U.S. DEPARTMENT OF ENERGY | Fossil Energy
OFFICE OF OIL & NATURAL GAS

Colorado Natural Gas Flaring and Venting Regulations

The U.S. Department of Energy's Office of Fossil Energy (FE) supports research and development of technologies that can reduce the volume of natural gas (e.g., methane) flared or vented (released) into the atmosphere during crude oil and natural gas exploration, production, processing, transportation, and storage operations. This fact sheet was created by FE to inform stakeholders on state-level production and regulatory activity regarding natural gas flaring and venting. FE's research portfolio includes efforts to reduce methane (and other hydrocarbon) flaring through the application of improved technologies to capture and utilize small volumes of natural gas at remote locations, as well as technologies to reduce (primarily) methane release during midstream gas processing and transportation. Intermittent flaring that occurs as a result of routine well testing, production facility process shutdowns, or facility and pipeline infrastructure maintenance, are normal aspects of safe oil and natural gas production. Increases in domestic oil and natural gas production have resulted in significant infrastructure buildouts, however, natural gas pipeline capacity constraints have led to regional increases in the flaring of associated gas in some unconventional plays (e.g., Permian Basin in Texas and New Mexico and Bakken Shale in North Dakota) in order to enable oil production.

Colorado Producing Basins and Plays

Colorado oil- and gas-producing basins include portions of the Denver-Julesburg (DJ), Uinta, Greater Green River, Piceance, Paradox, San Juan, Raton, and Park Basins (Figure 1). The Niobrara "Shale" play is a crude oil and liquids-rich gas play that spreads across the DJ, Piceance, and Park Basins. The Niobrara production comes from a brittle, tight limestone that's adjacent to oil-prone sources of rock shales. However, the Paradox Basin in southwestern Colorado is known more for its conventional oil and gas production, while the Piceance Basin is home to tight gas sands that include some liquids-rich natural gas.

Figure 1: Colorado producing basins with major unconventional oil and gas plays outlined. *Source: EIA*

On the other hand, the Pierre Shale in the northern Raton Basin has seen limited development activity. The 2016 Potential Gas Committee (PGC) report identifies nearly 80 trillion cubic feet (Tcf) of recoverable natural gas resources in the Piceance/Park Basins, about half of which is in unconventional formations. The PGC estimates the most likely DJ Basin conventional gas resource to be about 8 Tcf. The U.S. Geological Survey has estimated the mean undiscovered oil resource for the entire DJ Basin (including portions beyond Colorado) at 104 million barrels—of which, about 40 million barrels are associated with the Niobrara. According to the U.S. Energy Information Administration (EIA), Colorado's proved reserves are 1.59 billion barrels of oil and 28.73 Tcf of natural gas (2017).

Colorado Oil and Natural Gas Statistics (EIA)

	2013	2014	2015	2016	2017	2018
Crude Oil Production (Average Thousand Barrels/Day)	181	262	336	318	358	459
Natural Gas Gross Withdrawals and Production (Average MMcf/Day)	4,397	4,503	4,627	4,626	4,624	5,015
Natural Gas Gross Withdrawals and Production (Flared) (Mcf/Day) *	41	85	323	2,200	7,964	N/A
Natural Gas Gross Withdrawals and Production (Oil Wells) (MMcf/Day)	293	489	647	559	606	N/A
Natural Gas and Gas Producing Oil Wells (Thousands)	53.7	54.6	53.9	52.8	52.0	N/A

MMcf – million cubic feet

Mcf - thousand cubic feet

*Data provided by the *Colorado Oil and Gas Conservation Commission*

2017 ranking among 32 U.S. oil and natural gas producing states — Oil: 7 Natural Gas: 7

Colorado Key Regulations Associated with Flaring and Venting

The Colorado Oil and Gas Conservation Commission (COGCC) regulates the state's oil and gas development according to rules outlined in the Colorado Code of Regulations. Rule 912 of the Oil and Gas Conservation Act (see page 183) to read: Rule 912 of the Oil and Gas Conservation Act (see page 183) addresses natural gas flaring and venting, prohibiting unnecessary or excessive venting or flaring from a well. The rule also defines acceptable flaring as that which is necessary to protect public health, safety, and welfare. Additionally, this rule requires that a facility operator notify the appropriate local point of contact when it plans to conduct flaring activities.

The Oil and Gas Conservation Act also outlines regulations relevant to venting and flaring, with relevant provisions iprovisions in Rule 604 (see page 138). In 2016, the COGCC approved the provisions as part of a set of rules related to planning large-scale oil and gas facilities located near residential Urban Mitigation Areas (comprising 22 or more homes). This rule requires the planned facility to identify satisfactory mitigation measures and best management practices. The proposed facility must account for emergency events, fluid management and leak detection, flaring and venting, automated shut-in control measures, and storage tanks.

Colorado State Points of Contact

Colorado Oil and Gas Conservation Commission

Contact the COGCC for information about Colorado oil and gas enforcement, forms, hearings, operator guidance, orders, policies, and rules.

Website: https://cogcc.state.co.us

Email: julie.murphy@state.co.us

Phone: 303-894-2100 Ext.5122

Colorado Department of Public Health & Environment: Air Pollution Control Division

Contact the Air Pollution Control Division for information on permits and emissions from business and industry.

Website: https://www.colorado.gov/pacific/cdphe/apcd

Email: christopher.laplante@state.co.us

Phone: 303-692-3216

Visit energy.gov/fe/state-natural-gas-flaring-and-venting-regulations for a digital version of this fact sheet that includes hyperlinks to information sources.