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In North Dakota, Flames of Wasted Natural Gas Light the Prairie



Jim Wilson/The New York Times

Thirty percent of the natural gas extracted in North Dakota is flared off, like this gas near Ray. More Photos >

By CLIFFORD KRAUSS Published: September 26, 2011

NEW TOWN, N.D. — Across western North Dakota, hundreds of fires rise above fields of wheat and sunflowers and bales of hay. At night, they illuminate the prairie skies like giant fireflies.

They are not wildfires caused by lightning strikes or other acts of nature, but the deliberate burning of natural gas by oil companies rushing to extract oil from the Bakken shale field and take advantage of the high price of crude. The gas bubbles up alongside the far more valuable oil, and with less economic incentive to capture it, the drillers treat the gas as waste and simply burn it.

Every day, more than 100 million cubic feet of natural gas is flared this way — enough energy to heat half a million homes for a day.

The flared gas also spews at least two million tons of carbon dioxide into the atmosphere every year, as much as 384,000 cars or a medium-size coal-fired power plant would emit, alarming some environmentalists.

All told, 30 percent of the natural gas produced in North Dakota is burned as waste. No other major domestic oil

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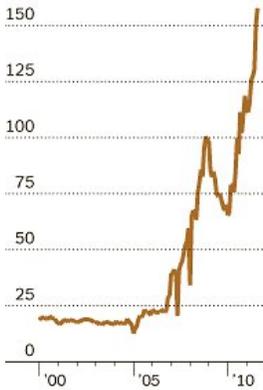
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### Flared Natural Gas

In North Dakota, much of the natural gas incidentally uncovered in the course of oil production is "flared," or burned off, and in effect, wasted. The amount of natural gas flared has risen sharply in the state.

#### NORTH DAKOTA NATURAL GAS FLARED

175 million cubic feet per day\*



\*The difference between natural gas produced and that sold is used to represent the amount flared, although a small amount of the gas may be used in internal plant operations.

Source: North Dakota Industrial Commission, Dept. of Mineral Resources, Oil and Gas Division  
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field currently flares close to that much, though the practice is still common in countries like Russia, Nigeria and Iran.

With few government regulations that limit the flaring, more burning is also taking place in the Eagle Ford shale field in Texas, and some environmentalists and industry executives say that it could happen in Oklahoma, Arkansas and Ohio, too, as drilling expands in new fields there unlocked by techniques like hydraulic fracturing and horizontal drilling.

"North Dakota is not as bad as Kazakhstan, but this is not what you would expect a civilized, efficient society to do: to flare off a perfectly good product just because it's expensive to bring to market," said Michael E. Webber, associate director of the Center for International Energy and Environmental Policy at the University of Texas at Austin.

The oil companies say economic reality is driving the flaring in the Bakken, the biggest oil field discovered in the United States in four decades. They argue that they cannot afford to pay for pipelines and processing plants to capture and sell the gas until they actually drill oil wells and calculate how much gas will bubble out of the oil. And reinjection of the carbon dioxide, commonly done in conventional oil fields, is more difficult and expensive in less permeable shale fields.

"This field covers 15,000 square miles, so it takes time to go and test what's there and then build a gathering system and plant," said Harold G. Hamm, chief executive of Continental Resources, one of the biggest oil producers in the Bakken.

The widespread flaring is a step backward for a domestic energy industry. Most oil and gas fields in the United States have well-developed facilities to gather and process gas.

But the recent rise of shale drilling has changed the economic calculus. Natural gas prices have plunged since 2008 as vast shale fields laden with gas are tapped through hydraulic fracturing and horizontal drilling. Meanwhile, those same techniques have opened up other shale fields rich with oil.

With oil prices high amid strong global demand and leases as short as five years for land in the Bakken, drillers have found it more profitable to just grab the oil and burn the gas. Building out the infrastructure to handle gas would substantially raise costs and slow development, and efforts so far to use the gas for electrical generation have had limited success because it contains components that burn too hot.

"I'll tell you why people flare: It's cheap," said Troy Anderson, lead operator of a North Dakota gas-processing plant owned by [Whiting Petroleum](#). "Pipelines are expensive: You have to maintain them. You need permits to build them. They are a pain."

Although capturing the gas is the best option, scientists say that flaring is better for the environment than venting the gas into the atmosphere. Pure natural gas is mostly methane, which has far greater heat-trapping qualities than carbon dioxide.

Regulations on flaring are loose in North Dakota, as they are in most states, and there are no current federal regulations on flaring at oil and gas wells. That is largely because flaring has not been a significant concern since the 1970s, when the federal government insisted that oil companies re-inject gas into Alaska's North Slope rather than flare it.

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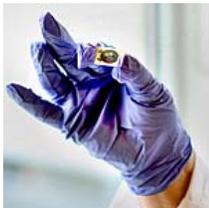
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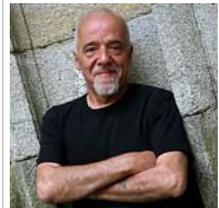
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