



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.

Texas Producing Plays and Basins

Texas has several 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 [19.62 billion barrels of oil](#) and [138.20 Tcf](#) of natural gas (2018). 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](#). During the first quarter of 2020, natural gas production in the Permian Basin averaged about [17 billion cubic feet per day](#) (Bcf/d).

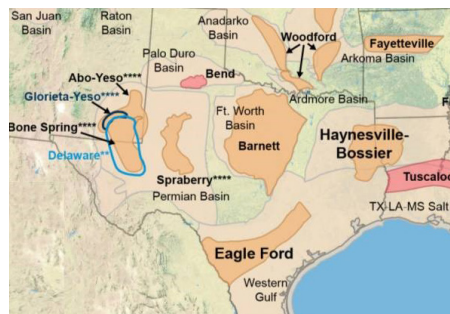


Figure 1: Texas producing basins with major unconventional oil and gas plays outlined.
Source: EIA

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 more than [25 percent of U.S. marketed natural gas production](#), making it the leading natural gas producer among the states.

In 2019, Texas ranked first, both in U.S. oil production and vented and flared natural gas. In 2018, Texas accounted for 51 percent of the total 1.28 Bcf/d. U.S. vented and flared natural gas. Of the two states operating in the Permian Basin (Texas and New Mexico), Texas accounted for 86 percent the 0.75 Bcf/d of vented and flared natural gas.

Texas [Oil](#) and [Natural Gas](#) Statistics (EIA)

	2014	2015	2016	2017	2018	2019
Crude Oil Production (Average Thousand Barrels/Day)	3,172	3,444	3,178	3,487	4,408	5,069
Natural Gas Gross Withdrawals and Production (Average MMcf/Day)	23,200	24,083	22,325	21,890	24,415	27,974
Natural Gas Gross Withdrawals and Production (Vented and Flared) (MMcf/Day)	247	312	240	338	652	750*
Natural Gas Gross Withdrawals and Production (Oil Wells) (MMcf/Day)	4,268	4,940	4,605	5,087	4,211	4,830*
Natural Gas and Gas Producing Oil Wells (Thousands)	246.5	238.4	232.8	229.9	216.3	264.7*

MMcf - Million cubic feet

* Estimated

2019 ranking among 32 U.S. oil and natural gas producing states — [Oil: 1](#) [Natural Gas: 1](#)

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. Exceptions for more than 180 days may only be granted through a final order after hearing signed by the RRC. 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 casing head 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 where pipelines reached capacity.

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. The Coalition will evaluate existing data and evidence on flaring and methane emissions from the industry in Texas and will develop opportunities and recommendations to continue to minimize these practices.

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.texas.gov

Phone: 512-463-1126

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