

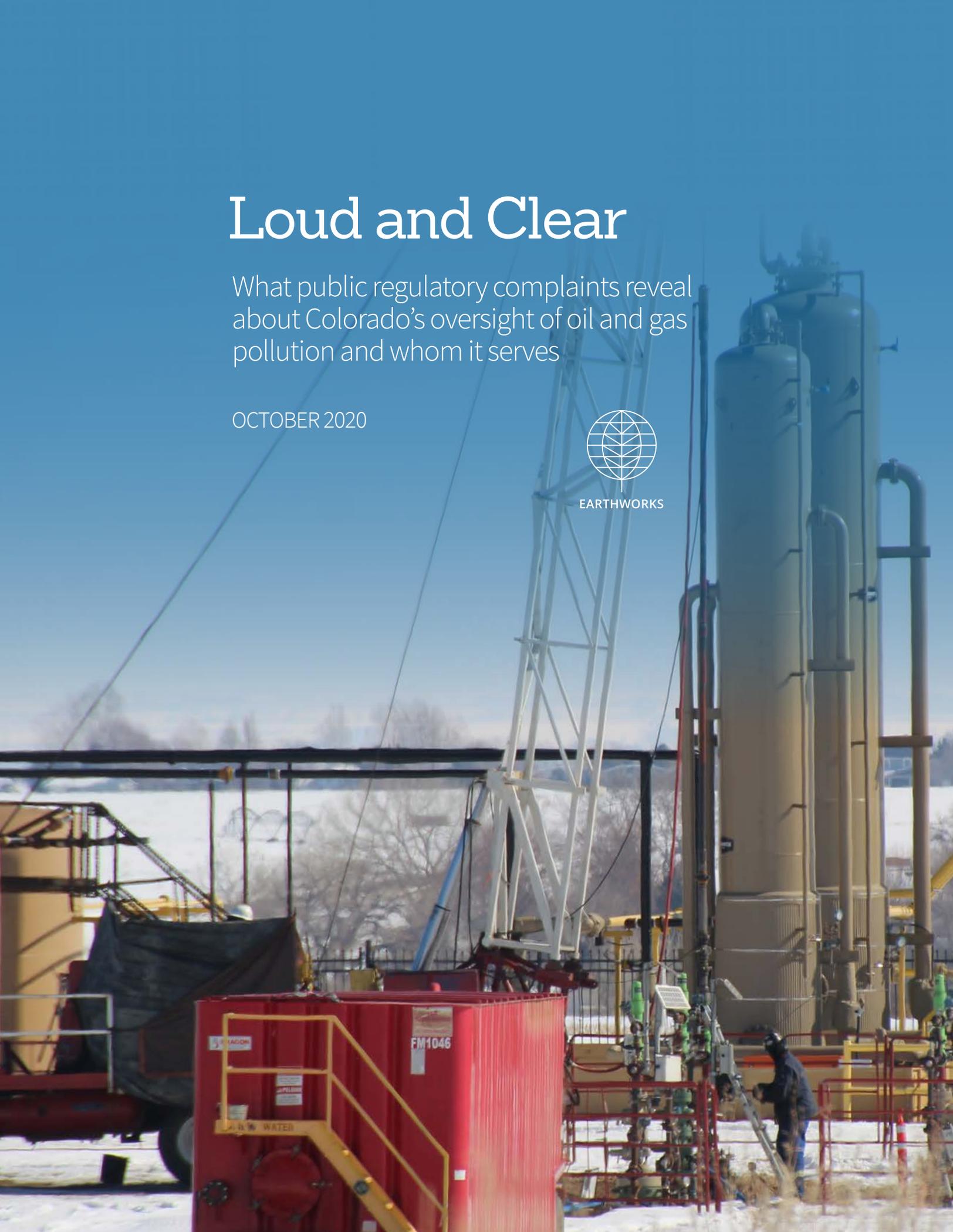
# Loud and Clear

What public regulatory complaints reveal about Colorado's oversight of oil and gas pollution and whom it serves

OCTOBER 2020



EARTHWORKS



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Report available at [earthworks.org/loudandclear-CO](https://earthworks.org/loudandclear-CO)

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*Earthworks is dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions.*

# Table of Contents

<b>1. Introduction: The Oil and Gas Pollution Threat.....</b>	<b>4</b>
Earthworks' Community Empowerment Project: Documenting Pollution to Protect People and the Planet.....	5
<b>2. The Complaint Process: Difficult and Unreliable for the Public.....</b>	<b>6</b>
Colorado's Separate Complaint Systems .....	6
Complaints Prompted Action but Pollution Reduction was Limited .....	7
Agency Response Relies on Industry's Claims More than the Public's .....	9
<b>3. Colorado's Pollution Measures: Pressure Brings Progress.....</b>	<b>11</b>
Leak Detection and Repair Becomes More Frequent.....	11
Actual Impact of Pollution Rules Remains Unclear .....	12
Pollution Assessment Improving but Gaps Remain .....	13
<b>4. Looking Ahead.....</b>	<b>14</b>
<b>5. Recommendations.....</b>	<b>15</b>
<b>Endnotes .....</b>	<b>18</b>



# 1

## Introduction: The Oil and Gas Pollution Threat

**The rapidly expanding oil and gas industry in Colorado is releasing large volumes of greenhouse gases – despite scientific consensus that fossil fuel pollution must instead be greatly curtailed to prevent the most catastrophic effects of climate change.<sup>1</sup> This includes methane, which is 86 times more powerful than carbon dioxide over a 20-year time scale.<sup>2</sup>**

At the same time, air quality is worsening for the communities living near oil and gas operations. The main reason is increased pollution from methane and volatile organic compounds (VOCs), which science confirms results in a range of health problems.<sup>3</sup>

Yet despite these evident trends, policymakers (and the general public) continue to assume that state and federal governments have both the will and the resources to adequately oversee a complex and increasingly polluting industry. Years of research and field experience by Earthworks have demonstrated that this is a faulty assumption.<sup>4</sup>

**Currently, state regulatory and enforcement agencies are:**

- Inconsistent and insufficient in how they respond to the public;
- Primarily focused on issuing permits quickly;
- Underfunded and short-staffed;
- Subject to the political influence of the oil and gas industry.



## Earthworks' Community Empowerment Project: Documenting Pollution to Protect People and the Planet

Earthworks started the Community Empowerment Project (CEP) because the oil and gas industry is putting people and the climate at risk – and governments are failing in their responsibility to prevent that from happening.

Most air pollution from oil and gas operations is invisible, making it easy for companies and regulators to dismiss residents' concerns. CEP's certified thermographers use optical gas imaging (OGI) to make visible the pollution caused by intentional safety releases, equipment failures, and operator errors in oil and gas fields.

CEP staff then uses that OGI evidence to file regulatory complaint with relevant state agencies and to document gaps in how those agencies track and address oil and gas air pollution. It is a critical time to do so, with some states already committed to reducing oil and gas pollution and others moving in that direction. This report details findings of CEP's work in Colorado from 2017-2020.

Nearly all state regulatory agencies have a complaint system. If properly designed and implemented, residents can notify regulators about problems at oil and gas sites – being critical “eyes and ears” while gaining needed assistance from public agencies.

For oil and gas regulatory regimes to be effective – in both combating pollution and protecting the public – complaint systems must be accessible, usable, responsive, and transparent.

### Robust complaint systems help to:

- Reduce pollution that harms health and the climate.
- Build trust in agencies mandated to both work with industry and serve the public.
- Respond to community concerns and experiences.
- Make government agencies more effective.
- Foster agency and operator accountability.



Seeing is Believing.

Earthworks uses Optical Gas Imaging to make invisible pollution visible.



Pollution viewed with the naked eye versus an OGI camera, here at the SRC Energy - Burton K-25-69-1HNL, Platteville, Weld County, Colorado.



# 2

## The Complaint Process: Difficult and Unreliable for the Public

### Colorado's Separate Complaint Systems

In Colorado, two agencies accept complaints on oil and gas operations: the Oil and Gas Conservation Commission (COGCC) and Department of Public Health and the Environment (CDPHE).

COGCC accepts complaints by phone, email, or an online form. A publicly accessible and searchable online database makes it possible to track all complaints, as well as related follow up inspections and resolution information.<sup>5</sup> COGCC assigns a complaint tracking number to each case and shows the names of both the complainant and the assigned inspector. Text of the complaint is included, providing an overview of the initial problem, a description of what the agency did in response, and conclusions about the pollution event and other problems.

CDPHE accepts air complaints via its Oil and Gas Enforcement Team and health complaints via its Oil and Gas Health Information and Response program (OGHIR).<sup>6</sup> Complainants who submit air pollution complaints can request updates by emailing the CDPHE oil and gas inspectors or by submitting (and paying for) a formal Colorado Open Records Act (CORA) request.

Health-focused complaints can also be made through online forms connected to the OGHIR database. The database provides some information about complaints to the public, but lacks any way for complainants to track regulator response, progress, or outcome. Earthworks has detailed these and other issues with CDPHE's handling of public concerns and complaints in a recent report.<sup>7</sup>



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## Complaints Prompted Action but Pollution Reduction was Limited

In just over two years, Earthworks made 28 trips to 15 Colorado counties to film oil and gas pollution. We made nearly 300 visits to about 200 sites, and documented problems at many wells, compressor stations, and other facilities.

**Earthworks made nearly 300 visits to well sites, compressor stations, and other oil and gas facilities in the last two years.**

Between 2017 and 2020, Earthworks staff filed 66 complaints with COGCC and CDPHE, based on OGI documentation and direct field experience (in some cases odors and health symptoms). As the COGCC and CDPHE complaint systems are not integrated and track different types of information, Earthworks filed each complaint in two or three places to improve the chances of receiving a response. Only 9 (14%) of these complaints resulted in direct pollution reductions, in the form of regulators requiring the operator to repair equipment or install new equipment on site. One of these complaints also resulted in the operator moving odor detection equipment to a better location on site and one led to a fine on the operator for failing to utilize Reasonably Available Control Technology for VOCs, as required under federal and state law.

The largest number of Earthworks' complaints (43, or 65%) generated some oversight action by regulators, such as inspections and contacting operators about the reported problem.

RESULTS OF COMPLAINTS — FILED BY EARTHWORKS IN COLORADO   AS OF JUNE 2020	
Closed — Action taken to reduce pollution	9
Closed — Other regulatory action taken	43
Closed — No action taken	14
<b>Total Complaints filed by Earthworks with COGCC and CDPHE</b>	<b>66</b>



Earthworks uses preset categories to analyze and flesh out the actions taken by regulators in response to filed complaints. Complaint responses fall into three broad categories:

- ❶ **Action taken is a regulator action specifically intended to reduce emissions** (i.e., the regulator requires an operator to replace or fix a piece of equipment).
- ❷ **Other action is a regulator action** that, while not leading to pollution reduction, does potentially support more oversight (i.e., a regulator inspection or informing an operator of a problem).
- ❸ **No action taken** means that agencies lost or ignored complaint submissions or otherwise declined to take action in response to a complaint.

Every complaint generated at least one type of response, although regulators often had more than one response (for example, contacting an operator and requiring an equipment fix that reduced emissions).

These graphs show the types of responses Colorado regulators had to Earthworks' complaints.



## Agency Response Relies on Industry’s Claims More than the Public’s

Even Earthworks staff, who are trained professionals focused on this project, faced significant challenges in getting regulators to respond to our complaints. This underscores that frontline community members, with fewer resources and having jobs and personal responsibilities, simply cannot rely on the public complaints system for resolution to – and even information on – the impacts they live with daily.

COGCC policy states that the agency will respond to a complainant within two business days with a “fact sheet explaining the procedure(s) for investigating,” and then with a formal letter once the complaint is resolved, which the agency estimates takes up to 60 days.<sup>8</sup> CDPHE does not appear to have such a policy.

As the table below shows, Colorado’s regulators have a limited number of inspectors, counted in double digits, in contrast to the number of active industry permits, counted in the tens of thousands. Although in actuality the distribution of the inspection caseload is not even across inspectors and sites, this gap illustrates the impossibility of regulators keeping up with industry oversight.

COLORADO’S OIL AND GAS INDUSTRY INSPECTION CAPACITY (2019)					
	# Active Permits (as of Feb. 2020)	# Inspectors	Ratio of wells and emission sources to inspectors	# Inspections per inspector in 2019	# Inspections conducted annually
COGCC	52,010 <sup>9</sup>	26 <sup>10</sup>	2,154	1,505	39,138 <sup>11</sup>
CDPHE	28,433 (air permits only) <sup>12</sup>	10	2,483	187	1,867 <sup>13</sup>

Earthworks found that regulators from both COGCC and CDPHE acknowledged receipt of our complaints, primarily by email. COGCC’s system generated an auto reply acknowledgment, followed by an individual email within a day that includes a complaint tracking number and explanation of whether the complaint will be handled by COGCC or was sent to CDPHE instead.

Upon receiving our OGI footage, COGCC and CDPHE decided to conduct on-site inspections about 40% of the time in order to determine whether a violation may have occurred. Ultimately, however, in most cases, agency inspectors appear to have defaulted to the assumption that the pollution documented at a particular site was just part of “normal operations” and “within allowable limits” contained in air permits.

This could be true in some instances, given that oil and gas operations have many parts that are permitted to release pollution (such as compressor stacks and flares). However, agency staff appear to accept assertions by operators about what was happening at their sites and that any identified problems would be resolved. Yet the veracity of such assertions is impossible to determine without substantiation (such as direct measurement of volumes being released or a stack test to assess release rate). State agencies could require this in certain

**For every 2,000 oil and gas pollution sources Colorado has permitted, there’s only one inspector.**



cases, as well as local governments given their new oversight authority related to inspections and monitoring programs.<sup>14</sup>

Nonetheless, Earthworks' complaints and OGI video submissions did generate some inspections and equipment fixes that otherwise would likely not have occurred. In some instances, regulators discovered that a particularly polluting event had been underway during the time Earthworks staff were at the site and documenting pollution with OGI (e.g., "cleaning tanks" or "replacing equipment").

For example, complaints filed by both Earthworks and a local resident included OGI footage of a significant pollution event at a compressor station in Weld County. A subsequent investigation by CDPHE found that the operator had been running the pollution source without a permit for nearly three years; the agency ultimately issued a fine and the operator installed new pollution reduction equipment.<sup>15</sup>

More broadly, Earthworks' collection of OGI evidence of pollution supported the concerns and affirmed the experiences of frontline residents, and encouraged them to file complaints and ask for regulators to respond. Earthworks' complaint filing opened lines of communication with COGCC and CDPHE staff that revealed key issues regarding transparency of information and response to residents' concerns. In addition, Earthworks' complaints filings, research, and engagement in rulemaking processes – including using OGI and other field evidence – helped draw attention to and win new measures to improve oversight and transparency by state agencies.

**Earthworks' complaint filing revealed key issues with the transparency and public response of Colorado's agencies.**



# 3

## Colorado's Pollution Measures: Pressure Brings Progress

Colorado has claimed leadership in reducing pollution and protecting the public based on the adoption of some of the nation's first state-level rules to reduce emissions from oil and gas operations. In addition, in 2019, the Colorado legislature passed Senate Bill 181, which directs state agencies tasked with overseeing industry to equally ensure that they serve the public and respond to community input.<sup>16</sup>

To date, Colorado has put important regulations in place to rein in pollution at a time when the state has fostered a dramatic expansion of the oil and gas industry. But when it comes to assessing whether these measures are actually working to reduce overall pollution – and to protect people and the climate – the picture is far less clear.

**Colorado is among the first states to adopt rules to reduce methane and other oil and gas pollution. But there's still no way to accurately track if those rules work.**

### Leak Detection and Repair Becomes More Frequent

In 2014, Colorado adopted requirements for operators to install new technologies to minimize emissions from various types of equipment and to regularly survey their sites to find and fix leaks. The state effectively incorporated the Leak Detection and Repair (LDAR) protocols set out in federal VOC control rules, while also taking the step to directly regulate methane.<sup>17</sup>

The frequency of LDAR inspections depends on the level, or tons per year (tpy), of pollution estimated by operators (see table below). In 2017, Colorado expanded the rules to cover more facilities and equipment, in accordance with changes in federal air quality guidelines.<sup>18</sup>

In the meantime, air quality in the Denver Metropolitan/Northern Front Range Area has continued to deteriorate due to development, traffic, and oil and gas operations. In late 2019, Colorado received the news that the US Environmental Protection Agency (EPA) was reclassifying the area as being in "serious" nonattainment of (i.e., inability to meet) federal standards for health-harming ozone pollution.<sup>19</sup> Going forward, this means that more facilities will have to meet lower allowable emissions thresholds – including large oil and gas polluters such as compressor stations and processing facilities.



Seeing the EPA writing on the wall and influenced by the passage of SB-181, Colorado’s Air Quality Control Commission (AQCC) adopted additional LDAR requirements at the end of 2019. This significantly stepped up the frequency for LDAR even in oil and gas areas (such as the Western Slope) that currently met federal air quality standards for ozone. In addition, operators with oil and gas pollution sources within 1,000 feet of “occupied areas” – defined as residences, schools, businesses, and recreational venues – will need to conduct inspections using monitoring instruments like OGI cameras more often than in other settings (see table below).<sup>20</sup>

COLORADO LEAK DETECTION AND REPAIR (LDAR) REQUIREMENTS		
LDAR frequency for pollution sources	2014 requirements	2019 requirements for sources near occupied areas
Below 6 tons per year	Annually for compressor stations; one time for tanks at well sites	Semi-annually
6-12 tons per year	Annually	Quarterly
12-50 tons per year	Quarterly	Monthly
Over 50 tons per year	Monthly	Monthly

## Actual Impact of Pollution Rules Remains Unclear

Prior to the adoption of LDAR rules, many of Colorado’s oil and gas sites (particularly lower-emitting ones) were inspected infrequently, if at all. Such measures therefore hold promise for reducing pollution that occurs because of equipment failure and operational errors.

According to calculations by Clean Air Task Force, Colorado’s 2014 and 2017 methane and VOC control rules, *if properly enforced*, could achieve a lower level of methane, VOC, and hazardous air pollution than in the absence of such regulations, with total reductions of over 1.6 million metric tons by the end of 2019.<sup>21</sup> The more recent 2019 rules could logically be expected to generate additional reductions.

However, to date Colorado has not had a system in place to determine the extent to which LDAR and new pollution control technologies are actually reducing pollution. Under the state’s reporting requirements, operators submit self-reported data on their LDAR activities to CDPHE’s Air Pollution Control Division (APCD). These reports include the number of inspections conducted, leaks detected and repaired, and leaks logged for future repair. However, they do not include any information on the estimated volume of emissions reduced as a result of that work, and the state has yet to calculate pollution reductions achieved.

The APCD indicates that over the last few years, operators have conducted an increasing number of LDAR inspections and the number of leaks occurring has decreased.<sup>22</sup> However, APCD also notes that while a 2018 jump in the number of both inspections and leaks could reflect the use by operators of more effective detection instruments (such as OGI cameras) – it could also be because more pollution is leaking in more locations.<sup>23</sup>



## Pollution Assessment Improving, but Gaps Remain

In addition to a lack of data on the actual impact of Colorado's oil and gas pollution rules, it is not currently possible to ascertain how resulting reductions compare to the ever-growing volumes of pollution generated by an expanding oil and gas industry. State-level pollution reporting and tracking systems provide some information for regulators, policymakers, researchers, and the public but also have critical gaps:

### ■ EPA's Greenhouse Gas Reporting Program (GHGRP)

Colorado's largest oil and gas polluters submit annual data on their estimated greenhouse gas emissions directly to the GHGRP.<sup>24</sup> This database is frequently used by regulators and policymakers to judge how much the oil and gas sector emits. However, it only covers sources releasing more than 25,000 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) per year. This effectively excludes thousands of wells, compressor stations, and other facilities that report lower volumes of emissions but nonetheless collectively have a widespread, significant pollution impact.

### ■ Colorado's Greenhouse Gas Inventory

Following an Executive Order by the Governor in 2008, the state has compiled 5-year inventories and made future projections for a range of pollution sources and sectors.<sup>25</sup> Emissions from oil and gas production and systems are estimated only for methane (i.e., not carbon dioxide and other greenhouse gases). The inventory is based on estimates and modeling – not actual emissions calculations by operators or field measurements.

### ■ CDPHE's Air Pollutant Emissions Inventory

This data source provides summary emissions data by county for key health-harming pollutants (VOCs, particulate matter, nitrogen oxide, carbon monoxide, and sulfur dioxide).<sup>26</sup> A searchable workbook function associated with the inventory allows users to see volumes of emissions by sector, including oil and gas.<sup>27</sup> This information is based on emissions estimates from operators, models, and equipment specifications; at the time of writing, the latest available inventory covers 2008-2013.

### ■ CDPHE's Oil and Gas Health Site

This interactive online tool provides users with reports on oil and gas health impacts, online forms to report health concerns, and a map showing reported concerns.<sup>28</sup> The data are aggregated by zip code and do not show what the concerns were or link these to specific sites or operators. The site has air sampling information related to certain concerns, but to date only 10 reports from 2016-2018 are included.



**Pollution viewed with the naked eye versus an OGI camera.**

**TOP: AKA Energy – Speer Facility, Platteville, Weld County, Colorado.**

**BOTTOM: Extraction Oil & Gas – Milkshake well site, Windsor, Weld County Colorado.**



# 4

## Looking Ahead

In 2019, the Colorado legislature took action to fill some of the critical gaps in data and information on oil and gas operations. Senate Bill 19-096 directs the AQCC to collect greenhouse gas emissions data directly from polluting industries and to publicly report on the data every two years (as well as providing forecasts of future emissions); the agency is required to develop rules for the reporting by June 1, 2020.<sup>29</sup>

In addition, as part of the rulemaking related to ozone reduction, the AQCC adopted requirements that oil and gas operators report on an annual basis their emissions of VOCs, nitrogen oxide, carbon monoxide, methane, and ethane.<sup>30</sup> The first operator reports are due in January 2021 and slated to be released publicly in July of that year.

More comprehensive and reliable data on greenhouse gases will help paint a clearer picture on oil and gas impacts on health, given the role of methane and ethane in the formation of ozone.<sup>31</sup> Expanded monitoring will also build on initial efforts connecting oil and gas pollution and ozone in Weld and Boulder Counties.<sup>32</sup> It is also essential to correct previous data gaps and mistakes in the state's methane monitoring efforts.<sup>33</sup>

Yet until these data are available and analyzed, Colorado will continue to be largely “flying blind” in determining the extent to which oil and gas pollution is occurring – and in turn how much more it needs to be curtailed in order to maintain air quality, protect health, and reduce climate impact.

Coming to terms with these facts is directly tied to Colorado's ability to meet its climate change goals, which include reducing statewide greenhouse gas emissions by more than 26% from 2005 levels by 2025, 50% by 2030, and 90% by 2050.<sup>34</sup> Fulfillment of these goals will be challenging if the state continues to expand its oil and gas industry.

A recent study indicates that to comply with its own climate targets, Colorado will have to reduce emissions by 58 million metric tons of CO<sub>2</sub>e (the measurement of total greenhouse gases) by 2030.<sup>35</sup> Yet even Colorado's current greenhouse gas inventory indicates that the estimated volume of methane emissions alone from the oil and gas sector doubled from 2005 to 2015 (from about 8 to nearly 16 million metric tons of CO<sub>2</sub>e).<sup>36</sup>

**More reliable data on greenhouse gases will help paint a clearer picture on oil and gas impacts on health, given the role of methane and ethane in the formation of ozone.**



# 5

## Recommendations

**Colorado has started down the road to leadership on climate and health – but still has many miles to travel. To better respond to the public’s concerns and ensure that complaint and pollution tracking systems are responsive, accessible, and informative, Colorado should:**

- 1 Adopt a public service lens when assessing complaint systems.** A complaint system is supposed to serve the impacted public. Currently Colorado only does so if complainants invest considerable time and effort, or indirectly to the extent that professional groups like Earthworks can make use of it in service of communities. A properly functioning system would allow residents to use the complaint system themselves easily and without assistance.
- 2 Shift the burden of proof for problems underpinning complaints.** Earthworks’ experience filing complaints and assessing agency response in Colorado has shown the need for a fundamental shift as to who regulators are accountable to, and where the “burden of proof” regarding impact lies. Contrary to the agencies’ current attitude, if the problems residents are experiencing haven’t been resolved, inspectors should continue to investigate until operators can demonstrate they’re not causing harm.
- 3 Work directly with impacted community members.** Inspectors often “resolve” complaints by contacting operators directly to inquire whether there was an operational problem or not. The people living daily with oil and gas impacts should be confident that regulators won’t dismiss their experiences in favor of communication with industry. Inspectors should follow up with residents directly and promptly and view their concerns as possible grounds for enforcement action.

Any resident should be able to go online and easily obtain information about the oil and gas facilities that concern them, including the status of complaints they or others have filed about specific operations and concerns (e.g., persistent odors, noise, and onset of health symptoms). Complainants should receive a single tracking number, guidance on use of the complaint tracking system, and information on COGCC and CDPHE’s timelines and procedures for following up on the identified problems and responding to complainants. Impacted residents should not be forced to make multiple calls, send numerous emails, and “connect the dots” among several sources of information.



- 4 Create a publicly accessible tracking system for complaints that is integrated across COGCC and CDPHE.** This integration should be part of CDPHE’s development of a publicly accessible and searchable oil and gas complaint system, which the agency was directed through legislation to initiate in 2020.<sup>37</sup>

Any resident should be able to go online and easily obtain information about the oil and gas facilities that concern them, including the status of complaints they or others have filed about specific operations and concerns (e.g., persistent odors, noise, and onset of health symptoms). Complainants should receive a single tracking number, guidance on use of the complaint tracking system, and information on COGCC and CDPHE’s timelines and procedures for following up on the identified problems and responding to complainants. Impacted residents should not be forced to make multiple calls, send numerous emails, and “connect the dots” among several sources of information.

- 5 Create a publicly accessible map of all complaints.** Community members should be able to easily see where complaints have been filed, via a map that reflects data in the complaint tracking system. They should be able to identify the operators and facilities nearby that could be connected to the problems they’re experiencing. This map could also include additional data layers, such as well sites, violations, and inspections.

- 6 Build community trust by regularly reporting on complaints made to both COGCC and CDPHE.** Residents have a right to know how and when public agencies conducted inspections in their communities, what they found, and the actions they and operators have taken to address their pollution and health concerns.

- 7 Make upcoming emissions inventories comprehensive and accessible.** Any future inventories for ozone-forming pollutants and greenhouse gases should include a comprehensive set of emission sources, be searchable by facility name and location, and allow the public to download data. Residents, researchers, and advocates should be able to see which pollutants and levels of pollution operators are reporting to the state and to track changes over time. This is essential to determine whether state policies and regulations to reduce pollution are actually effective, or not.

- 8 Develop an inventory of “excess” emissions.** It’s important to track and assess events that cause pollution above permitted levels (e.g., malfunctions and blowdowns). Given Colorado’s climate goals and expressed commitment to reining in oil and gas pollution, VOCs, hazardous air pollutants, and greenhouse gases should be included in this inventory.

These data are necessary to determine whether state policies and regulations to rein in climate pollution are actually effective, or not. More data on greenhouse gas releases would also help paint a clearer picture on oil and gas impacts on health, given the role of methane and ethane in the formation of ozone.<sup>38</sup>

CDPHE should also make publicly available reports on agency actions taken in response to excess emission events. Residents have a right to know how large pollution releases are being addressed and whether regulators are holding operators accountable. Environmental health research confirms that large, episodic emission events can cause health impacts immediately or in as little as 1-2 hours, in part because toxicity is determined by the concentration of the chemical and intensity of exposure.



- 9 Expand field measurement projects to determine actual volumes of oil and gas pollution.** Operators should continue to be required to report data to emissions inventories, but these are estimates based on the assumption that equipment is functioning as designed – which too often is not the case. Several studies demonstrate that measured emissions can be significantly higher than what operators report. To more clearly understand how much pollution needs to be reduced to reach climate goals, Colorado should conduct its own measurements, at minimum near significant pollution sources (e.g., compressor stations, processing plants, and large well pads).
- 10 Expand and improve both methane and VOC monitoring in oil and gas regions.** Accurate data is the only way to know whether health-harming pollution is going up or down. Given the role of methane in forming ozone pollution, reducing oil and gas emissions will be key to the state’s efforts to meet federal air quality standards. More monitors are needed in areas with growing numbers of oil and gas wells and facilities, particularly in close proximity to more developed and populated areas. The public should be able to access regularly updated information on the monitors and facilities near them.



# Endnotes

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- 12 Based on CDPHE's response to an information request submitted in August 2019. This is the number of sources of oil and gas emissions for which CDPHE APCD issued air permits. Since oil and gas sites can include several APCD permitted sources of emissions, the number of individual facilities is lower than the number of permits.
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