is meant to give ARB additional time in which to complete its review and determination of technology assessments, or to allow ARB to continue requesting technology assessments from owners or operators beyond January 1, 2019.

Recommendation 4: WSPA recommends that ARB clarify the proposed section 95668(b)(4) as follows:

If ARB has not made a determination on a technology assessment submitted under section 95668(b)(2) ~~the installation of vapor collection and control equipment~~ by July 1, 2019, an owner or operator to whom that determination would apply may continue to operate circulation tanks at a level below 95% vapor collection and control efficiency until 180 days after ARB makes the late determination.

F-11-4

Well Casing Vents

Issue 5: Section 95668(g)(1) requires operators to measure natural gas flow rate from open well casing vents. It is our understanding that ARB's intent is to only require natural gas flow rate monitoring for wells with casing vents *normally* open to the atmosphere. An operator does not have to measure a well casing vent that is normally closed but may be temporarily opened for maintenance or monitoring. WSPA recommends that ARB clarify this intent to avoid confusion.

F-11-5

Recommendation 5: WSPA suggests that section 95668(g)(1) be clarified as follows:

(1) Beginning January 1, 2018, owners or operators of wells located at facilities located in sectors listed in section 95666 with a well casing vent that is normally open to the atmosphere shall measure the natural gas flow rate from the well casing vent annually by direct measurement (high volume sampling, bagging, calibrated flow measuring instrument)…

F-11-5 cont.

Leak Detection and Repair

Issue 6: In Section 95669(b)(2) the phrase "exclusively for crude oil with an API Gravity less than 20" is used. It is our understanding that ARB's intent is to exclude components on equipment and processes used in crude oil production where the API Gravity is less than 20.

Recommendation 6: WSPA suggests that section 95669(b)(2) be clarified as follows:

(2) Components, -- including components found on tanks, separators, wells, and pressure vessels – used exclusively for crude oil production with an API Gravity less than 20 averaged on an annual basis. The average annual API gravity shall be determined using certified reports submitted to the California Department of Conservation Division of Oil, Gas, and Geothermal Resources.

F-11-6

Issue 7: WSPA will continue to point out that there is no Method 21 inspection procedure for pipes. Method 21 states, "place the probe inlet at the surface of the component interface where leakage could occur." Therefore, there needs to be a suspected leak path in order to effectively implement Method 21, which does not exist on a run of pipe. If a pipe leak is detected by some other means such as audio-visual inspections, then it can be measured by Method 21. ARB is already requiring audio-visual inspections on pipes annually.

Recommendation 7: WSPA recommends that ARB exclude pipes from the quarterly Method 21 inspections. WSPA suggests that section 95669(g)(1) be clarified as follows:

(g) At least once each calendar quarter, all components, except components identified in Section 95669(e)(1), shall be tested for leaks of total hydrocarbons in units of parts per million volume (ppmv) calibrated as methane in accordance with US EPA Reference Method 21 excluding the use of PID instruments.

F-11-7

Issue 8: WSPA appreciates that ARB is allowing the use of OGI as a screening process for leak detection. As stated in previous comment letters, WSPA believes that operators should be allowed to use cost-effective technologies to meet the emissions reduction targets of the LDAR requirements. While OGI (followed by Method 21) is more cost-effective than Method 21 alone, there are several emerging control technologies that may be even more cost-effective in the future in achieving the target emissions reductions. WSPA understands that ARB is willing to consider any emerging LDAR technologies as an option, if such technologies can be proven to meet the emission reduction targets. However, this intent is not stated in the regulation which is limited to the use of OGI as a screening tool.

Recommendation 8: WSPA recommends that ARB state the intent that ARB will consider reviewing emerging technologies for LDAR and consider allowing such technologies as an option, if they can be proven to meet the emission reduction targets. WSPA recommends that this intent be made clear either in the regulatory text or in the Adopting Resolution/Final Statement of Reasons (FSOR).

F-11-8

Issue 9: As ARB has noted several times and as explained repeatedly in WSPA's previous Comment Letters, the majority of facilities are already in a mature LDAR program implemented by a local air district. Several years of data demonstrates that these facilities have had very low leak rates. Unfortunately, ARB

F-11-9

is requiring quarterly inspections indefinitely. WSPA is disappointed that ARB has removed the step-down provision that would act as a reward for operators that work hard at minimizing the number of leaks from their operations. WSPA re-iterates that removal of step-down provision will lead to extremely onerous and costly inspections without any significant emissions benefit. F-11-9 cont.

> **Recommendation 9:** WSPA recommends that ARB review leak data that will be reported under the LDAR program. WSPA requests that ARB include references in either the Adopting Resolution or the Regulation to allow evaluation for potential future re-consideration of step-down provision for operators who demonstrate very low leak rates.

Issue 10: There is a typographical error in Section 95669(i)(5)(A)(1). F-11-10

> **Recommendation 10:** WSPA suggests that section 95669(i)(5)(A)(1) be revised as follows:
>
> *1. A delay of repair to obtain parts or equipment shall not exceed 30 calendar days from the date identified in Table ~~2~~4 by which repairs must be made, unless the owner or operator notifies the ARB Executive Officer to report the delay and provides an estimated time by which the repairs will be completed.*

Vapor Collection Systems and Vapor Control Devices

Issue 11: Proposed section 95671(e) requires operators to remove circulation tanks from service by January 1, 2020 if vapor control systems cannot be installed. However, section 95668(b)(4) allows operators to continue to operate circulation tanks at a level below 95% vapor collection and control efficiency if the ARB Executive Officer makes a determination that controlling emissions is not possible or until 180 days after ARB has made a determination on a technology assessment, if such determination is not made by July 1, 2019. Proposed section 95671(e) does not take into account the potential for ARB to find, based on the technology assessment, that controlling emissions is not possible, or for the potential for a late determination by ARB as to a technology assessment as noted in section 95668(b)(4)(A). Both of these situations allow operators to continue to operate circulation tanks at a level below 95% vapor collection and control beyond January 1, 2020. F-11-11

> **Recommendation 11:** WSPA suggests that proposed section 95671(e) be clarified as follows:
>
> *If the collected vapors cannot be controlled as specified in sections 95671(b) through (d) of this subarticle, the equipment subject to the vapor collection and control requirements specified in this subarticle may not be used or installed and must be removed from service by January 1, 2019, and circulation tanks may not be used and must be removed from service by January 1, 2020, unless the ARB Executive Officer has made a determination under section 95668(b)(4) that controlling emissions is not possible or section 95668(b)(4)(A) applies.*

Reporting Requirements

Issue 12: WSPA appreciates the inclusion of our previous comment in the clarification of annual reporting deadlines for previous year's data. WSPA's understanding of the reporting requirements in section 95673 is that the annual report for a calendar year will be due on July 1 of the following year. As such, the first annual report will be due July 1, 2019 for the data from calendar year 2018. F-11-12

> **Recommendation 12:** WSPA recommends that ARB clarify the reporting requirements as follows:

Attachment A

WSPA Comments on 15-day Modifications to draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations (February 2017)

(a) Beginning ~~in January 1, 2018~~ 2019, owners or operators of facilities located in sectors listed in section 95666 subject to requirements specified in sections 95668 and 95669 shall report the following information to ARB for each calendar year by July 1st of ~~each calendar~~ the following year (first report for calendar year 2018 will be due July 1, 2019) unless otherwise specified…

F-11-12 cont.

0G-F-12-WSPA

Western States Petroleum Association
Credible Solutions • Responsive Service • Since 1907

Thomas A. Umenhofer, CCM, REPA
Vice President

February 21, 2017 Sent via email: jim.nyarady@arb.ca.gov

Mr. Jim Nyarady
Manager, Oil and Gas Section
California Air Resources Control Board
1001 I Street
Sacramento, CA 95814

Re: WSPA Comments on 15-day Modifications to Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations (February 2017)

Dear Mr. Nyarady:

The Western States Petroleum Association (WSPA) appreciates the opportunity to provide comments on the California Air Resources Board (ARB) draft regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations (the Methane Rule) released on February 10, 2017 for a 15-day public comment period. WSPA is a non-profit trade association representing companies that explore for, produce, refine, transport and market petroleum, petroleum products, natural gas and other energy supplies in California and four other western states.

WSPA and its member companies would like to express our appreciation to ARB for the stakeholder process that has allowed WSPA and others to provide feedback during the past two years. Based on a review of the 15-day draft, WSPA still has specific concerns with the proposed regulatory language. These concerns are outlined below and further detailed in the enclosure with this letter. The key general areas of concern include, without limitation, the following:

- Circulation tanks
- Vapor Collection Systems and Vapor Control Devices
- Leak Detection and Repair ("LDAR") frequency
- Reporting Requirements

Circulation Tanks

Circulation tanks are portable tanks used to circulate water into a well after a well stimulation treatment. WSPA appreciates ARB's effort to allow for technological advancements and safety to be the driver of control requirements on these types of tanks. As WSPA has stated in our previous comment letters on this issue, some of the proposed control requirements would create an unsafe situation or would result in an increase in criteria and greenhouse gas emissions from current emissions from circulation tanks. In addition, currently, it is infeasible to comply with the 95% control efficiency requirements of the proposed regulation, as there is no control technology available today capable of controlling emissions from circulation tanks without supplemental fuel and that can be operated in a safe manner. While it is our understanding that the intent is to allow for Best Management Practices (BMPs) in the interim and beyond in the event that no

F-12-1 (summary of F-11-1 thru F-11-4)

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technology is available by 2020, we still believe further clarification needs to be included in the rule language.

F-12-1 cont. (summary of F-11-1 thru F-11-4)

Vapor Collection Systems and Vapor Control Devices

The Vapor Collection Systems and Vapor Control Devices sections also need to be clarified. Circulation tanks are portable equipment and any control devices and collection systems on portable equipment are not feasible from an engineering perspective and will actually result in *increased* GHG emissions from the equipment that would be required to dispose of the minuscule amount of methane from the circulation tanks.

F-12-2 (summary of F-11-10 thru F-11-11)

LDAR

All WSPA members are currently subject to an LDAR program either through the San Joaquin Valley Air Pollution Control District (SJVAPCD) or other air districts with oil and gas operations. The ARB LDAR requirements in this rule will result in a dramatic expansion of existing LDAR programs. WSPA believes it is vital in the SJVAPCD area that the local air district be the lead agency in implementing the Methane Rule to avoid operators having to comply with two programs, two sets of inspections, and two recordkeeping requirements – one for the local APCD and one for the ARB. Also, as currently written, LDAR will be required for systems that in practical application do not have the potential to emit methane. We expect the cost to comply with the LDAR provisions in the proposed regulation will be significantly more than estimated by ARB and will present difficulty for owners and operators in finding competent contractors to perform and correctly document inspections.

WSPA is disappointed that ARB removed the "step-down" provision in the last two versions of the regulation. While we understand the concerns raised in regards to natural gas storage projects, we need to emphasize the immense difference between oil and gas ***production*** and natural gas ***storage***, particularly as it relates to the potential for catastrophic leaks. WSPA members have implemented leak inspection and repair programs on oil and gas equipment for the past several decades. As WSPA has stated in our previous comments, based on extensive local air district LDAR programs, the average amount of leaks found are minimal. The Federal EPA only requires semi-annual inspections at well site facilities. The SJVAPCD program, which has been in place for decades, allows operators to do annual inspections once they have submitted at least five quarterly reports without an exceedance of the leak standards. Since the ARB LDAR program simply incorporates more components requiring inspection, it would be more efficient for the programs requirements to correlate.

In addition to the issues of the LDAR program in its practicable application, the frequency for testing will result in an administrative nightmare not only for operators but for the SJVAPCD and the ARB. This further enhances the need for one lead agency to implement this rule to prevent, as much as possible, duplicative requirements. WSPA continues to recommend that the local air districts implement the rule, specifically in the San Joaquin Valley where 85% of the in-state oil and gas production occurs.

Therefore, WSPA requests that ARB revisit this section with industry in the future and reconsider including the step-down provision based on data and information that demonstrate that leaks are insignificant.

F-12-3 (summary of F-11-6 thru F-11-9)

Reporting Requirements

The reporting schedule as written is unclear and WSPA recommends that ARB clarify the requirements as suggested in the attached comments.

F-12-4 (summary of F-11-12)

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Attached is an enclosure with specific WSPA recommendations on the proposed Modifications to Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations (Attachment A) as well as a safety analysis on controls for circulation tanks, conducted by Michael Juarena, a certified safety professional and Senior Consultant at Safety Management Systems (Attachment B).

Thank you for your consideration of WSPA's comments. If you have any questions, please contact me at (805) 701-9142 or email tom@wspa.org, or Jenifer Pitcher at (661) 321-0884 or email jpitcher@wspa.org.

Sincerely,

enclosures

cc: Richard Corey, ARB
Elizabeth Scheehle, ARB
Ken Harris, DOGGR
Jenifer Pitcher, WSPA

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September 13, 2016

Jenifer Pitcher
Senior Coordinator, San Joaquin Valley Region
Western States Petroleum Association (WSPA)
901 Tower Way Suite 300
Bakersfield, CA 93309

RE: Safety Analysis of Proposed California Air Resources Board's (ARB's) Vapor Recovery Requirements under the Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations

Background

I received a request from WSPA to review the vapor recovery requirements proposed in Sections 95668 (b) and 95671 under the Draft Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Operations and provide a professional review on its impact on safety. The options presented and reviewed were as follows:

- Capture and utilize vapors
    - Introduce vapors from circulation tanks into a "fuel system".
    - Introduce vapors from circulation tanks into sales gas system.
- Combustion of vapors
    - Introduce vapors from circulation tanks into a flare.
    - Introduce vapors from circulation tanks into an incinerator/furnace.

I have reviewed the proposed options and the following presents the basis of analysis, risk assessment and my conclusion.

Basis of Analysis

Tools utilized for the basis of analysis are sound and proven in the safety profession. These tools are utilized to ensure personal biases do not skew the data or facts and this analysis is based on tolerable risk criteria. The overlaying tool utilized in this report is "Risk Vs Benefit". Simply put the benefit of any action should outweigh the risk taken. The action taken should increase or better a situation. If the action taken decreases benefit or introduces additional or intolerable risk, then the action should not be undertaken and be reconsidered until a better process can be defined or developed.

There are many applications when using the "Risk Vs Benefit" tool so the parameters of analysis should be defined before starting, however all "Risk Vs Benefit" analysis is judged on the "Hierarchy of Safety" of risk:

- First – Risk to and Safety of People (workforce / public).
- Second - Risk to and Safety of the Environment.

For the purposes of this analysis, risk will be identified in the following categories:

- Intolerable Risk – Not in line with accepted safety practices or cannot be managed safely.
- Tolerable Risk – Risk that can be managed using current safety practices however increases additional risk not in place before. It must be noted that even with safety process in place, risk remains and therefore there is a potential for incident.

Risk Analysis

Intolerable Risk

Capture and Utilize Vapors

The major cause of accidents in the oil & gas industry is fire. There are numerous flammable & inflammable fluids & solids present in the oil & gas facilities, which can ignite to cause fire.[i] The vapors from circulation tanks are expected to contain high amounts of oxygen. The regulatory requirement to capture these oxygen-rich vapors from circulation tanks and introducing them into a closed fuel/sales system poses intolerable risk of fire and potentially disastrous results. This control option is against all process and safety engineering practices[ii].

This can be further understood by reviewing the basics of fire. The concept of fire can be well understood and explained using a simple model called the Fire Triangle. The three factors contributing to cause a fire are: Fuel, Oxidizing agent (Oxygen) & Heat. A fire is caused if all the three factors are present in mixture in the required concentration. Reverse is true for stopping the fire to happen i.e., if any one of the factors are eliminated or the concentration of any one can be kept below the required level then fire can be eliminated[iii]. In the Oil and Gas industry, it is a standard practice to eliminate oxygen from the process streams to eliminate any potential for explosion to occur.

Flaring or Incineration of Vapors

The technologies we have evaluated so far are still in the process of being proven, and process hazards and risks still need to be evaluated and not oversimplified. When some of these technologies have been tested in real life situations we will also need to evaluate the work process against OSHA regulations to ensure they comply process safety management practices[iv].

Flaring or incineration of vapors would require some method of pulling the vapors from the circulation tank due to the very low volume of gas returned during the clean out phase[v]. Operators would have to use a compressor for this purpose. However, due to the high volume of oxygen in the vapors from the circulation tanks, the compression equipment would cause an extreme hazard and risk.

Bladder technology is unsafe because the concept of transporting a partially charged bladder tank is both unsafe and is a violation of Department of Transportation, Title 49 Subchapter C—Hazardous Materials Regulations.

Tolerable Risk

Flaring or Incineration of Vapors

- Due to the increased amount of equipment for the vapor recovery and flare system, a larger footprint would be necessary at the well location. However, many locations are very tight or have limited spacing. As such, vehicle traffic will increase to move equipment more frequently.
- The increased amount of process equipment due to the flaring or incineration process will increase vehicle traffic and the use of transportation equipment. This will also increase the emissions from the diesel combustion and increase the risk for incidents due to increased volume of traffic. The increased traffic risk can be managed (however not eliminated).
- Due to the increased process equipment, additional manpower, lifting, mobilization, and maintenance will be required leading to increased operational concerns. Again, while these processes can be managed it increases the potential for incidents.

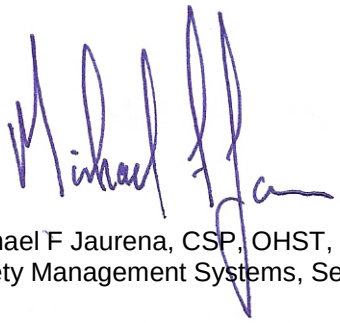
Conclusion

The potential safety risks associated with the proposed control options on circulation tanks is grossly disproportionate to the emissions benefit of the proposed ARB regulation. Even where risk can be

F-13-1

managed, the total increased risk to the safety of people is not consistent with sound safety practices of protecting people over the environment. In this case, the proposed regulation increases both the risk to people and ultimately increases the total emissions to the environment.

F-13-1 cont.



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Safety Management Systems, Senior Consultant

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[i] http://www.piping-engineering.com/fire-and-explosion-in-oil-gas-industries-and-related-qas.html
[ii] HERSEY, M. D. (1924), A STUDY OF THE OXYGEN-OIL EXPLOSION HAZARD*. Journal of the American Society for Naval Engineers, 36: 231–243. doi:10.1111/j.1559-3584.1924.tb05446.x
[iii] http://www.piping-engineering.com/fire-and-explosion-in-oil-gas-industries-and-related-qas.html
[iv] https://www.dir.ca.gov/Title8/5189.html
[v] http://www.wspa.org/sites/default/files/uploads/Recirculation%20Tank%20Testing%20Report%201-29-16_Clean.pdf

OG-F-14-PGE

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February 21, 2017

Elizabeth Scheehle
Chief, Oil and GHG Mitigation Branch
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1001 "I" Street
Sacramento, CA 95814

To Ms. Scheehle,

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide feedback on the proposed modifications to the Air Resources Board's (ARB) Proposed Regulation for Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities (Proposed Regulation), as released on February 3, 2017.

PG&E is committed to helping California achieve its ambitious climate goals while maintaining its vibrant economy, and supports ARB's efforts to establish regulatory and market mechanisms to achieve greenhouse gas (GHG) emissions reductions. PG&E appreciates many of modifications to the Proposed Regulation put forth by ARB to address the concerns expressed by various stakeholders but several key issues still remain.

These comments supplement and incorporate by reference previous comments submitted to ARB on July 21, 2016, and February 26, 2016. PG&E's key recommendations are as follows:

- Enforcement of leak thresholds should be delayed until 2022 to allow time for development of a more accurate methodology than Method 21 to determine emissions violations.
- ARB should approve ambient air monitoring equipment specifications in the air monitoring plans and remove the 250 ppb accuracy requirement from the regulation.
- ARB should include provisions to allow a delay of repair for equipment-related issues for natural gas storage facility sensors.
- The notification requirements for natural gas storage facilities should allow verification of the severity of a leak based on a flow-rate threshold prior to notification, exclude wellhead component leaks from notification, and exclude alarms set off during planned operational work.

- ARB should also include a delay of repair provision to enable operators to reduce emissions by bundling work.
- ARB should continue working closely with the CPUC to coordinate clear roles and responsibilities for implementation across the Proposed Regulation and the Leak Abatement rulemaking.
- Additional suggestions for clarifications to the regulation.

I. General Comments on Draft Changes

1. Enforcement

a. Enforcement Criteria Should Not be Based on Concentration Measurements

The Proposed Regulation includes criteria specifying the number or percentage of allowable leaks based on concentration thresholds.[1] Starting in 2020, any leak detected with a concentration measurement of 50,000 parts per million volume (ppmv) or greater constitutes a violation of the regulation. PG&E appreciates the proposed changes which modify this provision so that only leaks exceeding the thresholds discovered during an ARB Executive Officer inspection or during the 4th quarter of the year would be violations. However PG&E remains very concerned with allowable leak thresholds set on a concentration basis, and believes that applying this threshold may trigger numerous violations for small-emission leaks in the 4th quarter of each year, as outlined in more detail below.

As PG&E has pointed out in prior comments, high concentration measurement does not always correlate to a high-emission leak and there is a strong likelihood that low-emission but high-concentration leaks could trigger violations.[2] The Proposed Regulation requires operators to use Method 21 to measure concentrations of methane. However, the Method 21 concentration measurement is not a good predictor of the actual amount of methane being released to the atmosphere. Due to the limited flow rate of Method 21 instruments, the portion of methane from the leak that is sampled varies greatly depending on leak dispersion. Leak dispersion is influenced by many factors, such as: component type, pressure, wind speed, position and orientation of the instrument nozzle, etc. As a result, for the same value of measured concentration, the actual flow rate of the leak can vary greatly.

F-14-1

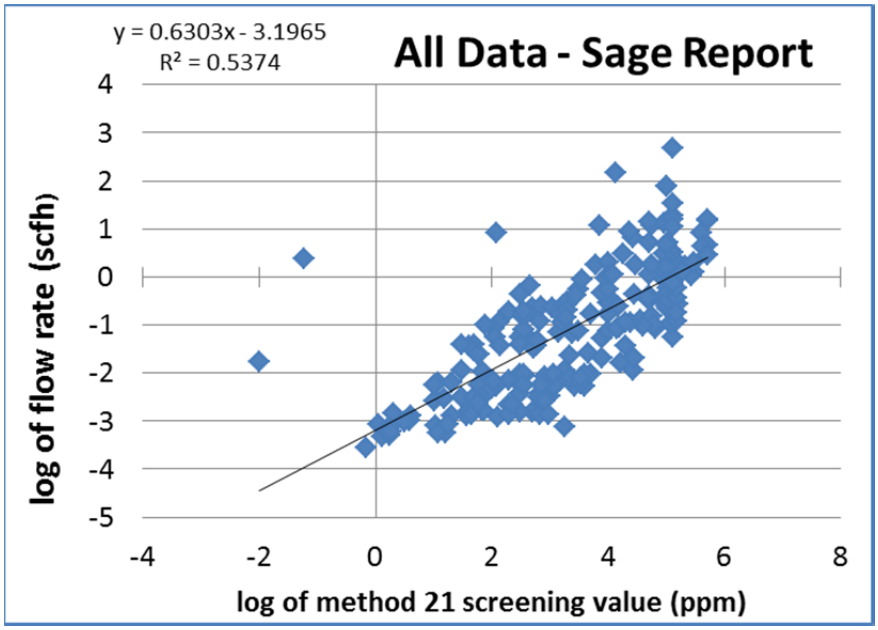
The report recently released by ARB from Sage Environmental Consulting supports this point and demonstrates that the correlation between concentration and flow-rate measurements is not strong: the correlation coefficient varies widely across the different categories of natural gas equipment that were tested, as can be seen in Figure 1 below.[3] The spread of data around the line of best fit means that at a concentration of 50,000 ppm the measured flow rate can vary from

[1] § 95669 (i)
[2] Pacific Gas and Electric Company, "Re: Comments on the Proposed Regulation for Greenhouse Gas Emissions Standards for Crude Oil and Natural Gas Facilities," July 21, 2016.
[3] "Enhanced Inspection & Maintenance for GHG and VOCs at Upstream Facilities," SAGE Environmental Consulting, December 2016, p. 2-12

0.01 standard cubic feet per hour (scfh) to more than 100 scfh (i.e. a range of 10,000). In addition, the comparison of concentration to flow-rate measurements in the Sage report is done on a $\log_{10}$- $\log_{10}$ scale which gives the impression that errors in the estimated flow rate are diminished, even though the error could be larger than the actual value of the flow rate. This further weakens the confidence in the correlation relationship.

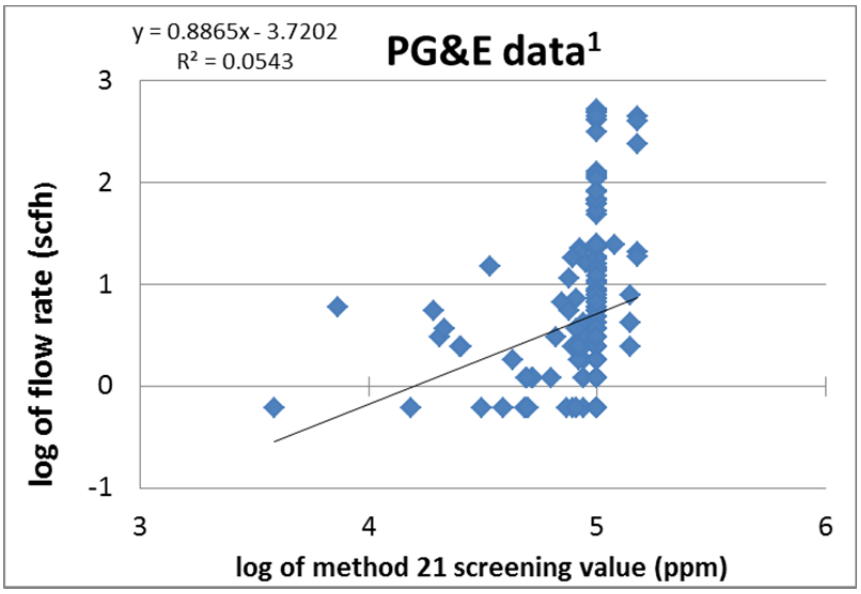
F-14-1 cont.

Figure 1



PG&E's results from recent leak surveys conducted in 2016 at its compressor stations and underground storage facilities with both concentration and flow-rate measurements similarly demonstrate a weak correlation relationship. As can be seen in Figure 2 below, there is a wide vertical spread of flow-rate measurements for a given concentration.

Figure 2



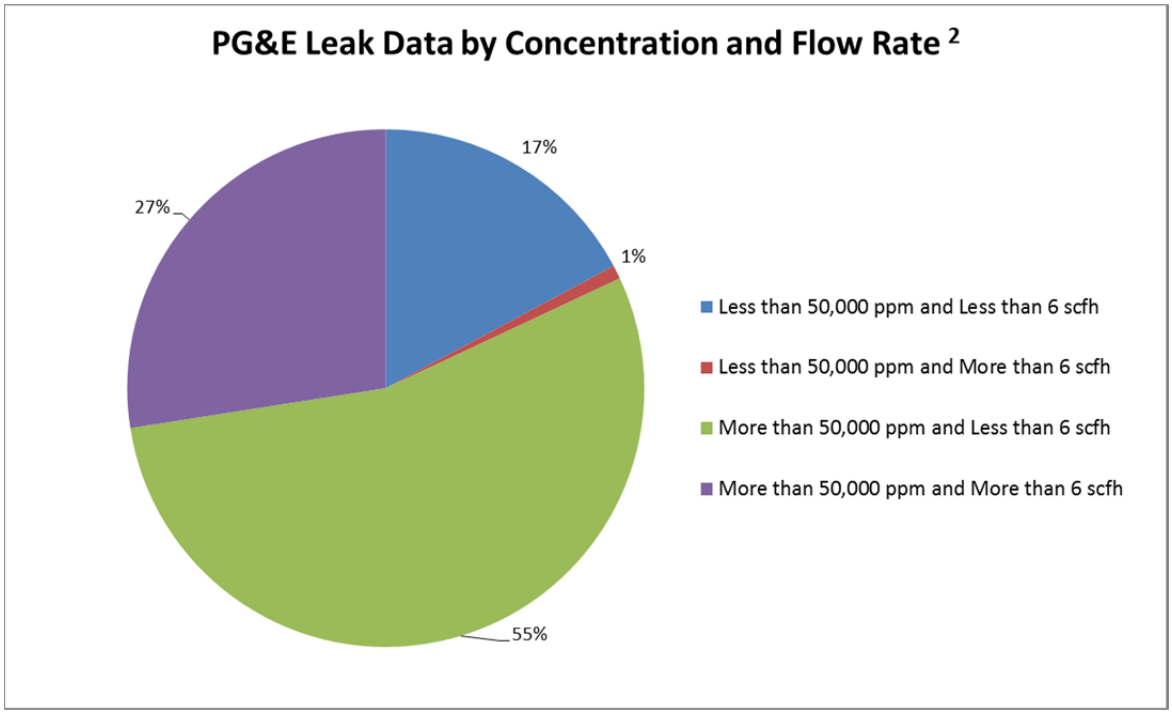
[1] Leak measurements with no detectable flow were excluded.

F-14-1 cont.

The relationship between concentration and flow is important because it is the basis on which the Proposed Regulation determines the severity of a leak for notification, repair and enforcement action. In Figure 3, PG&E's leak survey data is displayed to show the percentage of leaks above and below 50,000 ppm concentration with a flow rate above and below 6 cubic feet per hour (the threshold used by ARB in the Proposed Regulation to determine if a pneumatic device is considered "high-bleed" or a large emitter).[4] Fifty-five percent of the leaks found were measured at a concentration above 50,000 ppm but with a flow rate less than 6 scfh, and a small number of leaks were found that measured below 50,000 ppm with greater than 6 scfh flow rate. Using Method 21 concentration measurements alone would incorrectly prioritize those leaks as being high-emission leaks when they are not, or vice versa, incorrectly identify them as being low-emission leaks when they are high.

[4] For reference, 6 scfh leak flow rate equates to 21.19 metric tons of carbon dioxide equivalent per year (MT CO2e/year)

Figure 3



[2] This data includes leaks too small to be measured with Hi-flow sampler instrument.

As demonstrated above, Method 21 is not a good predictor of actual methane emissions. Therefore PG&E proposes ARB work with it and other stakeholders to better quantify emissions, and use data from more than just Method 21 concentration measurements at each of the regulated facilities to inform a meaningful threshold on the allowable number of leaks. PG&E recommends waiting until 2022 to implement a leak threshold subject to enforcement based on this data. This will allow operators two years once the regulation is implemented to gather sufficient data on the number of leaks and trends on their systems for various types of equipment and components that ARB and stakeholders can then use to set realistic benchmarks against which to require future improvement. The rulemaking process to modify this regulation to set new leak threshold criteria could take up to an additional year, which is the basis for the three-year delay in enforcement of leak thresholds that PG&E recommends above.

F-14-1 cont.

b. Inaccurate Information

As currently proposed, Section 95674(f) would trigger a violation for submission of inaccurate information required by the regulation. This does not take into consideration "intent" – an operator may unknowingly provide inaccurate information due to instrumentation error for example, or a measurement of a leak may have different results on one date versus another. This provision should be modified to clarify that an operator must "knowingly" submit inaccurate information for there to be a violation, or the provision should be removed since Section 95674(g) already covers falsification of information.

F-14-2

2. Natural Gas Underground Storage Facility Monitoring

PG&E appreciates the revisions ARB has made to the Proposed Regulation to incorporate greater flexibility for operators to specify how they will meet the requirements of the regulation through their air monitoring plans. The same flexibility should be applied to equipment specifications. The proposed modifications increase the accuracy requirements for ambient air monitors from 100 parts per billion (ppb) to 250 ppb. However, the ambient concentrations of methane and the variations in those concentrations that PG&E has measured at its facilities are in parts per million (ppm). Requiring accuracy levels three orders of magnitude greater than the current range of background concentrations is unnecessary and could cause continuous indications or "false positives" that would take time and resources to continually clear, as well as requiring unnecessary notifications. It would not improve detection of changes in ambient air methane levels that would require an emergency or urgent response to potentially hazardous leaks. In addition, equipment at the ppb range of sensitivity is not widely available and it is unclear if such instruments would work at storage fields in this context. Therefore, PG&E recommends removing the 250 ppb accuracy requirement for monitoring sensors and allowing ARB to approve equipment proposals within the monitoring plans. F-14-3

In addition, PG&E recommends explicitly including delay of repair provisions for equipment orders for the ambient air monitoring equipment. A provision similar to the one added to section § 95669(h)(4)(A) would be appropriate. Many of the vendors for ambient air monitoring equipment are located out of state and could take longer to ship replacement pieces than the required repair timelines. It should also be noted that this technology has only recently been made commercially available, and therefore provisions that allow for additional time for troubleshooting potential errors with new technology should also be included, if an operator or owner provides documentation showing the ongoing issue is pending resolution with the equipment vendor. F-14-4

3. Notification and Reporting Requirements

As currently written, the Proposed Regulation requires operators to notify ARB, the Division of Oil, Gas and Geothermal Resources (DOGGR), and the local air district any time a leak is identified at an underground storage facility that exceeds the concentration-based leak thresholds. PG&E's concerns about the use of concentration-based measurement are highlighted above in Section 1. This provision will likely lead to excessive notifications for small leaks with high concentrations, which is counter to PG&E's interpretation of the intended purpose of this provision, i.e. notifications for large, potentially hazardous leaks. Using this concentration data to notify regulators and agencies may incorrectly burden these agencies, and inappropriately prioritize repairs on low-emission leaks. PG&E recommends allowing an operator to verify the severity of a leak with a flow-measurement threshold before requiring notification. Additionally, leaks that are confirmed as only wellhead-component leaks should be excluded from the F-14-5

notification requirements as they would not fall under the classification of large, potentially hazardous leaks, which is the intended target of the regulation. F-14-5 cont.

PG&E also recommends including language that exempts operators from the notification requirements if an alarm from the ambient air sensors or automated wellhead assembly sensors goes off during a planned operational activity at an underground storage facility. Many of PG&E's storage wells are located within 25 feet of each other and various well remediation operations result in some releases of emissions which would then require notification. F-14-6

4. Delay of Repair Provisions

PG&E believes that effective regulations provide sufficient flexibility for operators to continue operations while following the intent of the regulation, and thus appreciates the addition of provisions allowing for the delay of leak repair under certain conditions. These provisions will be critical in facilitating the continued operation of systems while still meeting the intent of the Proposed Regulation. F-14-7

In addition to allowing a delay of repair for equipment orders and systems critical for reliability, ARB should also allow delay of repair to reduce emissions by bundling work. Without such a provision, there will be situations in which the amount of gas that will have to be released (blown down) to repair a leak will be greater than the emissions from the leak itself. Allowing these leaks to be bundled with other work reduces the overall vented emissions. This would also be consistent with proposed best practices from the California Public Utilities Commission (CPUC) in its Leak Abatement Order Instituting Rulemaking (R.15-01-008) to bundle work whenever possible to prevent multiple ventings of the same piping.[5] F-14-8

5. Coordination with the CPUC's Leak Abatement Rulemaking

PG&E appreciates the ARB's participation and continued focus on emission reduction efforts, as well as ensuring consistency between its regulations and the CPUC's Leak Abatement OIR Proceeding (R.15-01-008), as directed by Senate Bill 1371. The Proposed Regulation and the Leak Abatement OIR regulations currently both cover natural gas underground storage and gas transmission compressor stations. Clarification is still needed on which agency owns implementation and reporting when there is overlap. PG&E recommends that ARB take this need for coordination into account as it works to finalize the Proposed Regulation in order to ensure that the jurisdictional boundaries of the ARB and CPUC regulations are clear. F-14-9

[5] See Administrative Law Judge's Ruling Entering California Air Resources Board and California Public Utilities Commission Joint Staff Annual Report on Analysis of June 17, 2016 Utilities' Reports and Commission Staff Proposal on Best Practices Into the Record and Seeking Comments, issued in R.15-01-008 on January 19, 2017, at Attachment 2, Best Practice (BP) 7 ("Bundling Work Policy. Written company policy requiring bundling of work, whenever practicable, to prevent multiple venting of the same piping consistent with safe operations and considering alternative potential sources of supply to reliably serve customers. Company policy shall define situations where work bundling is not practicable. Exact wording TBD by the company and approved by the CPUC, in consultation with CARB, as part of the Compliance Plan filing. A company may request an exemption with appropriate justification.")

6. Additional Feedback

PG&E has also suggested areas for additional clarification as follows:

- Section 95668 (a)(2)(H) Separator and Tank Systems: include "pipeline liquids" as there may be non-petroleum based products that could be subject to the exemption.
    - Suggested language: "Tanks that recover an average of less than 10 gallons per day of any petroleum or pipeline liquid waste product from equipment provided that the owner or operator maintains, and can make available at the request of the ARB Executive Officer, a record of the amount of liquid recovered. The average daily production shall be determined by using annual production and dividing by 365 days." F-14-10
- Sections 95668 (h)(5)(A)(4) and 95668 (h)(5)(B)(2), Natural Gas Underground Storage Facility Monitoring Requirements: Clarify the different requirements for unmanned vs. continuously manned facilities.
    - Suggested language: "The monitoring system for unmanned facilities must have an integrated alarm system that is audible and visible continuously in the control room at the facility and in remote control centers. The monitoring system for continuously manned facilities must have an integrated alarm system that is audible and visible continuously in the control room at that facility." F-14-11
- Section 95669 (i)(4) Leak Detection and Repair: Add "planned" to the provision.
    - Suggested language: "Critical components or critical process units shall be successfully repaired by the end of the next planned process shutdown or within 12 months from the date of initial leak detection, whichever is sooner." F-14-12

II. Conclusion

Thank you for the opportunity to provide feedback on ARB's draft changes to the Proposed Regulation. PG&E looks forward to participating in continued discussions with ARB in the rulemaking process.

Sincerely,

/s/

Fariya Ali

Expert Representative
State Agency Relations
PG&E

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