



Legislative Council Staff

Nonpartisan Services for Colorado's Legislature

Greenhouse Gas Emissions Report

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Prime Sponsors:	Sen. Fenberg Rep. Becker	Analyst:	Legislative Council Staff (303) 866-3521 GHGReports.ga@state.co.us

Bill Topic: PROTECT PUBLIC WELFARE OIL AND GAS OPERATIONS

Sectors Impacted:

<input type="checkbox"/> Electric Power	<input checked="" type="checkbox"/> Natural Gas and Oil Systems
<input type="checkbox"/> Transportation	<input type="checkbox"/> Mining
<input type="checkbox"/> Residential / Commercial / Industrial Fuel Use	<input type="checkbox"/> Agriculture
<input type="checkbox"/> Industrial Processes	<input type="checkbox"/> Land Use / Forestry
<input type="checkbox"/> Waste Management	

Net Change: Increase Decrease Indeterminate Minimal

Report Status: This report reflects the introduced bill.

Emissions Summary

This bill imposes stricter requirements on oil and natural gas operators that could reduce greenhouse gas emissions. The increased regulations on controlling emissions from oil and natural gas systems will result in a direct reduction in greenhouse gas emissions from existing sources including from wellheads, flowlines, and across the entire fuel cycle. In addition, the increased cost to operators, including permit application fees, financial assurance, and compliance with operational controls, may reduce the number of permit applications in the future, thereby indirectly averting new sources of greenhouse gas emissions. Finally, the bill strengthens the authority of local and state officials to protect public health, safety and welfare, which may result in a decrease in permit approvals, thereby averting new sources of greenhouse gas emissions.

Key Provisions Impacting Greenhouse Gas Emissions

This bill expands and strengthens the regulatory authority of both state and local government over the impacts of oil and gas development to promote the protection of public health, safety, welfare, the environment, and wildlife resources. In addition to providing local government with greater regulatory authority over the surface impacts of oil and gas development, the bill requires the state to adopt rules that create stricter requirements from oil and gas operators to monitor and mitigate emissions from oil and gas development.

The key provisions of this bill that may impact greenhouse gas emissions from the oil and gas production sector include:

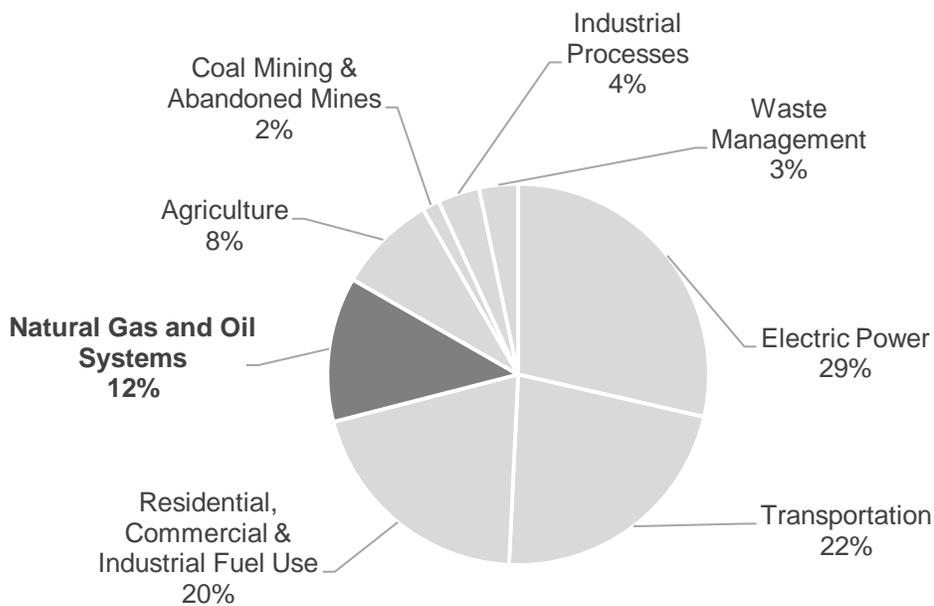
- **COGCC mission.** Changing the mission of the Colorado Oil and Gas Conservation Commission (COGCC) in the Department of Natural Resources from *fostering* to *regulating* the development of oil and natural gas resources in a manner that protects public health, safety, and welfare, including protection of the environment and wildlife resources.
- **Local authority.** Expanding local authority over surface impacts from oil and gas development, including the siting of oil and natural gas facilities, impacts to public facilities and services, water quality, noise, air emissions and air quality. Local governments are also authorized to inspect all facilities within their jurisdiction, and may impose fines and fees for leaks, spills, and emissions.
- **Adverse impacts.** Requiring state and local authorities to avoid, minimize, and mitigate adverse impacts to public health, safety, and welfare, the environment, and wildlife.
- **Air quality rules.** Directing the Air Quality Control Commission (AQCC) in the Colorado Department of Public Health and Environment (CDPHE) to adopt rules to minimize emissions from the entire oil and gas fuel cycle, and require installation of continuous emission monitoring equipment.
- **Oil and gas permitting and regulation.** Directing the COGCC to adopt and/or amend rules to:
 - ensure proper wellhead integrity;
 - regulate flowlines, and inactive, temporarily abandoned, and shut-in wells in a manner that protect and minimize adverse impacts to public health, safety, and welfare and the environment;
 - allow public disclosure of flowline information and evaluating and determining when a deactivated flowline must be inspected before being reactivated;
 - evaluate and determine when inactive, temporarily abandoned, and shut-in wells must be inspected before being put into production or used for injection;
 - adopt an alternative location analysis process
 - evaluate and address the potential cumulative impacts of oil and natural gas development;
 - require financial assurance sufficient to adequately cover all applicable requirements from oil and gas operators; and
 - establish permit application fees that sufficiently cover the COGCC's costs of ensuring compliance with all applicable requirements and eliminate the existing cap on fees.
- **Stricter rules prevail.** Directing local and state authorities, where conflict arises between rules and standards, to adhere to the rules and standards rationally designed to be more protective of public health, safety, and welfare, the environment, and wildlife resources.
- **Mineral pooling requirements.** Eliminating “forced” or “statutory” pooling, and requiring permit applicants to secure the consent of the owners of more than 50 percent of the mineral interest in order to enter a pooling order. The COGCC cannot issue a pooling order without offering a lease offer to the nonconsenting owners.

Background

Purpose. Greenhouse gases trap heat in earth’s atmosphere and contribute to global climate change. Greenhouse gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases. Greenhouse gases are typically reported and measured in carbon dioxide equivalent according to each gas’s global warming potential.¹ As required by House Bill 19-1188, this greenhouse gas emissions report identifies whether a measure is likely to directly cause a net increase or decrease in greenhouse gas pollution within a ten-year period following enactment, and identifies any new sources of greenhouse gas emissions, any increase or decrease in emissions from existing sources, and any impact on sequestration of emissions.

Colorado emissions. CDPHE publishes an inventory of greenhouse gas emissions for the state, with the most recent draft inventory published in 2019. The inventory classifies and measures greenhouse gases by emissions sector using national and state level data. In Colorado, total greenhouse gas emissions in 2015 were estimated to be 127.0 million metric tons of carbon dioxide equivalent. Figure 1 shows a breakdown of greenhouse gas emissions in Colorado in 2015 by sector with the sectors affected by this bill highlighted.

Figure 1
Colorado Greenhouse Gas Emissions by Sector, 2015
 (Percent of total emissions)



Note: The Land Use, Land Use Change, and Forestry Sector sequestered 6.9 million metric tons of carbon dioxide equivalent in 2015, offsetting 5.4% of total greenhouse gas emissions
 Source: Colorado Department of Public Health and Environment.

¹For instance, methane is a potent greenhouse gas that is 25 times more effective at trapping heat than carbon dioxide. Therefore, 1 metric ton of methane is calculated as being equivalent to 25 metric tons of carbon dioxide on a 100-year time horizon. IPCC Fourth Assessment Report. 2007

Oil and gas emissions. The natural gas and oil systems, the primary sector impacted by Senate Bill 19-181, accounted for 15.6 million metric tons of carbon dioxide equivalent in 2015, or about 12 percent of total emissions. The extraction and production of oil and gas generate greenhouse gas emissions from two main pathways: (1) fugitive methane emissions from the extraction and production of oil and gas, and (2) carbon dioxide and methane emissions from venting and flaring natural gas. Greenhouse gas emissions are estimated for natural gas systems based on well counts and regional emissions factors (i.e., metric tons of methane per well), and oil/petroleum systems based on barrels of oil produced and national emissions factors.

Emissions Assessment

SB 19-181 is anticipated to reduce greenhouse gas emissions, but the size of the reduction depends on numerous factors and future decisions by the state, local governments, and businesses in the oil and gas industry. Therefore, it is not possible to anticipate the magnitude of emissions reductions within a ten-year period following enactment of this bill.

Greenhouse gas emissions from natural gas and oil systems are determined both by the size of the sector itself (e.g., number of wells) and the control requirements on existing wells to avoid and mitigate fugitive emissions. The new rules adopted under SB 19-181 will affect the cost of operations through increased permit application fees, financial assurance, and compliance with operational controls. These increased costs may result in fewer applications for drilling permits, thereby limiting the addition of new drilling wells and their associated greenhouse gas emissions in Colorado. Stronger operational controls may result in reduced greenhouse gas emissions from existing wells and pipelines. The following sections discuss these potential impacts of the key provisions of the bill on greenhouse gas emissions.

COGCC mission. Changing the mission of the COGCC from one that *fosters* the development of the oil and gas sector to one that *regulates* the industry may lead to more stringent rules and procedures that would reduce greenhouse gas emissions from the oil and gas industry. To the extent that permitting procedures are more stringent or costly, fewer permit applications may be filed and less permits may be approved by the COGCC. Limitations on the size or growth of the oil and gas sector and stricter regulation could potentially reduce greenhouse gas emissions from both fugitive emissions as well as from venting and flaring natural gas compared to the current baseline emissions.

Local authority. Expanding local government authority over the surface impacts of oil and gas development may result in more stringent regulations than otherwise required by the state. These local regulations could restrict oil and gas development, thereby reducing the number of new drilling permits and thus future greenhouse gas emissions from the sector. The potential impact will vary by jurisdiction and depend on future decisions made at the local level.

Adverse impacts. The bill strengthens the requirement that both state and local authorities avoid and minimize adverse impacts, and removes the requirement to take into consideration cost-effectiveness and technical feasibility. Rules and procedures adopted as a result of this bill could result in additional restrictions and more stringent environmental standards for oil and gas development, thereby reducing future emissions from new sources, or reducing emissions from existing sources.

Air quality rules. The AQCC is directed to adopt rules to minimize emissions of methane, other hydrocarbons, and nitrogen oxides from the entire oil and gas fuel cycle, as well to require oil and gas operators to install continuous emission monitoring equipment at facilities to monitor for hazardous air pollutants, methane, and volatile organic compounds. Although improving the monitoring and detection of emissions from facilities will not directly reduce greenhouse gas emissions, improved monitoring and identification of leaks could increase repairs and thereby reduce future greenhouse gas emissions.

Permitting and regulation. The COGCC is directed to adopt new rules for oil and gas operations and to establish permit application fees and financial assurance requirements. These rules will result in increased operating costs that could restrict the development of new drilling wells. A reduction in permit applications and approvals could result in a decrease in future greenhouse gas emissions. In addition, improving rules and public disclosure of flowline information and inspection requirements for reactivating deactivated flowlines and wells may result in fewer wells and flowlines being brought back into production, thereby avoiding future greenhouse gas emissions.

Data Sources and Agencies Contacted

Air Quality Control Commission
Colorado Oil and Gas Conservation Commission
CDPHE Colorado Greenhouse Gas Inventory Report (2019 Draft)