Agenda

- 2010 Overview & Highlights
- Program Resources and Services
- Overview of Annual Workshop
Overview & Highlights
Current U.S. Greenhouse Gas Emissions Estimates

U.S. Greenhouse Gas Emissions All Sources

- CO₂: 85%
- CH₄: 8%
- N₂O: 5%
- HFCs, PFCs, & SF₆: 2%

Methane emissions from Oil and natural gas systems make up about 2% of total U.S. greenhouse gas emissions.

U.S. Methane Emissions by Sector

- Enteric Fermentation: 25%
- Oil & Gas Systems: 22%
- Landfills: 22%
- Coal Mining: 12%
- Other: 19%
- Recombined energy: 19%
- Enteric Fermentation: 25%

Oil and natural gas systems are tied as the 2nd largest man-made source of methane emissions in the U.S. (22%).

Background: U.S. Oil and Gas Methane Emissions by Sector

- 2008 U.S. methane emissions from oil and natural gas industry: 310 Bcf (2% of total U.S. greenhouse gas emissions)

U.S. Oil & Natural Gas Opportunities: Why Gas STAR?

310 Bcf of methane emissions per year amounts to:
- $1.24B worth of gas lost (at $4/Mcf)
- CO$_2$ emissions from the electricity use of 15.2 million homes for one year
- Annual greenhouse gas emissions from 24.0 million passenger vehicles

U.S. oil and natural gas industry has an opportunity to cost-effectively reduce methane emissions resulting in:
- Improved safety
- Increased operational efficiency
- Increased domestic natural gas supply
- Increased revenue/profits
- Improved environmental performance
Cost-Effective Methane Mitigation Opportunities

**Natural Gas Production & Processing**

- Identify, measure, & fix leaks in pipelines & metering and regulating stations
- Inject blowdown gas into low pressure mains
- Identify, measure, & fix leaks in processing plants
- Install plunger lifts
- Install flash tank separators on dehydrators
- Identify, measure, & fix leaks in compressor stations & pipelines
- Re-route gas to fuel system or sales line or flare
- Replace wet seals with dry seals in centrifugal compressors
- Economic replacement of reciprocating compressor rod packing
- Aerial leak detection using laser and/or infrared technology

**Oil Production**

- Route casinghead gas to VRU or compressor for recovery & use or sale
- Install VRUs on crude oil storage tanks
- Install plunger lifts
- Install flash tank separators on dehydrators

**Gas Transmission**

- Use pipeline pumpdown
- Install vapor recovery units on pipeline liquid/condensate tanks
- Identify, measure, & fix leaks in compressor stations & pipelines
- Re-route gas to fuel system or sales line or flare
- Replace wet seals with dry seals in centrifugal compressors

**Gas Distribution**

- Identify, measure, & fix leaks in pipelines & metering and regulating stations
- Inject blowdown gas into low pressure mains

*Picture courtesy of American Gas Association*
Gas STAR Partners reduced methane emissions by 86 Bcf in 2009.

904 Bcf in cumulative reductions since 1990
Natural Gas STAR Continues to Grow

Over 130 Partners, including 12 International Partners

Comgas
ConocoPhillips Canada Ltd
Devon Energy
Empresa Nacional del Petroleo
ENAP Sipetrol S.A.
ExxonMobil Corporation
GAZ-SYSTEM S.A.
Marathon Oil Corporation
Naftogaz
Occidental Oil and Gas Corporation
Oil and Natural Gas Corporation (ONGC)
TransCanada

3 New Partners in 2010
- UGI Penn Natural Gas/UGI Central Penn Gas
- Gill Ranch Storage, LLC
- Cabot Oil & Gas Corporation
2010 Technology Transfer Workshops

- Vernal, UT (March 22, 2010) Newfield Exploration Company’s Pleasant Valley Compressor Station Survey
- Vernal, UT (March 24, 2010)
  - Newfield Exploration Company
  - Anadarko Petroleum Company
  - Utah Petroleum Association
  - Interstate Oil & Gas Compact Commission
  - Independent Petroleum Association of Mountain States
- Farmington, NM (May 11, 2010)
  - ConocoPhillips Petroleum Company
  - New Mexico Environment Department
  - New Mexico Oil & Gas Association
- Farmington, NM (May 12-13, 2010) Four Corners Oil & Gas Conference
Natural Gas STAR International

EPA expanded Program to include international operations in 2006.

Currently 12 International Partners

Participation involves:
- Developing an implementation plan
- Identifying and implementing cost-effective projects
- Reporting your success

Support from Gas STAR International is available:
- Identify top cost-effective methane reduction project opportunities
- Conduct project pre-feasibility analysis
- On-site training and workshop development
Natural Gas STAR International Methane Emissions Reductions

Natural Gas STAR International Methane Emissions Reductions as of 2009

- Annual (Bcf)
- Cumulative (Bcf)

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Program Resources and Services
The Natural Gas STAR Program is a flexible, voluntary partnership that encourages oil and natural gas companies—both domestically and abroad—to adopt cost-effective technologies and practices that improve operational efficiency and reduce emissions of methane, a potent greenhouse gas and clean energy source.

**Basic Information**
- Program Overview
- Overview Oil and Natural Gas Industry
- Methane Emission Sources and Opportunities
- Industry Links

**Accomplishments**
- Emission Reduction Achievements
- New Tools and Resources

**Partners**
- International Partners
- Domestic Partners
- Endorsers

**Join the Program**
- Program Forms

**Guidelines to Participation**
- Key Components of Natural Gas STAR
- Annual Reporting
- Beyond the Basics
Key Program Resources

- Lessons Learned and PRO documents available in several languages!
  - Russian
  - Spanish
  - Chinese
  - Arabic

- Service Provider Directory

- Partner Challenge
Natural Gas STAR “Partner Challenge”

- EPA offers one-on-one technical assistance to Partners in identifying and prioritizing cost-effective methane emissions reduction opportunities
- Uses customized data
- Quantifies Partners’ methane emissions and identifies corresponding emissions reduction opportunities
- Details economic and operational benefits of reduction technologies & practices

Comparison of Estimated Methane Emissions Before and After Project Implementation

Methane Emissions Source

Available on the web at: epa.gov/gasstar/tools/partner-challenge.html
2010 Annual Implementation Workshop
Yesterday’s Site Visits

- El Paso Pipeline
  Southern Natural Gas Company
  Station 5110
  Toca, LA

- Targa Resources
  Yscloskey Gas Plant
  St. Bernard, LA
Workshop Overview

**Today, November 2**

- **Plenary Session**
  - Salons 2 & 3

- **Lunch and Award Ceremony**
  - Lafayette Ballroom

**Three Concurrent Technology Sessions:**

- Production
  - Salon 2

- Gathering & Processing
  - Salon 3

- Transmission & Distribution
  - Broadmoor Room – First Floor

- **Networking Reception**
  - Ballroom Foyer and Salon 1

**Tomorrow, November 3**

- **Global Methane Initiative**
  - Broadmoor Room

- **Oil & Gas Subcommittee Meeting**
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