

EPA's Natural Gas STAR Program



2010 Annual Implementation Workshop



Natural Gas STAR Program
November 2, 2010



Agenda

- 🔥 2010 Overview & Highlights
- 🔥 Program Resources and Services
- 🔥 Overview of Annual Workshop

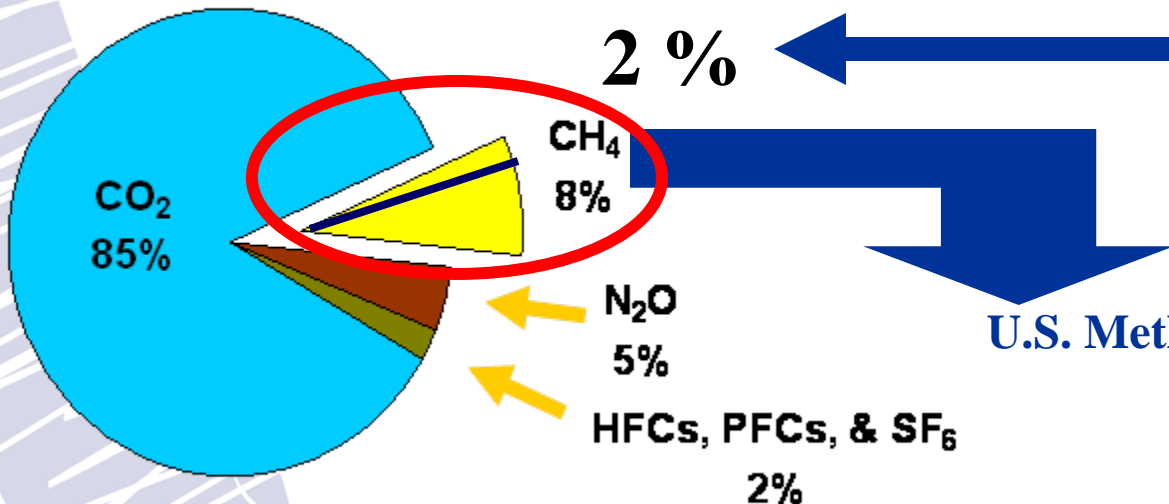
Overview & Highlights





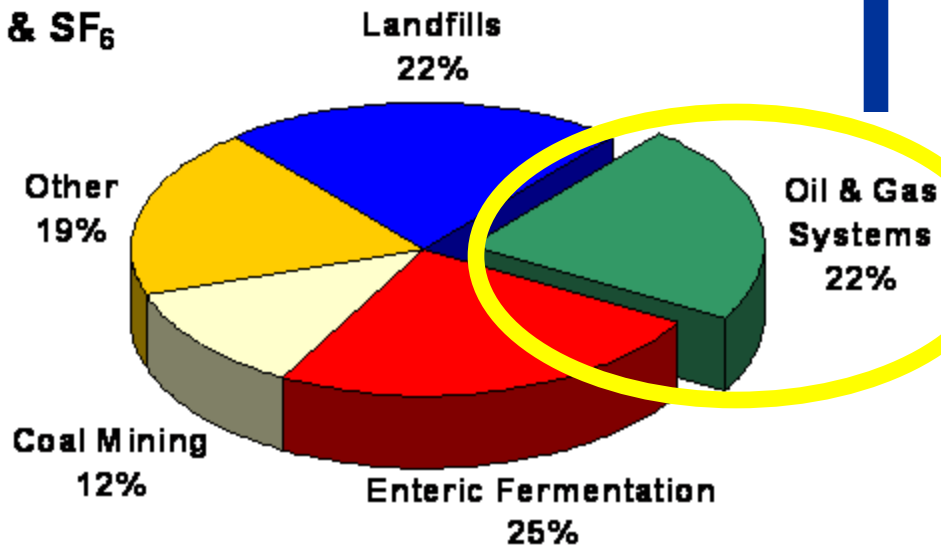
Current U.S. Greenhouse Gas Emissions Estimates

U.S. Greenhouse Gas Emissions All Sources



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

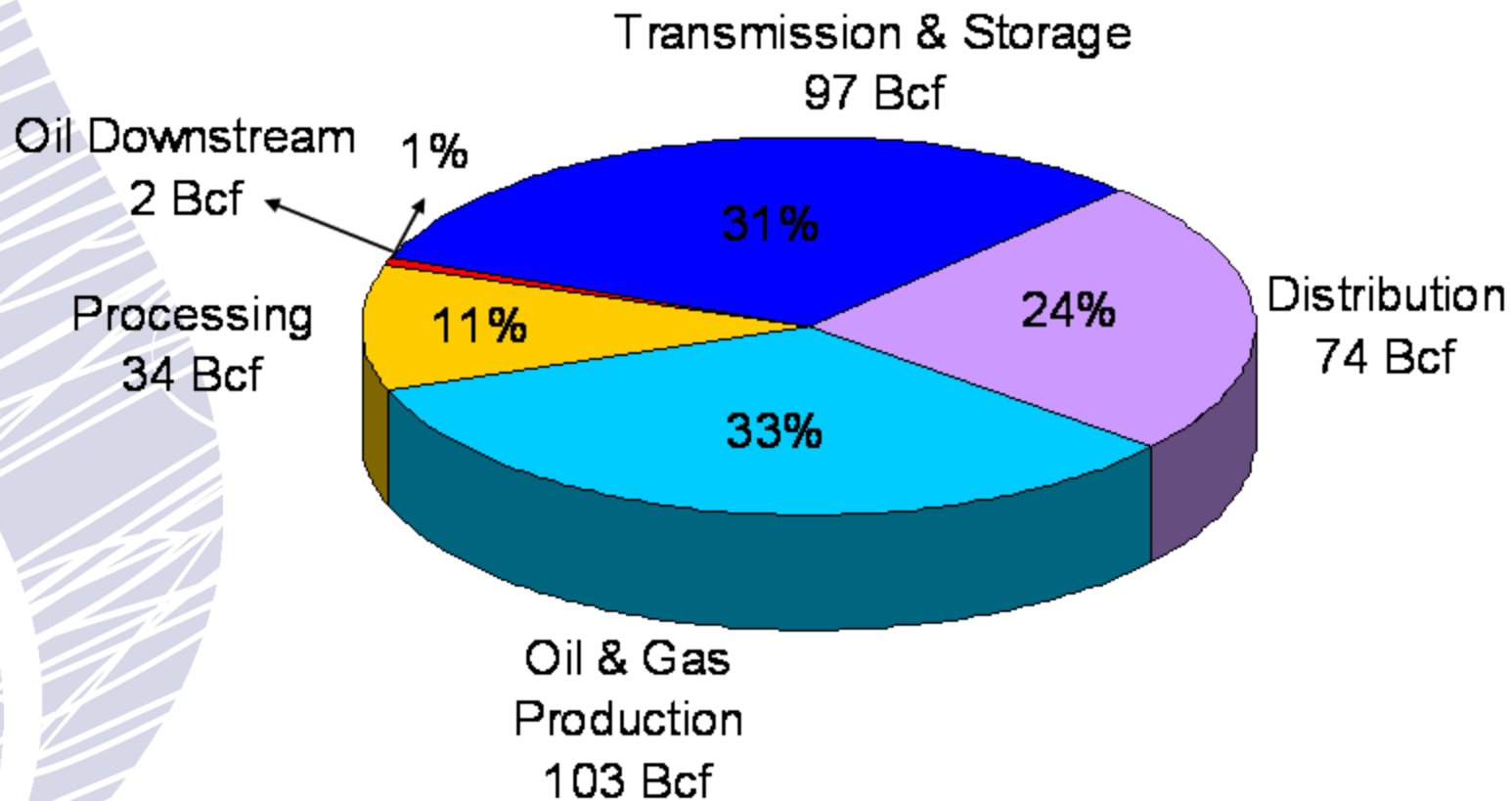


Oil and natural gas systems are tied as the **2nd largest** man-made source of methane emissions in the U.S. (**22%**)



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)**



Source: EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2008*. April, 2010. Available on the web at: epa.gov/climatechange/emissions/usinventoryreport.html. **Notes:** 1) Natural Gas STAR reductions from gathering and boosting operations are reflected in the production sector.



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)
 - 🔥 CO₂ 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



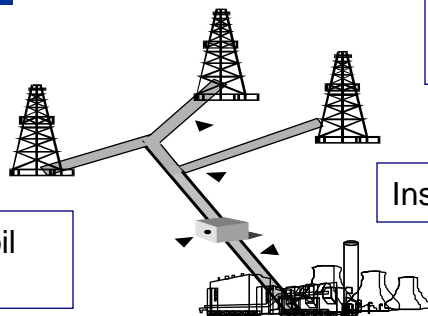


Cost-Effective Methane Mitigation Opportunities

Oil Production

Route casinghead gas to VRU or compressor for recovery & use or sale

Install VRUs on crude oil storage tanks



Reduced emissions well completions

Install plunger lifts

Identify, measure, & fix leaks in processing plants

Install flash tank separators on dehydrators

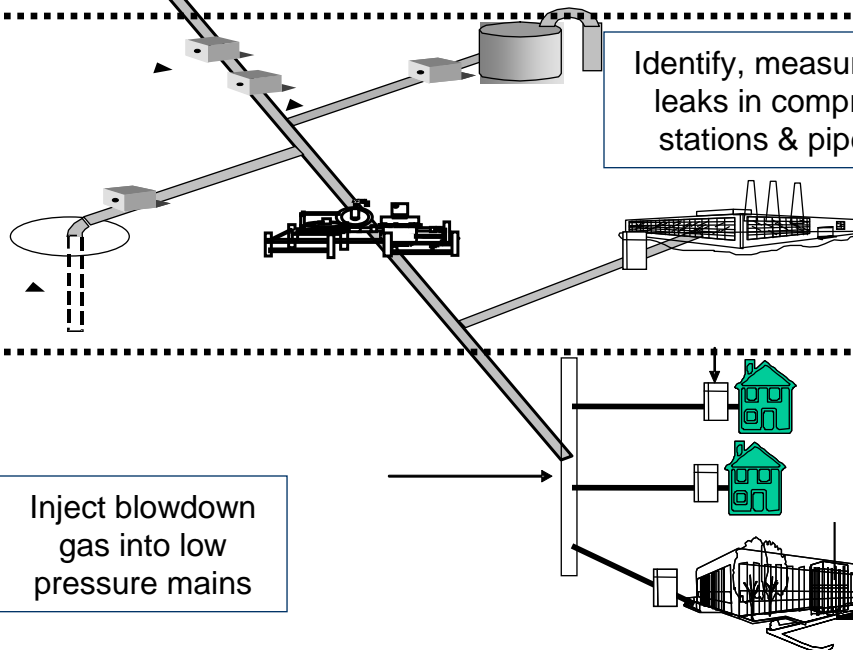
Economic replacement of reciprocating compressor rod packing

Aerial leak detection using laser and/or infrared technology

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

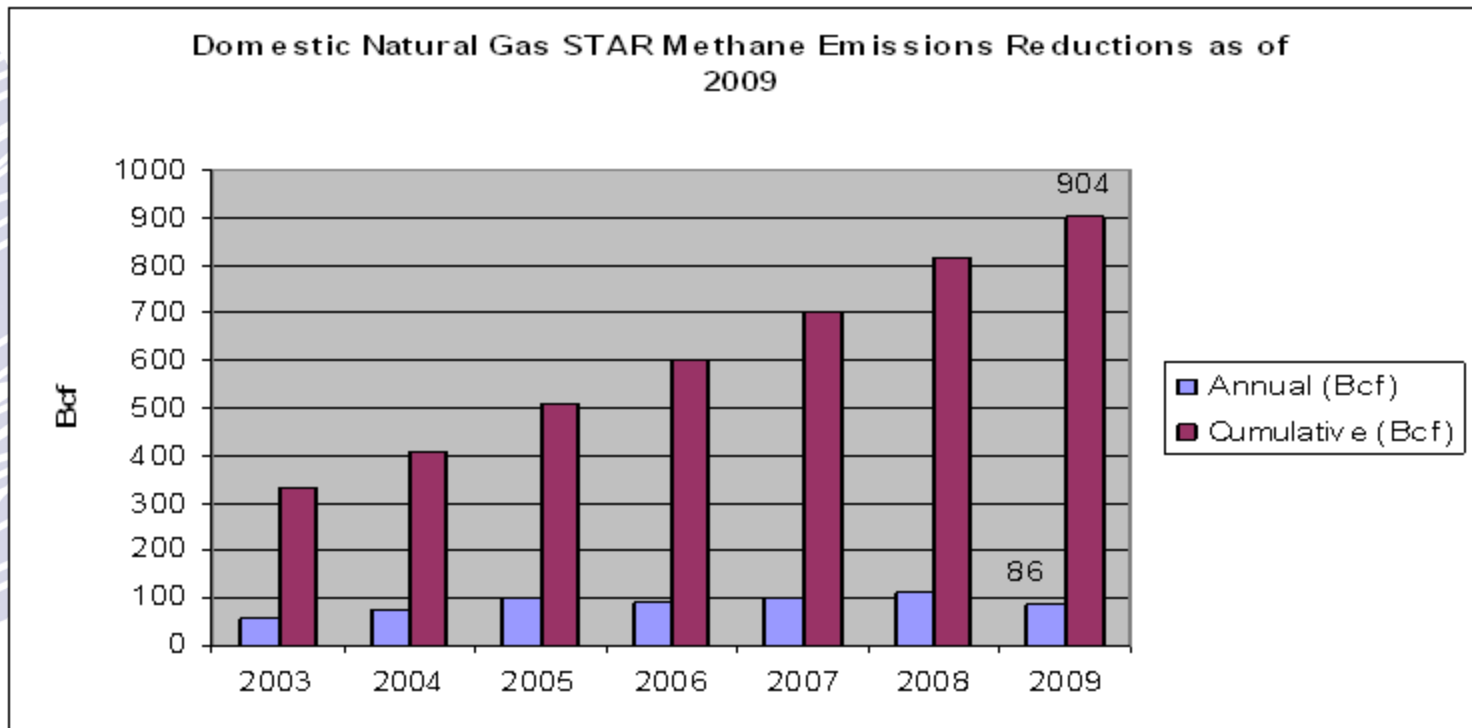
Identify, measure, & fix leaks in pipelines & metering and regulating stations

Inject blowdown gas into low pressure mains



2009 Another Successful Year Domestic Methane Emission Reductions

- 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



Technology Transfer Workshops

🔥 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:

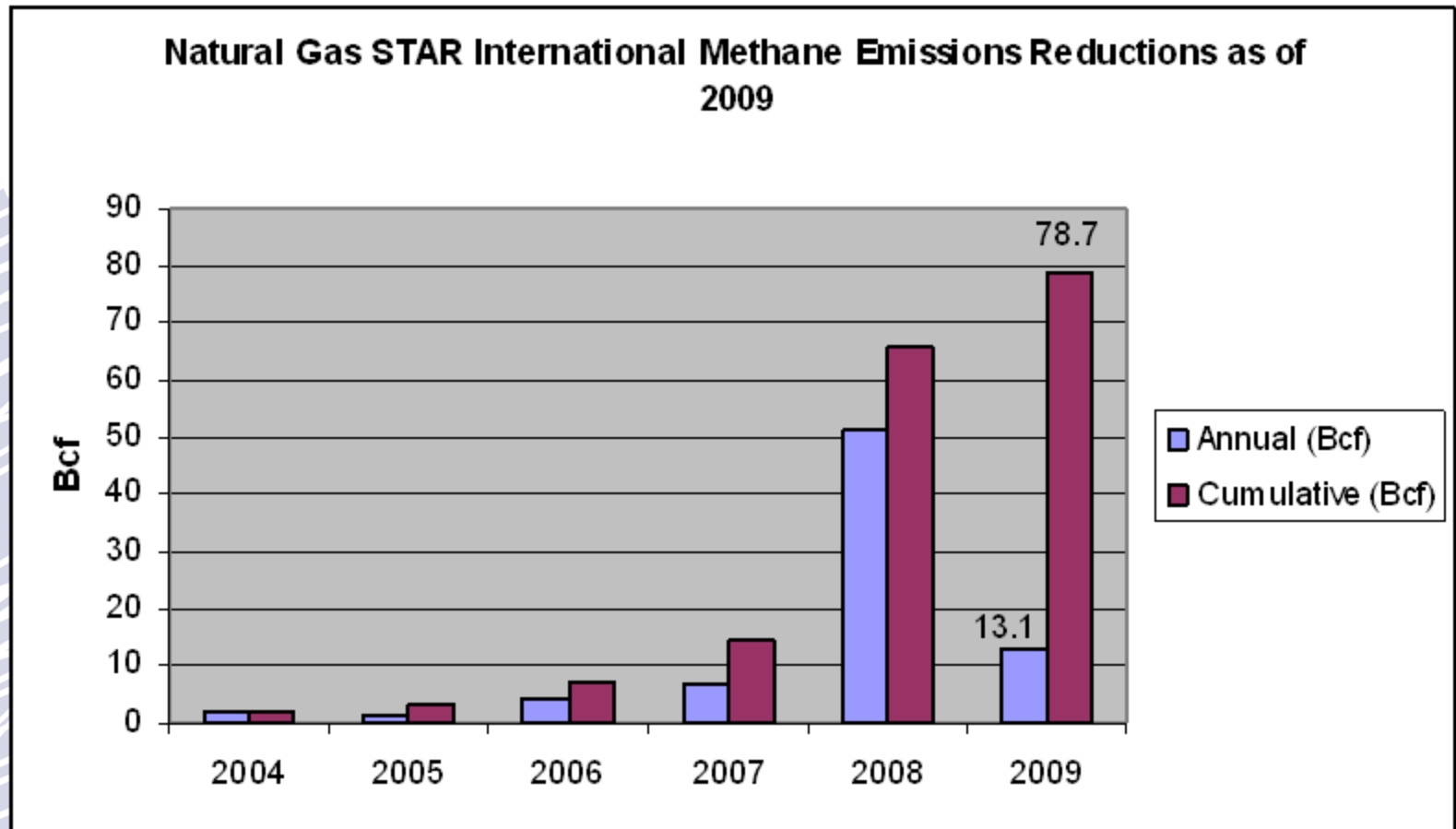
- 🔥 Developing an implementation plan
- 🔥 Identifying and implementing cost-effective projects
- 🔥 Reporting your success

🔥 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



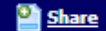
Program Resources and Services





Web site: www.epa.gov/gasstar

U.S. ENVIRONMENTAL PROTECTION AGENCY



Natural Gas STAR Program

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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.



Methane Home

Natural Gas STAR Home

Basic Information

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Frequent Questions



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[Guidelines to Participation](#)

[Key Components of Natural Gas STAR](#) | [Annual Reporting](#) | [Beyond the Basics](#)

Highlights

- » [The Natural Gas STAR Partner Update - Fall 2010](#)
- » [Thirty-Six Governments Meet in Mexico on Greenhouse Gas Reductions, Clean Energy](#)
- » [Annual Implementation Workshop Information Now Available](#)
- » [Methane to Markets *Methane International* #20](#) [EXIT Disclaimer](#)
- » [Society of Petroleum Engineers \(SPE\) Paper "Designing the Ideal Offshore Platform Methane Mitigation Strategy" \(PDF\)](#) (27 pages, 2011)



Key Program Resources

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

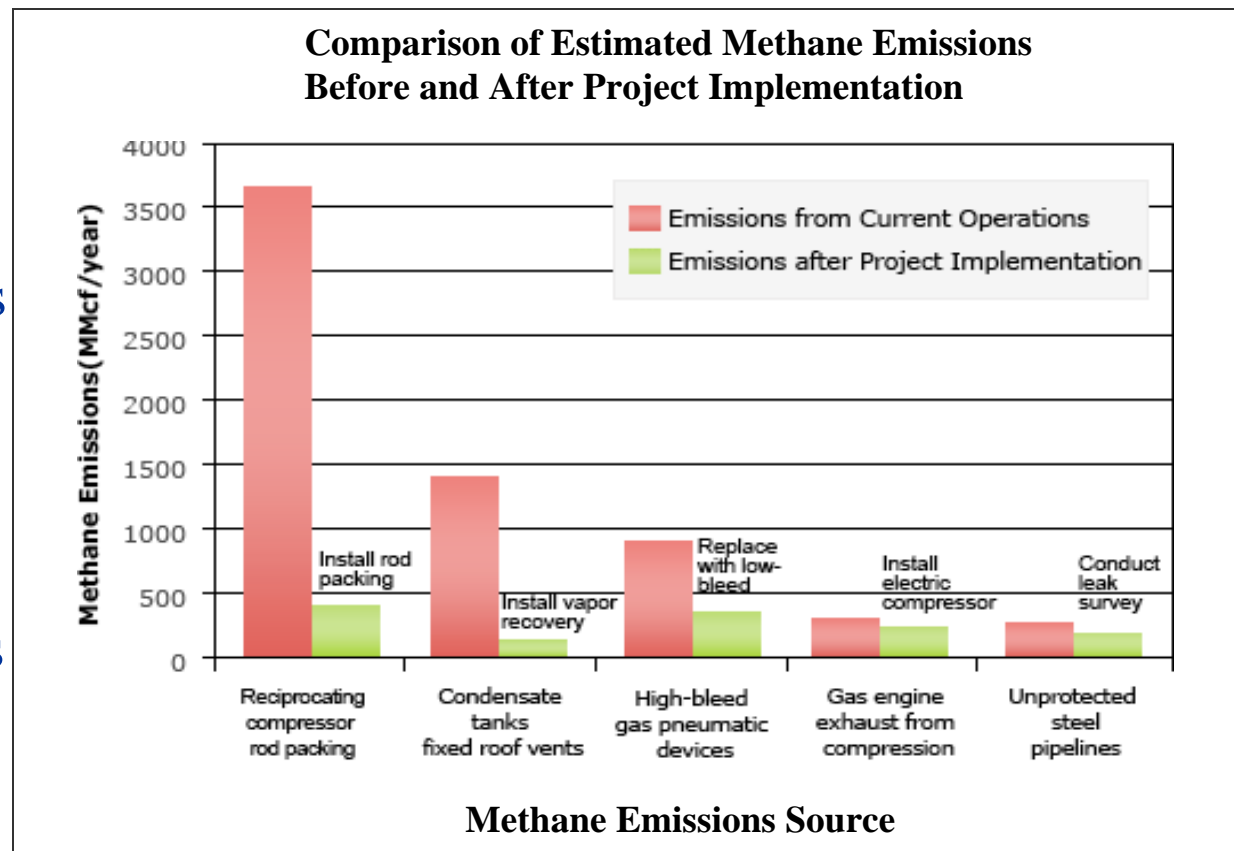
- 🔥 Service Provider Directory

- 🔥 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



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 Oil & Gas Subcommittee Meeting	Broadmoor Room
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