



FLARING AND VENTING: WASTE OF A NONRENEWABLE RESOURCE

The burnoff or release of excess natural gas - processes known as flaring and venting, respectively - are commonplace in the oil and natural gas extraction industries. Flaring and venting occur for a few different reasons, most commonly because pipeline or processing infrastructure is insufficient or nonexistent, or because the producer determines that it is economically inefficient to collect and sell the gas. For whatever the reason they occur, flaring and venting are wasteful and economically damaging practices:

- Owners are not paid royalties for the majority of gas lost this way, costing both private mineral owners and American taxpayers millions, as detailed below.
- Methane, the primary component of natural gas released by flaring and venting, has a global warming impact over 100 years that is 28-36 times greater than CO₂.¹
- Natural gas emissions create a host of risk factors for human health. Flaring and venting release large amounts of volatile organic compounds (VOCs), a primary contributor to smog levels. Smog is a source of many negative health outcomes, and particularly damages the respiratory system. Carcinogens in the form of VOCs such as benzene also contribute to the negative impact that flaring and venting has on human health.²

Fortunately, flaring and venting are often avoidable, and several states and federal agencies have recently strengthened their rules. Unfortunately, recent federal advances are being challenged, and there is still a need for further action.



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RECENT EVENTS

In May 2016, the Environmental Protection Agency (EPA) finalized the first national standards to curb methane emissions in the oil and gas industry.³ The new standards apply only to new and modified sites, and serve to limit flaring, venting, and leakage of natural gas.

A second national rule for new and existing oil and gas sites with federal and Indian minerals was finalized by the Bureau of Land Management (BLM) in November 2016, requiring operators to “take commonsense and cost-effective measures to reduce this waste of gas.”⁴ This rule fulfills BLM’s duty to ensure that all reasonable steps are taken to prevent waste.⁵ The rule’s key provisions reduce routine gas flaring, require waste minimization plans to be in place before drilling can begin, enforce new standards for leak detection, and reduce venting to an absolute minimum.⁶

Unfortunately, both rules have been under attack since their inception on multiple fronts:

- Both rules are being challenged in court by oil and gas producing states and industry groups.
- In February 2017, barely a month after going into effect, Congress attempted to use the Congressional Review Act to “disapprove” the BLM rule. This Congressional override of the methane rule was halted in the Senate, where Susan Collins (R-ME), Lindsey Graham (R-SC), and John McCain (R-AZ) crossed party lines on May 10, 2017 to vote with all Democrats to narrowly block the rule’s repeal.⁷
- EPA Administrator Scott Pruitt and Department of Interior Secretary Ryan Zinke have attempted to place stays on both rules (EPA and BLM), in order block implementation while they begin the process of formally reviewing and revising them.⁸ However, a U.S. Court of Appeals recently struck down the stay on the EPA rule, and the stay on the BLM rule is being challenged in court.

FEDERAL MINERAL LEASES

Using data from the Department of the Interior’s Office of Natural Resources Revenue (ONRR) and the Government Accountability Office (GAO) and EPA’s conservative estimate of 4.2% of natural gas produced is lost to flaring and venting, we calculate that an estimated 470 billion cubic feet (Bcf)⁹ of natural gas was flared or vented from federal and Indian sites from 2013 to 2016.¹⁰ This represents a total of \$1.6 billion in lost sales value and \$236 million in uncollected royalties for federal, state and tribal governments.¹¹

COLORADO

Colorado's Oil and Gas Conservation Commission reports that the state lost 27.2 Bcf of natural gas across all leases due to flaring and venting from 2013-16.¹² This gas would have been worth \$109 million. The portion from federal and Indian lands was estimated at \$30.5 million, resulting in \$3.8 million in lost royalty revenue for American and Coloradan taxpayers.

The average home in Colorado home requires 28 Mcf of gas for their yearly needs; 27.2 Bcf of gas is enough fuel to supply the cities of Denver and Colorado Springs with residential energy for almost an entire year.¹³

MONTANA

Based on ONRR data, producers in Montana wasted an estimated 2 Bcf due to flaring and venting on federal and tribal leases from 2013-2016.¹⁴ This would have created \$6.3 million in market sales value if it hadn't been lost. A conservative estimate of lost federal and tribal royalties during this period is \$880,000. Gas extraction in Montana has sharply declined in recent years, leaving it with the lowest production totals of any state in WORC's network.

Montana does not publish data on wells that are flaring or venting under 100 Mcf per day. 100 Mcf is enough natural gas to supply three Montana homes for an entire year. Additionally, the state does not publish any data at all about the volume flared on state or private leases, meaning a large amount of lost gas is being left out of our calculations.¹⁵

NORTH DAKOTA

North Dakota Oil and Gas Division data shows that roughly 409 Bcf of gas was flared or vented on all leases from 2013-16, representing \$1.64 billion in lost market value. Using ONRR data, we estimate that this includes \$31 million worth of natural gas flared and vented from federal and tribal leases, which would have generated \$4.8 million in royalties if it had been brought to market.

After years of extremely high flaring rates, North Dakota enacted targets for flaring reductions in 2014 which have resulted in a steady decrease in relative flaring rates.

- Up to 36% of natural gas produced in the state was being lost due to flaring and venting at the peak of well-side flaring in January 2014, with around 129 Bcf of natural gas flared in total that year.
- Even with production almost doubling to 605 Bcf over the 2013-2016 period, North Dakota's capture rate has improved such that only 69 Bcf was emitted for the year, with an average loss of 11.4%¹⁶ However, this rate is still higher than most states and EPA's estimated national average of 4.2%.

WYOMING

According to ONRR's data, Wyoming flared and vented an estimated 225 Bcf across federal and tribal leases from 2013-16. This is a lost market value of \$816 million, and lost royalties of over \$83 million.¹⁷

Much like Montana, this estimate is conservative, as the Wyoming Oil and Gas Conservation Commission does not publish information about flared gas from well operators who are flaring less than 60 Mcf per day.

REFERENCES

- 1 EPA “[Understanding Global Warming Potentials](#)”
- 2 EPA “[Basic Information about Oil and Natural Gas Air Pollution Standards](#)”
- 3 EPA “[EPA Releases First-Ever Standards to Cut Methane Emissions from the Oil and Gas Sector](#)”
- 4 Department of Interior “[Fact Sheet on Methane and Waste Prevention Rule](#)”
- 5 30 USC 225
- 6 See Endnote 4.
- 7 United States Senate [Roll Call](#) - 115th Congress 1st Session.
- 8 The Hill. [5/31/2017](#)
- 9 Estimates for venting and flaring from all federal leases calculated by: 1) deriving the total sales value and revenues of all gas, flared and unflared, (Coal Bed Methane, Processed, and Unprocessed categories) produced in a given year from the Office of Natural Resources Revenue’s [Report Tool](#), 2) multiplying this total by the EPA’s proposed 4.2% flare rate as reported in the Government Accountability Office’s 2010 report “[Federal and Oil Gas Leases: Opportunities Exist to Capture Vented and Flared Natural Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases](#)”. Because ONRR only releases data for federal and tribal leases, our ability to measure state and private leases is determined on a state-by-state basis. ONRR data is used as a baseline, and is used where no figures are available from state oil and gas regulatory bodies.
- 10 This number does not represent the full extent of flaring and venting in the United States. ONRR’s data does not include state and private leases, and federal and tribal leases have historically been only a fraction of total sales, ranging from 37.2% in 2003 to 15.1% in 2014. The national data collected by the Department of Energy’s Energy Information Administration (EIA), is based on state data, which vary in their consistency and reliability. For example, while Colorado and North Dakota collect this information and make it available to the public, Montana and Wyoming have not in recent years.
- 11 Our calculations also do not factor in the presence of Natural Gas Liquids (NGLs) in flared and vented gas. NGLs are refinable chemicals found in select gas deposits, and are frequently worth more than the gas they are refined from, representing a significant and unaccounted-for source of lost revenue. We are also unable to account for the higher rates of flaring that are often associated with oil production.
- 12 Colorado’s data has been synthesized from flaring figures available on the Colorado Oil and Gas Conservation Commission’s [website](#) - located under “All Production Reports Received By Year” listing.
- 13 Figures calculated by taking the [average energy use](#) of American households in each state and comparing it to data from the ONRR.
- 14 See Endnote 6.
- 15 See Endnote 13.
- 16 North Dakota aggregate (federal, state, and private) statistics taken from EIA’s [natural gas data](#) (2013-15) and by compiling data from the North Dakota Department of Oil and Gas [Director’s Cut Reports](#) (2016).
- 17 See Endnote 6.

