



Methane to Markets

Introduction to Methane to Markets Activities in the
Oil and Natural Gas Sector

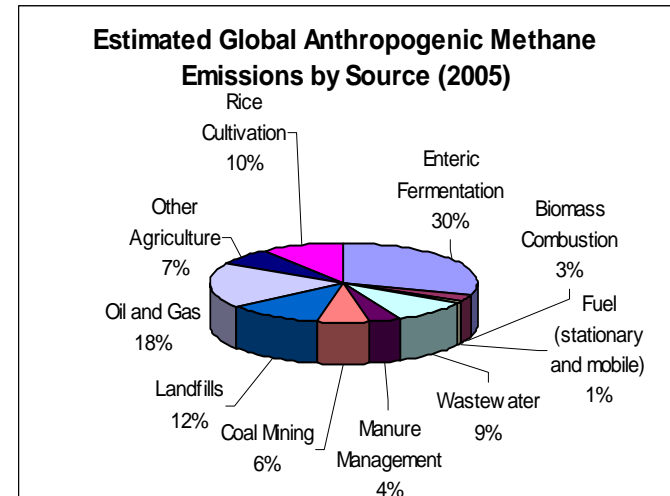
Carey Bylin, U.S. Environmental Protection Agency
March 4, 2010

Overview

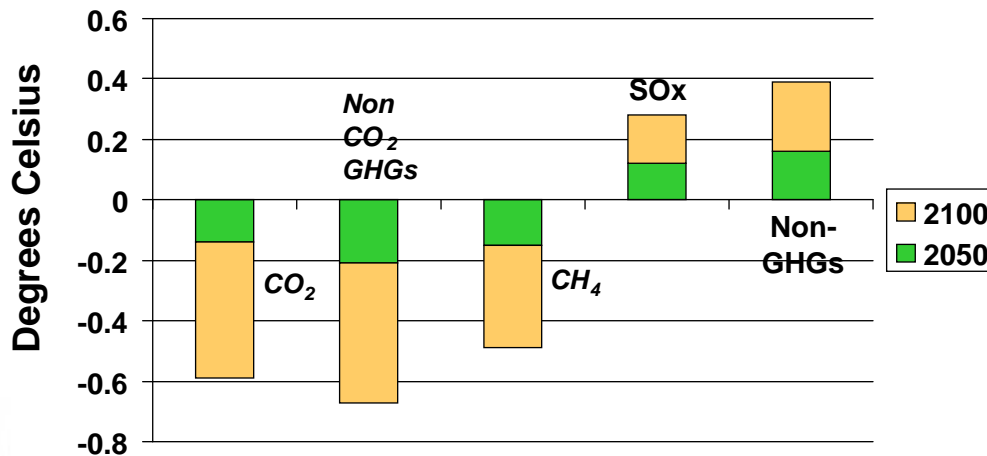
- Importance of Methane
- Methane to Markets
- Opportunities to Reduce Methane Emission from the Oil & Gas Sector
- U.S. Contribution to Methane to Markets: Natural Gas STAR
- Conclusion and Introduction to Technical Session

Why focus on Methane?

- **2nd most important GHG** accounting for ~18% of total radiative (climate) forcing
- **A primary component of natural gas** and a valuable, **clean-burning energy source**



Source: U.S. EPA Report (2006)



Source: Pew Center on Global Climate Change, 2003

- **Critical to achieving short-term climate impacts**
- **50% reduction in global methane emissions will have same temperature impact as a 50% reduction in carbon dioxide emissions**

Methane to Markets Partnership

- The **Methane to Markets Partnership (M2M)** is an international initiative that advances cost-effective, near-term methane recovery and use as a clean energy source in four sectors:



Oil and Gas Systems



Coal Mines



Landfills



Agricultural Waste

- The goals of the Partnership are to reduce global methane emissions to
 - Enhance economic growth
 - Strengthen energy security
 - Improve air quality and industrial safety
 - Reduce emissions of greenhouse gases

Methane to Markets Partnership

- 31 Partner Governments representing nearly 65% global anthropogenic methane emissions
- 9 of the 10 top methane emitting countries

Europe & FSU

- Bulgaria
- European Commission
- Finland
- Georgia
- Germany
- Italy
- Kazakhstan
- Poland
- Russia
- Ukraine
- United Kingdom

North America

- Canada
- Mexico
- United States

Caribbean

- Dominican Republic

South America

- Argentina
- Brazil
- Chile
- Colombia
- Ecuador

Africa

- Nigeria

Asia Pacific

- Australia
- China
- India
- Japan
- Korea
- Mongolia
- Pakistan
- Philippines
- Thailand
- Vietnam

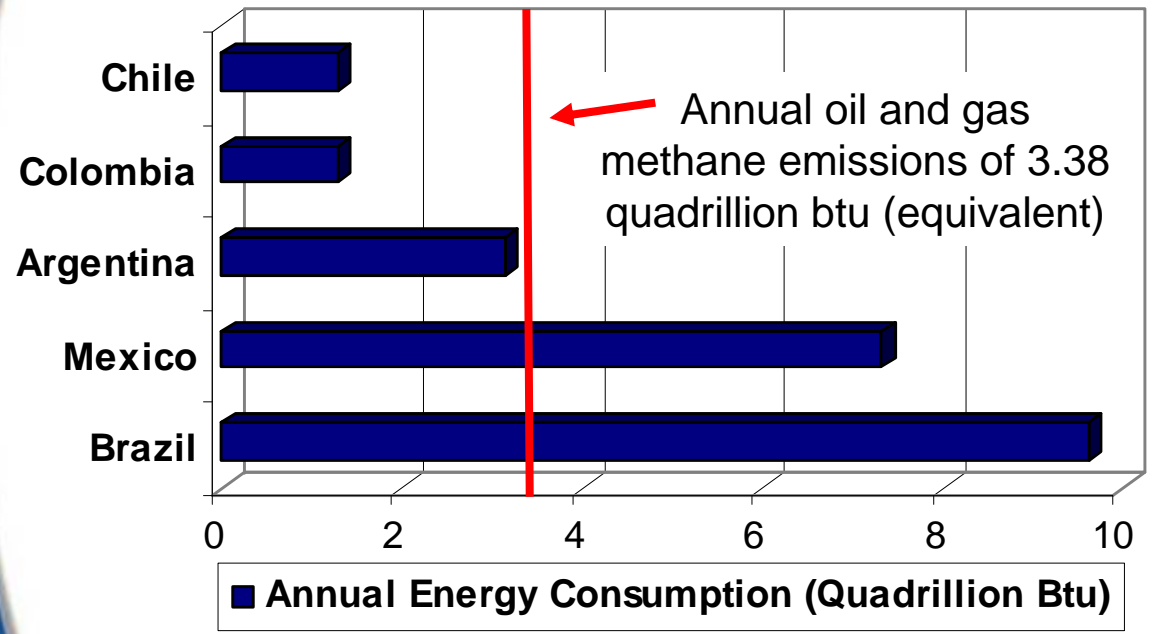


- Private companies, multilateral development banks and other relevant organizations participate by joining the ***Project Network – over 900 organizations now participating***

Importance of Methane Emissions in the Oil and Gas Sector

→ ECONOMIC LOSS OF A VALUABLE PRODUCT

- 95 billion m³ of natural gas* lost annually by global oil and gas industry equates to **U.S. \$10 to \$20 billion lost revenues**



Energy value of gas lost annually is equivalent to 5 months to 2.6 years worth of TOTAL primary energy consumption for these countries

EIA. (2008) International Energy Statistics

*Methane is the primary component of natural gas

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



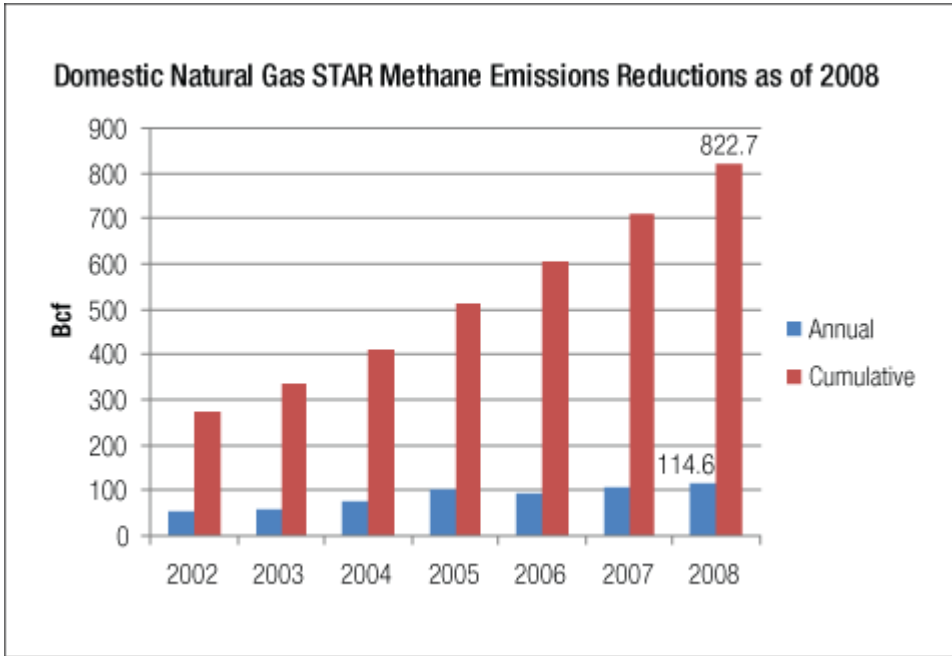
Why Do Companies Lose This Gas?



Vented emissions are not readily visible, yet they represent significant gas losses and emissions of methane, a greenhouse gas.

Natural Gas STAR Program

- Partnership between EPA and oil and natural gas industry
 - Started in the U.S. in 1993
 - Expanded internationally in 2006
- Partner companies report methane mitigation activities to EPA
- Program provides (at no cost) resources to advance cost-effective oil & gas sector methane emission reductions:
- General technology transfer, training, and capacity building
 - Technical documents, research, workshops and conferences
- Individual assistance to identify and assess project opportunities
 - Estimated methane inventories
 - Feasibility studies
 - Measurement studies



Natural Gas STAR Program

- Partner companies (over 120 domestic and 13 international) have identified over 80 cost effective technologies and practices for reducing methane emissions

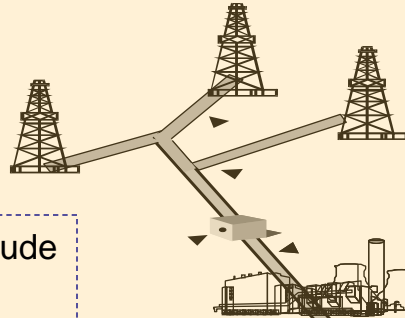


Cost Effective Mitigation Options Exist Many Sources of Methane Emissions

Oil Production

Venting of casinghead gas

Flash emissions from crude oil storage tanks



Natural Gas Production & Processing

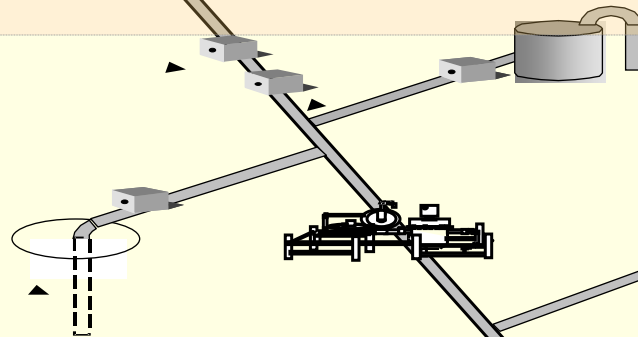
Well completions, blowdowns and workovers

Reciprocating compressor rod packing

Venting from glycol reboilers on dehydrators

Processing plant leaks

Gas-driven pneumatic devices



Gas Transmission

Venting of gas for maintenance or repair of pipelines or compressors

Leaks from pipelines, compressor stations

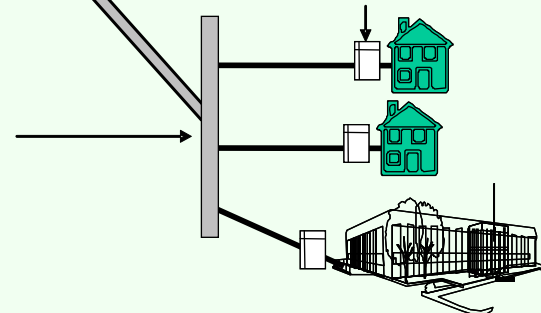
Centrifugal compressor seal oil de-gassing

Gas Distribution

Leaks from unprotected steel mains and service lines

Leaks at metering and regulating stations

Pipeline blowdowns



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www.methanetomarkets.org

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

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