North Dakota Producing Plays and Basins

The U.S. Geological Survey has estimated that there are more than 7 billion barrels of technically recoverable oil in the Williston Basin’s Bakken and Three Forks formations (Figure 1) —and much of that oil is in North Dakota. According to the U.S. Energy Information Administration (EIA), proven reserves are 5.47 billion barrels of oil and 10.38 trillion cubic feet of natural gas (2017). In fact, of the nation’s 100 largest oil fields—as measured by reserves—20 are in North Dakota, which ranks second in the nation after Texas in proved crude oil reserves. However, until the past decade, there was only modest oil production in the state—until new drilling technologies, such as horizontal drilling and hydraulic fracturing, helped increase production from the Bakken Shale. North Dakota has only about 2 percent of the nation’s total natural gas reserves, and it accounts for a similar share of U.S. natural gas production.

North Dakota Key Regulations Associated with Flaring and Venting

The state of North Dakota bans the venting of natural gas and requires that vented casinghead gas be burned through a flare with the estimated volume flared reported to the director of the oil and gas division at the North Dakota Department of Mineral Resources (Administrative Code 43-02-03-45: Vented Casinghead Gas). All oil and gas wells within the state must be registered with the North Dakota Division of Air Quality and adhere to emission controls. Permitting requirements are applicable for oil or gas well production facilities that are classified as a major stationary source or a major modification.

North Dakota Producing Plays and Basins (EIA)

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Oil Production</td>
<td>856</td>
<td>1,081</td>
<td>1,177</td>
<td>1,32</td>
<td>1,074</td>
<td>1,257</td>
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<tr>
<td>Natural Gas Gross</td>
<td>947</td>
<td>1,269</td>
<td>1,602</td>
<td>1,668</td>
<td>1,887</td>
<td>2,346</td>
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<tr>
<td>Natural Gas Flared</td>
<td>282</td>
<td>355</td>
<td>292</td>
<td>192</td>
<td>242</td>
<td>-</td>
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<tr>
<td>Natural Gas with Oil</td>
<td>35</td>
<td>38</td>
<td>32</td>
<td>28</td>
<td>26</td>
<td>-</td>
</tr>
<tr>
<td>Natural Gas and Gas</td>
<td>9.8</td>
<td>11.9</td>
<td>13.2</td>
<td>13.7</td>
<td>14.5</td>
<td>-</td>
</tr>
</tbody>
</table>

MMcf - million cubic feet
* Includes gas reinjected, flared and vented, and non-hydrocarbon gas

2017 ranking among 32 U.S. oil and natural gas producing states — Oil: 2, Natural Gas: 12
These requirements include the prevention of significant deterioration (PSD) of air quality—a number that is calculated based upon the average daily amount of gas burned, incinerated, and/or flared per day (North Dakota Department of Health, Division of Air Quality).

All flares must adhere to regulations regarding Requirements for Organic Compounds Gas Disposal, Restrictions Applicable to Flares, and Controls of Emissions from Oil and Gas Well Production Facilities. These regulations include requirements that the flare must be operational and capable of proper combustion at all times (North Dakota Administration Code Title 33, Article 15, Chapter 7, Section 2; Chapter 3, Section 3.1; Chapter 20).

The North Dakota Industrial Commission (NDIC) established Order No. 24665 as a system of gas capture to reduce the volume of natural gas flared in the state. Adopted on March 3, 2014 and effective on June 25, 2014, this Order established a drilling permit review policy that requires producers to submit a gas capture plan with every drilling permit application. This Order also requires that producers submit gas capture plans at permit hearings. These plans should include information on area-gathering system connections and processing plants, the rate and duration of planned flowback, current system capacity, a timeline for connecting the well, and a signed affidavit verifying that the plan has been shared with area midstream companies.

In April 2018, the NDIC amended the flaring reduction rules to make the following allowances:

- Allow companies drilling outside of the core areas of western North Dakota’s oil patch to drill multiple wells for up to one year without capturing the gas
- Allow operators to accumulate credits over a six-month time period instead of only three months
- Give companies credit if the natural gas they produce is used in the state to power equipment or facilities
- Allow companies that are meeting targets to forgo a capturing plan with their drilling permit applications.

In November 2018, the NDIC made additional changes due to the high rate of growth in gas production. The NDIC revised the goals of the gas capture policy to focus on increasing the volume of captured gas, rather than reducing the flared volume. They also removed the goals related to reducing the number of wells flaring and reducing the duration of flaring. Instead, they added a goal of incentivizing investment.

**North Dakota State Points of Contact**

**Department of Mineral Resources, Oil and Gas Division**

The Department of Mineral Resources’ Oil and Gas Division regulates the drilling and production of oil and gas in North Dakota. Contact them for questions regarding oil and gas regulatory issues.

Website: [https://www.dmr.nd.gov/oilgas/](https://www.dmr.nd.gov/oilgas/)

Email: oilandgasinfo@nd.gov

Phone numbers: 701-328-3722; 701-328-8000

**North Dakota Department of Health, Division of Air Quality**

Contact them for information about flaring regulations associated with air quality and the control of pollutants including details about when a flare may be used at a well site, the type of flare that is permissible, and proper flare operation.

Website: [https://deq.nd.gov/AQ/oilgas/OilGasWell.aspx](https://deq.nd.gov/AQ/oilgas/OilGasWell.aspx)

Email: arooky@nd.gov

Phone: 701-328-5188

**North Dakota Industrial Commission, North Dakota Oil and Gas Research Program**

The North Dakota Industrial Commission (NDIC) has jurisdiction over the volume of gas flared at a well site in regards to conserving mineral resources. The North Dakota Oil and Gas Research Program, which is an initiative of the NDIC, is a joint state/industry effort, established in 2003, that supports research related to oil and natural gas exploration and production. Recent projects include efforts to develop methods for reducing flaring through small-scale gas-to-liquids, compressed natural gas, and liquefied natural gas systems, as well as small-scale electricity generation via gas turbines. Contact them for questions regarding research focused on flaring reduction.

Website: [https://www.dmr.nd.gov/ogr/Default.aspx](https://www.dmr.nd.gov/ogr/Default.aspx)

Email: ndicinfo@nd.gov

Phone: 701-328-3722

**North Dakota Pipeline Authority**

The North Dakota Pipeline Authority, which is governed by the NDIC, supports the production, transportation, and utilization of North Dakota energy-related commodities including participation in pipeline facilities through financing, planning, joint ownership, or other arrangements at the request of a person giving a notice of intent. Contact them for questions about data analytics and production forecasting for the transportation and processing industry.

Website: [https://northdakotapipelines.com/](https://northdakotapipelines.com/)

Email: jjkringstad@ndpipelines.com

Phone: 701-220-6227