

## Why GAO Did This Study

The Department of the Interior (Interior) leases public lands for oil and natural gas development, which generated about \$9 billion in royalties in 2009. Some gas produced on these leases cannot be easily captured and is released (vented) directly to the atmosphere or is burned (flared). This vented and flared gas represents potential lost royalties for Interior and contributes to greenhouse gas emissions.

GAO was asked to (1) examine available estimates of the vented and flared natural gas on federal leases, (2) estimate the potential to capture additional gas with available technologies and associated potential increases in royalty payments and decreases in greenhouse gas emissions, and (3) assess the federal role in reducing venting and flaring. In addressing these objectives, GAO analyzed data from Interior, the Environmental Protection Agency (EPA), and others and interviewed agency and industry officials.

## What GAO Recommends

To reduce lost gas, increase royalties, and reduce greenhouse gas emissions, GAO recommends that Interior improve its venting and flaring data and address limitations in its regulations and guidance. Interior generally concurred with these recommendations.

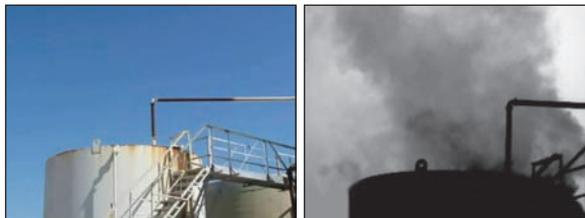
# FEDERAL OIL AND GAS LEASES

## Opportunities Exist to Capture Vented and Flared Natural Gas, Which Would Increase Royalty Payments and Reduce Greenhouse Gases

### What GAO Found

Estimates of vented and flared natural gas for federal leases vary considerably, and GAO found that data collected by Interior to track venting and flaring on federal leases likely underestimate venting and flaring because they do not account for all sources of lost gas. For onshore federal leases, operators reported to Interior that about 0.13 percent of produced gas was vented or flared. Estimates from EPA and the Western Regional Air Partnership (WRAP) showed volumes as high as 30 times higher. Similarly, for offshore federal leases, operators reported that 0.5 percent of the natural gas produced was vented and flared, while data from an Interior offshore air quality study showed that volume to be about 1.4 percent, and estimates from EPA showed it to be about 2.3 percent. GAO found that the volumes operators reported to Interior do not fully account for some ongoing losses such as the emissions from gas dehydration equipment or from thousands of valves—key sources in the EPA, WRAP, and Interior offshore air quality studies.

#### Vented Gas from Oil Storage Tank Visible through Infrared Camera



Source: EPA.

Data from EPA, supported by information obtained from technology vendors and GAO analysis, suggest that around 40 percent of natural gas estimated to be vented and flared on onshore federal leases could be economically captured with currently available control technologies. According to GAO analysis, such reductions could increase federal royalty payments by about \$23 million annually and reduce greenhouse gas emissions by an amount equivalent to about 16.5 million metric tons of CO<sub>2</sub>—the annual emissions equivalent of 3.1 million cars. Venting and flaring reductions are also possible offshore, but data were not available for GAO to develop a complete estimate.

As part of its oversight responsibilities, Interior is charged with minimizing vented and flared gas on federal leases. To minimize lost gas, Interior has issued regulations and guidance that limit venting and flaring during routine procedures. However, Interior's oversight efforts to minimize these losses have several limitations, including that its regulations and guidance do not address some significant sources of lost gas, despite available control technologies to potentially reduce them. Although EPA does not have a role in managing federal leases, it has voluntarily collaborated with the oil and gas industry through its Natural Gas STAR program, which encourages oil and gas producers to use gas saving technology, and through which operators reported venting reductions totaling about 0.4 percent of natural gas production in 2008.