



EARTHWORKS

Dedicated to protecting communities and the environment from the adverse impacts of mineral and energy development while promoting sustainable solutions.

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November 11, 2020

Will Toor, Executive Director
Colorado Energy Office
1600 Broadway, Suite 1960
Denver, CO 80202

Comments submitted by email to: coloradoenergyoffice@state.co.us

Dear Director Toor and Energy Office Staff:

Thank you for the opportunity to submit comments on Colorado's Pollution Reduction Roadmap (the Roadmap).

Earthworks is a national nonprofit organization committed to protecting communities and the environment from the impacts of mining and energy development while seeking sustainable solutions. For nearly 30 years, we have fulfilled our mission by working with communities and grassroots groups to reform government policies, improve corporate practices, influence investment decisions, and encourage responsible materials sourcing and consumption.

Earthworks' comments are focused on the section of the Roadmap related to the oil and gas sector and the imperative of reducing pollution from the industry, for the sake of both the climate and health. The following is in addition to Earthworks' comments as submitted by Earthjustice (the Earthjustice comments).

We emphasize the growing scientific consensus that fossil fuel pollution must be greatly curtailed to prevent the most catastrophic effects of climate change, including by restricting oil and gas production.¹ We also highlight Governor Polis' recent statement that, "levels of ground-level ozone...are on the rise, with the oil and gas industry as a major contributor of the components that combine to create the pollution. These impacts are especially felt in vulnerable populations like the elderly, children, low-income communities, and communities of color."²

1. The Roadmap ignores a key path to emission reductions

As currently written, the Roadmap ignores a critical strategy available to Colorado: limiting oil and gas production, which would help prevent pollution before it even occurs and give the state a stronger chance of reaching its climate goals. This is a significant oversight given that the state is currently less than halfway to its goal of reducing emissions by 25% by 2030.

The Roadmap clearly states (p. vi) that oil and gas production is among the top four sources of greenhouse gas (GHG) emissions in Colorado, and that the industry overall is the largest source of non-combustion sources in the state. Oil and gas operations also contribute significant volumes of combusted emissions from sources representing "routine operations," such as stacks and engines.

Yet the Roadmap fails to address the incompatibility of ambitious GHG reduction goals with the continued growth of the oil and gas industry as a whole. It also makes no mention of potential emissions from Colorado's hundreds of known and unidentified orphaned and abandoned wells.

Instead, the Roadmap assumes that a steep decline in greenhouse gas emissions from the oil and gas sector can be achieved solely by decreasing methane leaks in upstream and downstream operations. This assumption is not substantiated, as the Roadmap fails to explain how steep reductions in leak rates will be achieved and how this limited approach will be sufficient to offset growing volumes of emissions.

The explanatory data provided in the Roadmap draft ("CO GHG Roadmap Assumptions and Results") reflect state targets that allow oil and gas production levels and concomitant emissions volumes to increase over the next several years. Yet both would then have to drop precipitously, in order to be more than two-thirds lower by 2050.

As the Earthjustice comments emphasize, the Roadmap's assumptions about what can be achieved through leak reduction measures alone are questionable at best. This is further borne out in other studies, including a recent analysis by Evolved Energy, GridLab, the Natural Resources Defense Council, and Sierra Club (the NRDC/Sierra Club report).³

Earthworks strongly supports that report's conclusion (p. 129): "It is fundamentally incompatible to say, on one hand, that decarbonization requires the state to use less oil and gas by 2030, but on the other hand say that the state should be permitted to produce more oil and gas by 2030."

In coordination with the Colorado Oil and Gas Conservation Commission (COGCC) and Department of Public Health and Environment (CDPHE), the Energy Office should, at minimum:

- **Adopt a binding methane emission limit** from oil and gas production.
- **Set limits on overall oil and gas production** by a given percentage for 2025 and 2030.
- **Reduce new permitting** by a given percentage per year. Reduction limits should be based in part on projected emissions from new sites, as well as health impact considerations in particular areas (discussed further below).
- **Include in all new permits provisions for reopening or revoking the permit** if emissions levels are on track to exceed the state's established limits for 2025 and 2030.
- **Establish a mechanism for coordination between oil and gas permitting agencies.** COGCC and CDPHE should work jointly to limit the issuance of additional oil and gas permits, based on projected emissions and exceedances of established pollution reduction goals.

- **Develop a state plan for a just transition off fossil fuels** that includes the oil and gas sector (i.e., in addition to the power sector strategies being pursued by the state and utilities). Such strategies and implementation steps are necessary to meet decarbonization and climate goals over time and address changes faced by workers and consumers tied to the oil and gas production sector.
- **Address the equity aspects of oil and gas pollution.** The state has yet to develop clear strategies and implementation plans to achieve emission reductions specifically in minority, low-income, and other disadvantaged communities. Such efforts should build on the health and equity modeling and analysis conducted by PSE Healthy Energy that is included in the NRDC/Sierra Club report.

2. Emissions tracking is necessary to measure progress toward reducing pollution

To date, Colorado has not established a system to assess the effectiveness of the state's current oil and gas pollution control measures.⁴ Given this, it is hard to understand how the state plans to measure success of the ambitious leak reduction plans contained in the Roadmap that project decades into the future. Earthworks recommends that the Energy Office:

- **Require CDPHE's Air Pollution Control Division (APCD) to regularly assess the estimated volume of emissions reduced** as a result of existing and future leak detection and repair (LDAR) and other oil and gas pollution control requirements. Currently, 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 actual emission *reductions* that have been 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.⁵ 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 the result of more pollution leaking in more locations.⁶

- **Improve the accuracy and tracking of emissions data.** In order to take measures to prevent emissions that exceed GHG reduction goals, the state needs to invest in the systems and staff required to obtain a full and accurate picture of these emissions. These data are also necessary to determine whether state policies and regulations to rein in climate pollution are actually effective over time, or not. The Energy Office should ensure coordination between COGCC and CDPHE to:

- *Expand the state GHG inventory* to include carbon dioxide and other GHGs in addition to methane.

- *Develop an "excess emissions" inventory* to track and assess events that cause pollution above permitted levels (e.g., malfunctions, blowdowns, venting from unlit flares). Given Colorado's expressed commitment to reining in oil and gas pollution, all GHGs (as well as

VOCs and hazardous air pollutants) should be included in this inventory. Resulting data and information on agency response to excess emission events should be made publicly available.

- *Assess potential emissions from orphaned and abandoned wells.* These data could be considered by COGCC when making decisions on priorities and categories for the agency's Orphaned Well Program.

- *Conduct field measurement projects* to determine actual volumes of oil and gas pollution and verify operator self-reported estimates. Estimates submitted by operators are 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.⁷ At a minimum, measurements should be conducted near significant pollution sources (e.g., compressor stations, processing plants, and large well pads).

- *Ensure strong final Regulation 7 changes related to emissions monitoring* at oil and gas facilities and the transparency of resulting data. As Earthworks and partner organizations commented to the Air Quality Control Commission in September, the proposed rules, as currently written, lack specificity with regard to the protocols and parameters required in monitoring plans designed and submitted by operators. This could limit the data and information that are available to agencies to make pollution reduction decisions, as well as to impacted communities, policymakers, and the public.

- *Expand and improve both methane and VOC monitoring in oil and gas regions.* Reducing oil and gas emissions will be key to the state's efforts to meet federal air quality standards, particularly because of the role of methane and ethane in the formation of ozone.⁸ More monitors are needed in areas with growing numbers of oil and gas wells and facilities, particularly those in close proximity to developed and populated areas.

- **Identify potential violations of pollution limits** by oil and gas operators. Related investigations could be prompted by the state's pollution tracking, particularly in parts of the state currently in, or at risk of entering, a status of non-attainment for ozone and where oil and gas operations are widespread. (e.g., the Front Range and Western Slope).
- **Integrate third-party evidence**, such as optical gas imaging (OGI) video and resident complaints, into investigations of emission exceedances and subsequent permit adjustments or even revocations. This approach is increasingly being pursued by the New Mexico Environment Department, resulting in the issuance of violation notifications and subsequent equipment repairs or adjustments that have led to immediate emissions reductions.⁹

3. Enforcement is key to achieving emission reductions

As discussed above, the Roadmap's sole emphasis on methane leak reduction as a solution to meeting emission targets for the oil and gas sector is a risky bet. Success of the proposed strategy is also far from clear because Colorado does not have sufficient resources devoted to monitoring and enforcement of the state's current oil and gas pollution control measures.¹⁰ This calls into question how the state will ensure the high level of LDAR activities by operators that are assumed under the Roadmap's scenario.

Earthworks has long documented gaps in state oil and gas oversight and enforcement nationwide, including in Colorado.¹¹ 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 ¹²	26 ¹³	2,154	1,505	39,138 ¹⁴
CDPHE	28,433 (air permits only) ¹⁵	10	2,483	187	1,867 ¹⁶

Colorado's insufficient level of inspections and enforcement is evidenced every day in the state's oil and gas fields. Frontline community residents suffer as a result, while overall air quality and climate continue to be degraded. Since 2017, Earthworks' certified thermographers have used OGI in Colorado to make visible the pollution caused by intentional releases, equipment failures, and operator errors at over 200 well sites, compressor stations, and other facilities.

Earthworks has then used OGI videos to file regulatory complaints (about 70 to date) with state agencies and to document gaps in how they track and address oil and gas air pollution. Our Colorado video playlist is publicly available: <http://bit.ly/CEP-CO>

Upon receiving our OGI footage, COGCC and CDPHE have decided to conduct on-site inspections about half the time. Ultimately, however, in most cases, agency inspectors appear to have--often based on operator assertions rather than actual emissions tracking--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.

Notably, it was because Earthworks and local residents filed complaints that regulators conducted inspections and, in some instances, took measures to stem pollution problems. Given the scale of operations statewide, it is logical to assume that many other emission releases are continuing unabated due to a lack of regulator oversight and operator initiative.

The following examples of Earthworks' field experiences illustrate the gaps in state enforcement systems and the significant work that remains to effectively reduce emissions at oil and gas sites--including to the degree assumed by the Roadmap.

AKA Energy, Speer gas plant, Platteville, Weld County. Earthworks has visited this facility several times in 2018-2020, documenting emissions from compressor engines and dehydrators. In Earthworks' field experience in Colorado, this is the only site for which [CDPHE issued a violation and a penalty](#) in response to one of our complaints. However, even after CDPHE penalized AKA Energy for emitting 214 tons of VOCs from an unpermitted piece of equipment, AKA was granted additional air permits and Earthworks documented additional, ongoing pollution events (which did not result in enforcement action by CDPHE). (See <https://www.youtube.com/watch?v=t-uH91Pa4BY> and <https://www.youtube.com/watch?v=4pbYxDknHL0>.)

Anadarko Petroleum, Hambert compressor station, LaSalle, Weld County. Earthworks visited this site twice in 2018, documenting emissions from engines. (See <https://www.youtube.com/watch?v=RcLD763MaZg>). In response to filed complaints, CDPHE stated that, given past equipment reports from the operator, the engines could be assumed to be operating "normally" and within permitted emission levels. This may or may not have been the case, and CDPHE did not conduct an onsite inspection to verify if the operator had released unallowed emissions.

Extraction Oil and Gas, Milkshake well site, Windsor, Weld County. Earthworks visited this site three times in 2019-2020, documenting emissions from enclosed flares and tanks in close proximity to homes. (See <https://www.youtube.com/watch?v=QiQ0K6Sa9ng> and https://www.youtube.com/watch?v=lHLtw_hlbbs). In response to filed complaints, CDPHE noted that while it appeared likely that equipment failures had resulted in excess pollution, inspectors couldn't do anything and had to accept Extraction's claim that everything was operating "normally." This reasoning was in part based on the time that lapsed between Earthworks' site visit and agency response.

Extraction Oil and Gas, Coyote Trails well site, Windsor, Weld County. Earthworks visited this site four times in 2018-2019, documenting emissions from enclosed flares in close proximity to homes. (See <https://www.youtube.com/watch?v=Lg4f0kfvvDk&list=PL9BS7nDf-8trguolVzCgqR3FmzO67-hC0&index=66>). In response to complaints by Earthworks and local residents, a COGCC inspector conducted a site inspection and contacted the operator, concluding that the intense emissions and black smoke were the result of "maintenance and adjustment" of equipment during a switch from flowback to production. Yet despite clear evidence and [media coverage](#) of the operational problems, the state didn't issue a violation or fine, nor require Extraction to take measures to prevent similar pollution releases in the future.

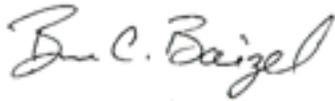
In light of these realities and to improve the chances of meeting the Roadmap's goals, the state of Colorado and both COGCC and CDPHE will need to invest additional resources to:

- Hire and train additional inspection staff.
- Deploy more emissions documentation technologies (including OGI cameras).
- Conduct timely field inspections.
- Hire oil and gas community liaisons.

- Transform the CDPHE oil and gas complaint system so that it is publicly accessible and searchable, and integrated with COGCC's complaint system.
- Respond to and track community complaints in a timely, thorough, and transparent manner--particularly those related to air quality and emission events.

Thank you for your time and consideration of our comments. Earthworks looks forward to continued dialogue with the Energy Office, state agencies, and stakeholders whose engagement will pave the way for a comprehensive and effective climate policy in Colorado.

Sincerely,



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¹ SEI, IISD, ODI, Climate Analytics, CICERO, and UNEP. 2019. *The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C*. <http://productiongap.org>

² Jared Polis and Michelle Lujan Grisham, "States can lead on climate and clean energy," *The Hill*, October 16, 2020.

³ Evolved Energy, GridLab, Natural Resources Defense Council, and Sierra Club, *Committing to Climate Action: Equitable Pathways for Meeting Colorado's Climate Goals 14* (Sept. 2020)

⁴ In 2014, Colorado adopted EPA's Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution 40 C.F.R. Part 60, Subpart OOOO. Revisions were made to Colorado's Regulation 3, 6, and 7. In 2017, Colorado adopted measures to fulfill the US Environmental Protection Agency's 2016 Control Techniques Guidelines for the Oil and Gas Industry.

⁵ CDPHE, Air Pollution Control Division, 2018 LDAR Annual Report Summary (2019).

⁶ Ibid.

⁷ Alvarez, Zavala-Araiza, Lyon, et al. "Assessment of methane emissions from the US oil and gas supply chain." *Science*, 2018; Barkley, Davis, Feng, et al. "Forward Modeling and Optimization of Methane Emissions in the South Central United States Using Aircraft Transects Across Frontal Boundaries." *Geophysical Research Letters*, 2019.

⁸ Fiore, A. M., J. J. West, L. W. Horowitz, et al. "Characterizing the tropospheric ozone response to methane emission controls and the benefits to climate and air quality." *Journal of Geophysical Research*, 2008.

⁹ NMED, "Embracing innovation and technology, the Environment Department identifies potential emissions violations." Press release, January 14, 2020.

¹⁰ In 2014, Colorado adopted EPA's Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution 40 C.F.R. Part 60, Subpart OOOO. Revisions were made to Colorado's Regulation 3, 6, and 7. In 2017, Colorado adopted measures to fulfill the US Environmental Protection Agency's 2016 Control Techniques Guidelines for the Oil and Gas Industry.

¹¹ Lisa Sumi, *Breaking All the Rules: The Crisis in Oil and Gas Regulatory Enforcement*. Earthworks 2012; Nathalie Eddy, *Putting the Public First: How CDPHE can overcome its legacy of prioritizing oil and gas interests ahead of public health, safety, welfare, and the environment*. Earthworks 2020; Nadia Steinzor, Nathalie Eddy, and Raphael Breit, *Loud and Clear: What public regulatory complaints reveal about Colorado's oversight of oil and gas pollution and whom it serves*. Earthworks 2020.

¹² COGCC Daily Activity Dashboard (DAD). <https://cogcc.state.co.us/dashboard.html#/dashboard>. Accessed 2/17/20.

¹³ COGCC Staff Report - January 29, 2020. https://cogcc.state.co.us/documents/library/Staff_Reports/2020/202001_StaffReport.pdf. Accessed 2/17/20.

¹⁴ COGCC Daily Activity Dashboard (DAD). <https://cogcc.state.co.us/dashboard.html#/dashboard>. Accessed 2/17/20.

¹⁵ 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.

¹⁶ 2019 inspection totals received from CDPHE staff with the APCD Oil and Gas Team. 2/10/20.