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

Alabama 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.

Alabama Producing Plays and Basins

The production of natural gas and some oil occurs in the Black Warrior Basin of northwestern Alabama and the Gulf Coast Salt Basin of southwestern Alabama. It also occurs in limited portions of the Appalachian fold and fault region that trends diagonally across the state from the upper northeast corner to the western border (Figure 1). Alabama has 19 natural gas fields established in its offshore state waters—7 that are productive from the Norphlet Formation and 12 that are productive from Miocene sands. Unconventional gas shale formations in northern Alabama include the Floyd-Neal and Floyd-Chattanooga Formations found within the Black Warrior Basin, which extends across the Mississippi-Alabama border. In 2007, the U.S. Geological Survey assessed the Floyd Shale in the Black Warrior Basin and estimated it to have technically recoverable resources of 1.4 trillion cubic feet (Tcf) of gas, 7.6 million barrels of natural gas liquids, and 5.9 million barrels of oil. To date, these resources have not been seen as an economic target. The Conasauga Shale, a highly folded and faulted gas shale play, has seen limited development. Alabama has had a total of 22 coalbed methane fields developed in the state—20 of which are in the Black Warrior Basin. At the end of 2005, Alabama had nearly 7,100 coalbed methane wells drilled in the state.

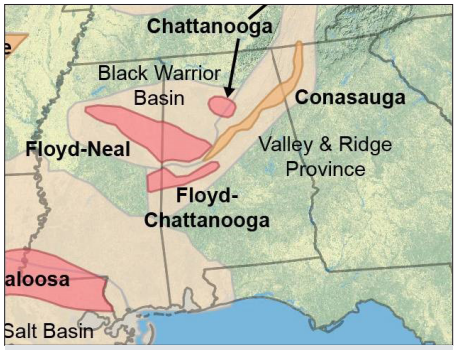

Figure 1: Alabama producing basins with major unconventional gas plays outlined
Source: EIA

In 2020, the U.S. Energy Information Administration (EIA) estimated that three-fifths of Alabama's natural gas production came from onshore wells and nearly 40%

Alabama Oil and Natural Gas Statistics (EIA)

	2014	2015	2016	2017	2018	2019	2020
Crude Oil Production (Average Thousand Barrels/Day)	27	27	22	19	16	13	12
Natural Gas Gross Withdrawals and Production (Average MMcf/Day)	496	461	451	412	382	356	320
Natural Gas Gross Withdrawals and Production (Vented and Flared) (Mcf/Day)	Operators report data to the state, but it is not available in an aggregated database.*						
Natural Gas Gross Withdrawals and Production (Oil Wells) (MMcf/Day)	22	23	25	25	21	14	11
Natural Gas and Gas Producing Oil Wells (Thousands)	6.6	6.5	6.3	6.2	6.2	6	5.8

MMcf – million cubic feet
Mcf - thousand cubic feet
**Information provided by the State Oil and Gas Board*

Ranking among 32 U.S. oil and natural gas producing states — Oil: 20 (2021) Natural Gas: 16 (2020)

of that onshore production came from coalbed methane fields. According to EIA, Alabama's proved reserves are 39 million barrels of oil and 1.54 Tcf of natural gas (2020).

Alabama Key Regulations Associated with Flaring and Venting

The State Oil and Gas Board of Alabama (OGB), which is part of the Geological Survey of Alabama, is a regulatory agency mandated with preventing waste and promoting the conservation of oil and gas. The Board has the authority to promulgate and enforce rules and regulations to achieve this mission and has done so in the State Oil and Gas Board of Alabama Administrative Code. Within this code, rules 400-1 through 400-7 relate to the flaring and venting of natural gas. Additionally, Alabama Statute Title 09, *Conservation and Natural Resources*, Chapter 17, Oil and Gas, Section 9-17-11, prohibits the waste of oil or gas.

Rule 400-3, *Coalbed Methane Gas Operations*, Section 400-3-5-.03, *Venting or Flaring of Coalbed Methane Gas*, allows the venting or flaring of gas from a permitted coalbed methane gas well when it is necessary for safety reasons or for the efficient testing and operation of coalbed methane gas wells. With the exception of pressure relief valves, vents for the venting or flaring of coalbed methane gas must be at least 20 feet above ground level, unless otherwise approved by the OGB State Geologist & Oil and Gas Supervisor.

Rule 400-1, *Governing Onshore Lands Operations*, Sections 400-1-9 and 10.d, *Well Testing Procedures*, stipulate that operators must produce all vented or flared gases through a flare system that has been designed to gather and burn hydrogen sulfide gas safely. These rules also require that:

- Flare lines be at a distance that is sufficient to compensate for wind changes.
- The flare system has a pilot igniter, an automatic igniter, and a backup ignition for each flare.
- Operators vent gases from stored test fluids into a flare system.
- Testing operations that involve flaring of produced gases comply with permit regulations of other state and federal agencies.

Alabama State Points of Contact

Geological Survey of Alabama; State Oil and Gas Board

Contact the State OGB of Alabama for information about state oil and gas regulations.

Website: https://www.gsa.state.al.us/

Email: mrogers@ogb.state.al.us

Phone: 205-247-3680

Alabama Department of Environmental Management; Air Division

Contact the Air Division at the Department of Environmental Management for information about air pollution control.

Website: https://adem.alabama.gov/programs/air/Default.cnt

Email: airmail@adem.alabama.gov

Phone: 334-271-7861

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.