U.S. DEPARTMENT OF ENERGY | Fossil Energy and Carbon Management

Texas Natural Gas Flaring and Venting Regulations

The U.S. Department of Energy's Office of Fossil Energy and Carbon Management (FECM) 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 production, processing, transportation, and storage operations. Methane is a potent greenhouse gas (GHG) and minimizing its release across the oil and natural gas supply chain is critical to the realization of a net GHG benefit and reducing climate and environmental impacts of carbon-based fuels. This fact sheet was created by FECM to inform stakeholders on state-level production and regulatory activities, as they relate to natural gas flaring and venting. FECM's research portfolio includes efforts to reduce natural gas 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 methane release during upstream production operations, as well as midstream natural gas processing and transportation. While flaring activities in the prolific unconventional shale plays have steadily increased between 2011-2019 due to higher oil production levels and natural gas pipeline takeaway capacity constraints, this trend took a sharp downturn since 2020 as a result of significant decline in demand for oil. Other factors include federal and state regulatory efforts to reduce methane emissions, companies taking voluntary actions and measures to minimize flaring of associated natural gas, and additional pipeline projects connecting sources of supply and consumption.

Texas Producing Plays and Basins

Texas has several producing basins (Figure 1) with combined potential gas resources totaling nearly 500 trillion cubic feet (Tcf). According to the U.S. Energy Information Administration (EIA), proved reserves are 16.69 billion barrels of oil and 114.73 Tcf of natural gas (2020). The Permian Basin, the most prolific oil-producing basin in the United States, has an estimated tight oil recoverable-resource potential of 20–75 billion barrels. According to the Texas Railroad Commission, in 2021 natural gas production in the Permian Basin averaged about 13.4 billion cubic feet per day (Bcf/d).

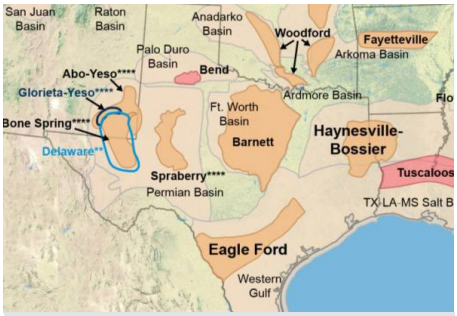

Figure 1: Texas producing basins with major unconventional oil and gas plays outlined. *Source: EIA*

Texas is also home to one of the most established natural gas shale plays, the Barnett Shale, which contains 19.2 Tcf of proved reserves. There are also substantial proved reserves in the Eagle Ford Shale Play (27.4 Tcf) and the Haynesville Shale (13 Tcf). Texas accounts for approximately 26 percent of U.S. marketed natural gas production, making it the leading natural gas producer among the states.

In 2020, Texas ranked first, both in U.S. oil production and vented and flared natural gas. In 2020, Texas accounted for 63 percent of the total 1.146 Bcf/d. U.S. vented and flared natural gas. Of the two states operating in the Permian Basin (Texas and New Mexico), Texas

Texas Oil and Natural Gas Statistics (EIA)

	2015	2016	2017	2018	2019	2020	2021
Crude Oil Production (Average Thousand Barrels/Day)	3,457	3,191	3,494	4,408	5,101	4,854	4,771
Natural Gas Gross Withdrawals and Production (Average MMcf/Day)	24,108	22,285	21,137	24,957	28,582	28,442	28,767
Natural Gas Gross Withdrawals and Production (Vented and Flared) (MMcf/Day)	312	240	266	652	688	719*	224**
Natural Gas Gross Withdrawals and Production (Oil Wells) (MMcf/Day)	4,940	4,598	4,299	788	830	812.5	N/A
Natural Gas and Gas Producing Oil Wells (Thousands)	238.4	232.8	216	281.7	278	267.3	N/A

MMcf - Million cubic feet
* EIA estimate
** As reported by the Railroad Commission

2021 ranking among 32 U.S. oil and natural gas producing states — Oil: 1 Natural Gas: 1

accounted for 92 percent the 0.70 Bcf/d of vented and flared natural gas.

Key Regulations Associated with Flaring and Venting

The Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ) are responsible for establishing standards and enforcing regulations for oil and natural gas exploration and production. RRC broadly regulates oil and natural gas production while TCEQ regulates air emissions and water pollution. RRC has jurisdiction over permitting of flaring operations with respect to prevention of waste of natural resources.

Upstream oil and gas operations that typically require air emissions permits from TCEQ may be eligible for authorization through a standard air quality permit for oil and gas facilities, a new source review permit, or a specific air permit by rule for projects in the 15 counties located over the Barnett Shale. TCEQ addresses the control of natural gas flaring and venting in the State Air Quality Implementation Plan adopted in 2004 and approved by the U.S. Environmental Protection Agency in 2006. Pursuant to the Texas Air Quality State Implementation Plan (SIP), the regulation entitled 30 TAC 115.720-115.729: Vent Gas Control) is part of Chapter 115, *Control of Air Pollution from Volatile Organic Compounds*. This policy requires that the owner or operator of each affected flare or vent gas stream adhere to reporting and record-keeping requirements, including the development and implementation of a Quality Assurance Plan.

As outlined in Texas Administrative Code (Statewide Rule 32, Title 16, Part 1, Chapter 3 §3.32), well operators are allowed to flare during tests for well potential. The regulations depend upon the duration of the gas release. All gas releases lasting less than 24 hours may be vented to the air, unless flaring is necessary for safety reasons (contact RRC District Office for verification). RRC requires well operators to apply for permits in order to flare for more than 10 days following well completion, as well as for most short-term requests. If the RRC approves the application, then it will grant a 45-day flare permit. Operators must provide additional documentation for an extension beyond 45 days, and up to 180 days. Extensions for more than 180 days may only be granted through a final order after after the RCC holds a hearing and approves it. In addition, an exception may be indefinitely approved administratively if flaring is less than 50 Mcf/day. The RRC reports that operators make extension requests most often when they are awaiting completion of pipeline construction. The RRC also reports that most requests for flaring permits are related to flaring casinghead gas from oil wells.

Rule 32 allows requests for exceptions to the no flaring rule, i.e., where pipeline connections are not available (the most common); gas plant shutdowns; repairing a compressor or gas line or well; and when pipelines have reached capacity.

In November 2020 the RRC approved a revised application for exception to rule 32. The changes reduced the period of time operators can obtain exemptions for flaring, provided incentives for operators to use new technologies to reduce flaring, required specific information to justify the need for an exemption, and provided additions data to facilitate compliance audits.

Oil producers in Texas have been working to reduce flaring levels through various efforts. In March 2020, a voluntary coalition of companies and organizations formed the Texas Methane and Flaring Coalition comprised of 40 state operators and industry groups. In 2021, the group pledged to end "routine" flaring by 2030. Routine flaring is considered as natural gas flared from new and existing wells during normal production where gas gathering, processing, or infrastructure is not available.

Texas Agency Points of Contact

Texas Railroad Commission: Oil and Gas Division; Engineering Unit

Contact the RRC Engineering Unit with any questions about the RRC permitting process for venting/flaring of casing head gas and well gas pursuant to Statewide Rule 32.

Website: http://www.rrc.state.tx.us/

Email: EngUnit@rrc.state.tx.us

Phone: 512-463-6838

Texas Commission on Environmental Quality: Air Permits Division; Permit by Rule Section

Contact the TCEQ regarding industrial air permitting requirements in Texas.

Website: https://www.tceq.texas.gov/

Email: airperm@tceq.texas.gov

Phone: 512-239-1250

Visit https://www.energy.gov/fecm/findyourstate-natural-gas-flaring-and-venting-regulations-fact-sheets-state for a digital version of this fact sheet that includes hyperlinks to information sources.