



Finding, fixing leaks is a cost-effective way to cut oil and gas methane emissions

Oil and gas companies in the U.S. emit at least **9.8 million metric tons** of methane pollution a year according to the Environmental Protection Agencyⁱ. The actual amount is likely even higher. Unburned methane (the main ingredient in natural gas) has over 80 times the warming power of carbon dioxide over a 20-year timeframe.

Fortunately, these emissions can be reduced quickly and cost effectively, making them one of the biggest bargains in the race to slow the rate at which our climate is warming. Some of these emissions are intentional, due to venting, incomplete flaring, and other activities. But **half** of all the industry's methane emissions come from leaksⁱⁱ. Leaks are a persistent challenge across the oil and gas supply chain, from remote wellheads to the utility gas lines under our neighborhood streets. Methane leaks come in all sizes, and they are as unpredictable as they are widespread.

That means that to find leaks, companies have to be looking regularly, and fixing the ones they find.

Leak detection and repair – referred to in the industry as “LDAR” – is a straightforward way to reduce oil and gas methane emissions from both new and existing facilities. These surveys are inexpensive, and costs are declining furtherⁱⁱⁱ thanks in part to America's innovative methane mitigation industry, whose companies have over 500 locations across 46 states.^{iv}

What are we doing now to stop methane leaks?

The EPA recently finalized rules requiring oil and gas operators to check well site facilities for methane leaks on a semi-annual basis and compressor stations on a quarterly basis.^v EPA's new rules apply only to new facilities, but the agency (and several states as well as the Bureau of Land Management) either have or are looking to address emissions from thousands of existing sources of pollution as well. All of these examples underscore both the importance and feasibility of addressing leaks.

- **Colorado** has tiered inspection policies – including requiring leak inspection on a quarterly basis and even monthly for some larger facilities.^{vi}
- The **Bureau of Land Management** (BLM) recently finalized a rule requiring operators on public and tribal lands to check equipment for leaks at both new and existing sources.^{vii}
- **Wyoming** has adopted LDAR requirements for operations in select areas of the state, including for existing sources,^{viii} and is considering expanding those requirements statewide.^{ix} Wyoming-based company Jonah Energy has been conducting monthly LDAR for the last five years, documenting **leak reductions of over 75%**.^x
- **California** is moving forward with existing source standards, including quarterly LDAR.^{xi}
- **Pennsylvania**, the nation's second largest gas producer, indicated it will pursue requiring quarterly monitoring.^{xii}
- **Ohio** requires quarterly inspections for new wells^{xiii} and has proposed quarterly inspections for new compressor stations.^{xiv}

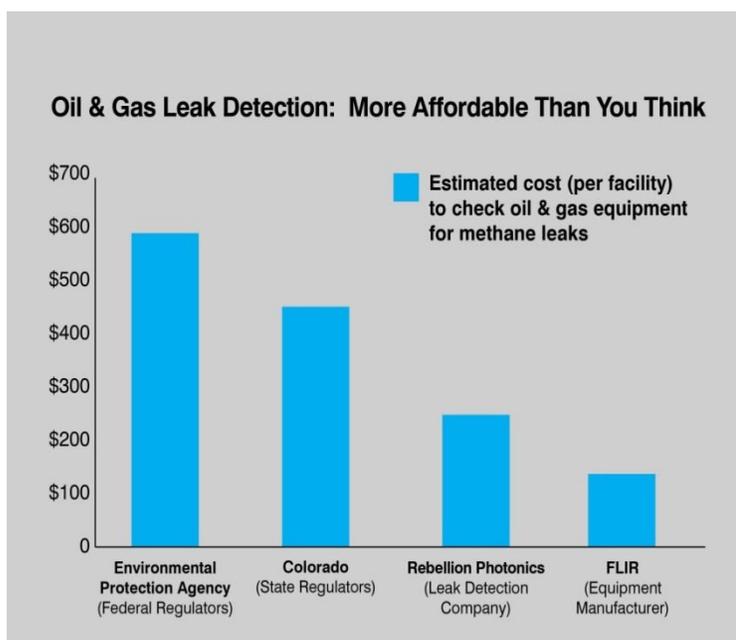
Clearly Cost Effective

Multiple studies have shown **quarterly LDAR** at new and existing facilities is a highly cost-effective way to reduce emissions.^{xv} But many in the industry dramatically overestimate the cost of compliance with these regulations – predicting costs up to *four times* higher than what we’re seeing in the real world (a pattern we see with almost every new health or environmental standard).

Opponents claim that companies will have to create their own costly in-house LDAR programs, rather than hire one of the many companies that already provide these services at a fraction of the cost.^{xvi} That’s like assuming every American would purchase their own auto shop just to fix their car.

By contrast, the U.S. Environmental Protection agency reasonably concluded that **existing third-party contractors** are a **low-cost** approach to complying with LDAR policies.^{xvii} A number of recent analyses and reports suggest EPA’s costs are not only reasonable, they are likely over-estimates.^{xviii}

- The state of Colorado estimates the costs per inspection to be around \$450 per inspection.^{xix}
- In public testimony to EPA, Texas-based Rebellion Photonics said its leak detection services cost \$250 per site, less than half the \$600-per-site cost estimated by EPA.^{xx}
- According to Wyoming producer Jonah Energy, total LDAR program costs were about \$99 per inspection in the first year, decreasing to about \$29 per inspection in the 5th year.^{xxi}



Even at today’s low gas prices, these policies pose modest costs for producers.

- In a recent survey in Colorado, seven out of ten oil and gas producers said benefits of regularly checking equipment for leaks outweigh costs.^{xxii}
- In an analysis of its proposed regulations, BLM concluded that impacts to individual operators would be small, even for companies with fewer than 500 employees.^{xxiii}
- BLM estimated that on average, compliance costs would reduce the profit margin of small operators by **less than one tenth of one percent**.^{xxiv}
- An economic study of so-called marginal wells in New Mexico’s San Juan basin found implementing BLM’s LDAR rule would have **little to no negative financial impact on marginal wells**^{xxv} and found that compliance costs will amount to approximately two cents on the dollar of annual oil and gas revenues in the state.^{xxvi}

References available at edf.org/methane

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<https://www3.epa.gov/climatechange/ghgemissions/usinventoryreport.html>
- ⁱⁱ Calculation based on Environmental Protection Agency's Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2014
- ⁱⁱⁱ Jonah Energy, WCCA Spring Meeting Presentation, May 8, 2015 delivered by Paul Ulrich
- ^{iv} The Emerging U.S. Methane Mitigation Industry, Datu Research, https://www.edf.org/sites/default/files/us_methane_mitigation_industry_report.pdf
- ^v Environmental Protection Agency, NSPS Overview, <https://www3.epa.gov/airquality/oilandgas/may2016/nsps-overview-fs.pdf>
- ^{vi} Colorado Department of Public Health and the Environment, Air Quality Control Division, https://www.colorado.gov/pacific/sites/default/files/5-CCR-1001-9_0.pdf
- ^{vii} Bureau of Land Management, Fact sheet on Methane Waste and Reduction Rule, http://www.blm.gov/style/medialib/blm/wo/Communications_Directorate/public_affairs/news_release_attachments.Par.74451.File.dat/VF_Fact_Sheet.pdf
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- ^{xi} California Environmental Protection Agency, Air Resources Board http://www.arb.ca.gov/cc/oil-gas/meetings/Draft%20ARB%20OG%20Regulation_Feb%201%202016%20Track%20Change.pdf
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- ^{xiii} Ohio Environmental Protection Agency, General Permits for Air Pollution source, Fact Sheet <http://www.epa.ohio.gov/Portals/27/permits/General%20Permit%20for%20Air%20Pollution%20Sources.pdf>
- ^{xiv} Ohio Environmental Protection Agency, Requests for Comments on Drafts of General Permits for Compressor Stations <http://www.epa.ohio.gov/Portals/27/permits/General%20Permit%20for%20Air%20Pollution%20Sources.pdf>
- ^{xv} ICF International, Leak Detection and Repair Cost Effective Analysis, https://www.edf.org/sites/default/files/content/edf_ldar_analysis_120415_v7.pdf
- ^{xvi} American Petroleum Institute, Comments on EPA Proposed Rulemaking, Oil and Natural Gas Sector: Emission Standards for New and Modified Sources, 80 FR 56593 (September 18, 2015), Docket ID No. EPA-HQ-OAR-2010- 0505-6884 (December 4, 2015).
- ^{xvii} See 80 Fed. Reg. at 56,641 "Further practical aspects we considered for the methodology of each monitoring survey include the likeliness that many owners and operators will hire a contractor to conduct the monitoring survey due to the cost of the specialized equipment needed to perform the monitoring survey and the training necessary to properly operate the OGI equipment.); see also TSD at 72 "The cost for OGI monitoring using an outside contractor was assumed to be \$600 for a well production site"
- ^{xviii} Id. FLIR estimate available here:
<https://www.regulations.gov/?elq=3ff5b8047ab24463aa9991e03f221745%26elqCampaignId=1306#!documentDetail;D=BLM-2016-0001-9035>
Not in chart: According to a presentation delivered by Jonah Energy at the WCCA 2015 Spring Meeting, total LDAR program costs were about \$99 per inspection in the first year, decreasing to about \$29 per inspection in the 5th year
- ^{xix} Colorado Air Quality Control Emission, Regulatory Analysis of Regulations 3, 6 and 7, (estimate based on the hourly cost (\$134) times 3.4 hours=\$456), <https://www.edf.org/sites/default/files/content/regulatoryanalysisattachment2013-01217.pdf>
- ^{xx} Rebellion Photonics comments at the EPA public hearing on the proposed NSPS OOOOa rule in Dallas, TX on September 23, 2015, https://www.edf.org/sites/default/files/content/attachment_1_-_rebellion_epa_hearing_testimony.pdf.
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- ^{xxiv} Id. P. 10
- ^{xxv} Conservation Economics Institute, A Review of the Economic Factors Surrounding the Capture of Methane from Oil and Natural Gas Development on Federal Public Land http://media.wix.com/ugd/5fc209_59c6d0e608554ac98fd5ac9b4655fad1.pdf

^{xxvi} New Mexico Oil Conservation Division, Natural Gas and Oil Production, Annual revenues from oil and gas were \$10.5 billion using 2014 production and 2015 prices (\$3,50/Mcf), even at high estimates of \$600, that annual cost for 20,000 active wells in New Mexico would be \$24 million <https://wwwapps.emnrd.state.nm.us/ocd/ocdpermitting/Reporting/Production/ExpandedProductionInjectionSummaryReport.aspx>.