

Global Methane Initiative Oil and Gas Subcommittee:

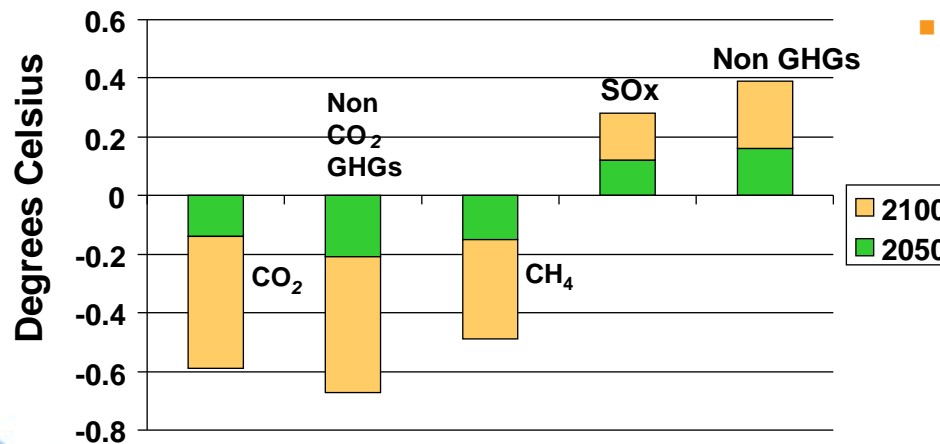
Achieving Environmental, Economic and Operational Benefits by Reducing Oil & Natural Gas Sector Methane Emissions

**Carey Bylin
U.S. Environmental Protection Agency
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Why focus on Methane?

- **CLIMATE:** 2nd most important greenhouse gas (GHG) accounting for 14% of global GHG emissions and over one-third of today's anthropogenic warming
- **ENERGY and ECONOMY:** Primary component of natural gas and a valuable, clean-burning energy source
- **AIR QUALITY:** Pre-cursor to tropospheric ozone, which at ground level is harmful to human health and toxic to ecosystems
- **NEAR-TERM IMPACTS:** Short-lived GHG critical to achieving short-term climate protection goals

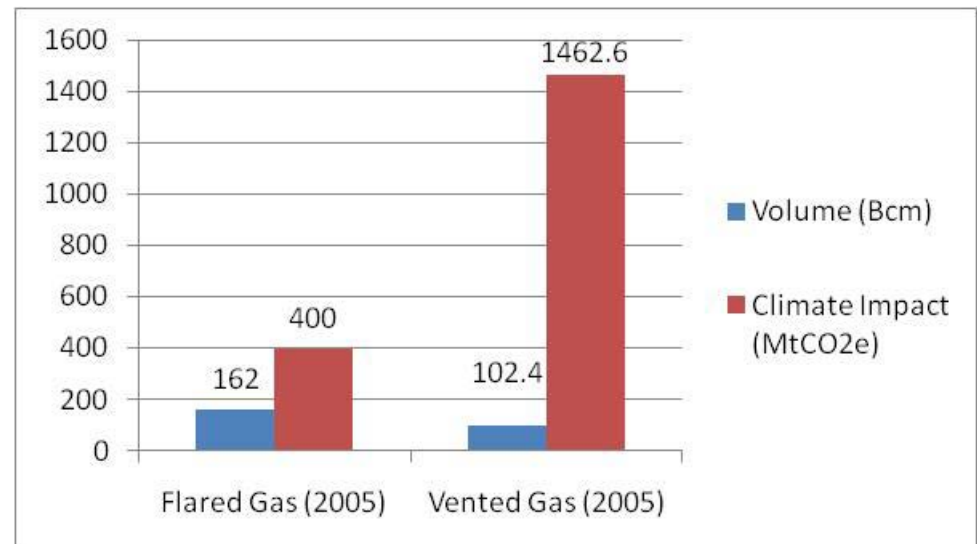


Source: Pew Center on Global Climate Change, 2003

- In the near term, a 50% reduction in global methane emissions will have **same temperature impact** as a 50% reduction in carbon dioxide emissions

Global Oil and Gas Sector Methane Emissions

- Over 4,000 Bcf of natural gas* lost annually by global oil and gas industry equates to
 - US\$12 to \$28 billion lost revenues
 - Over 4% of worldwide net dry gas consumption
- 20% of global anthropogenic methane emissions from oil and natural gas operations
- Upstream gas emissions can include VOC and HAPs
- Climate impact of global natural gas venting nearly three times greater than that of global natural gas flaring



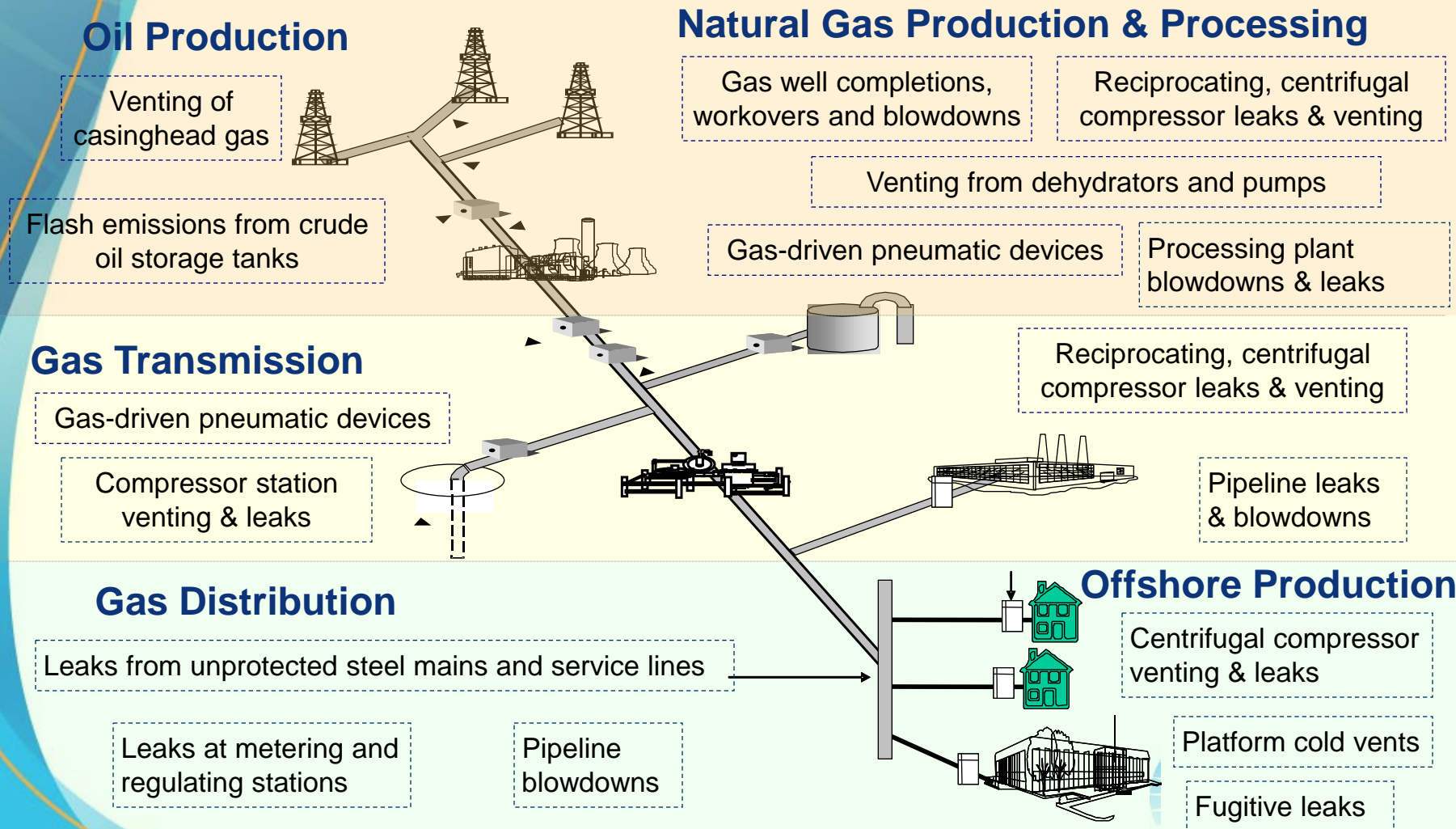
*Methane is the primary component of natural gas

Sources of Methane Emissions from Oil and Gas Operations

- The majority of oil and gas methane emissions come from
 - Oil production
 - Natural gas
 - Production
 - Processing
 - Transmission
 - Distribution
- Methane emissions can be intentional or unintentional
 - Leaks
 - Process venting
 - System upsets



Top Sources of Oil and Gas Methane Emissions



Companies May Not Realize the Volume of Gas They Are Losing



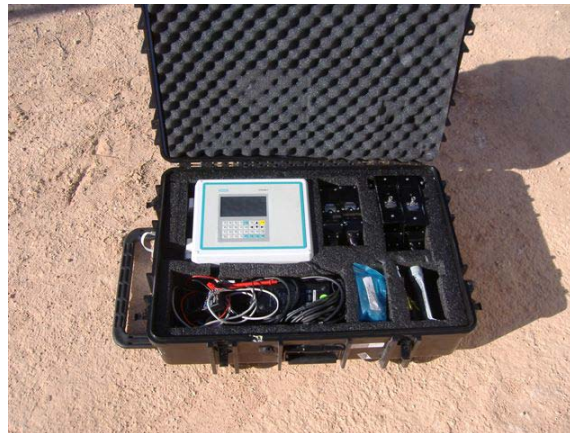
Vented emissions are not readily visible or identifiable without specialized equipment yet they represent significant natural gas losses, reduced operational efficiency, greenhouse gas emissions and potential safety risks.

Measurement Study Equipment – Identification & Measurement

Identification:
FLIR Infrared Camera



Measurement: Turbine Meter (Daniels), Ultrasonic Meters, Hi-Flow® Sampler, Calibrated Bags



In Summary, Significant Benefits of Methane Reduction Projects

Economic Benefits

- Increased natural gas sales revenue
- Using natural gas to replace a more expensive fuel for onsite energy generation
- Reduced operating, maintenance and fuel costs

Environmental Benefits

- Reduced greenhouse gas emissions
- Improved local air quality

Operational Benefits

- Increased energy efficiency at oil and gas facilities
- Reduced waste of a valuable fuel and local energy source
- Improved industrial safety
- Progress toward corporate goals

Contact Information

Carey Bylin
Program Manager, U.S. EPA
Global Methane Initiative, Oil & Gas
Natural Gas STAR International
bylin.carey@epa.gov, +1-202-343-9669

<http://www.globalmethane.org/>

<http://www.epa.gov/gasstar/>

<http://www.epa.gov/gasstar/tools/recommended.html>