

EPA's Natural Gas STAR Program



Producers Technology Transfer Workshop

Co-sponsored with:
Newfield Exploration Company,
Anadarko Petroleum Corporation,
Utah Petroleum Association,
Interstate Oil & Gas Compact Commission,
Independent Petroleum Association of Mountain States

Vernal, UT
March 23, 2010

epa.gov/gasstar



Agenda

- 🔥 Natural Gas STAR: Overview & Highlights
- 🔥 Program Resources and Services
- 🔥 MRR Update



Overview & Highlights



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Natural Gas STAR

The Natural Gas STAR Program is a *flexible, voluntary partnership* between EPA and the oil and natural gas industry designed to *cost-effectively* reduce methane emissions from natural gas operations.

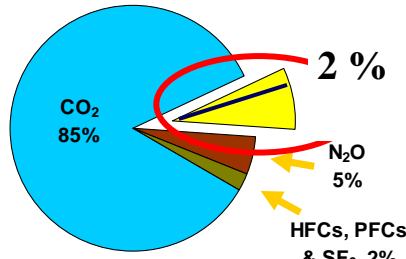
- ♠ **Over 130 Program Partners across four sectors**
 - ♠ 13 International Partners
 - ♠ 20 Endorser Associations

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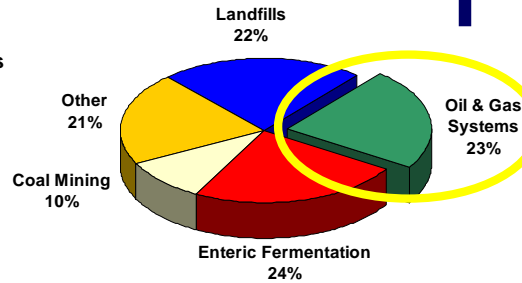
Current U.S. Greenhouse Gas Emissions Estimates

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 the second largest man-made source of methane emissions in the U.S. (23%)

Source: EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2007*. April, 2009.



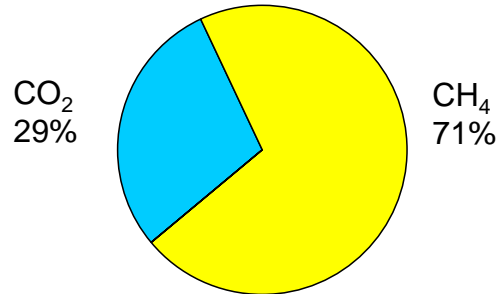
Why Focus on Methane?

- ⚡ A potent greenhouse gas (GHG) with 100-year global warming potential of 25; atmospheric lifetime of ~12 years
- ⚡ Second most important GHG accounting for ~18% of total climate forcing
- ⚡ Primary component of natural gas and a valuable, clean-burning energy source
 - ⚡ Proven, viable technologies and practices exist to reduce methane emissions cost-effectively
- ⚡ Oil and natural gas operations are a significant source of total U.S. (23%) and global (18%) human-made methane emissions.



U.S. Natural Gas Industry GHG Emissions: 20 year Global Warming Potential Basis

◆ Methane emissions comprise 71% of total U.S. Natural Gas industry GHG emissions



(N₂O Emissions are negligible)

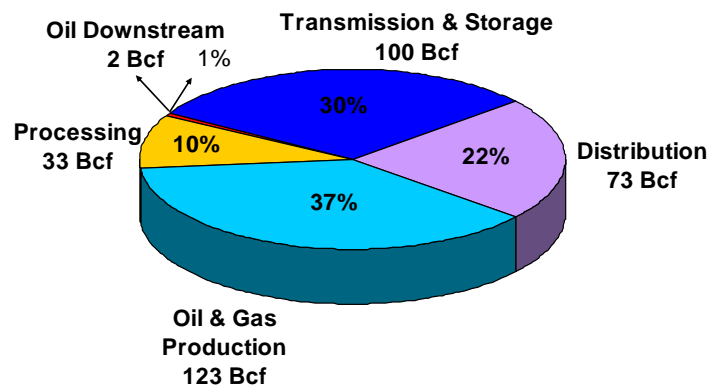
EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2007*. April, 2009.
Updated with 20-year GWP from IPCC. *Changes in Atmospheric Constituents and in Radiative Forcing*. 2007.

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

2007 U.S. methane emissions from oil and natural gas industry:
331 Bcf (2% of total U.S. greenhouse gas emissions)



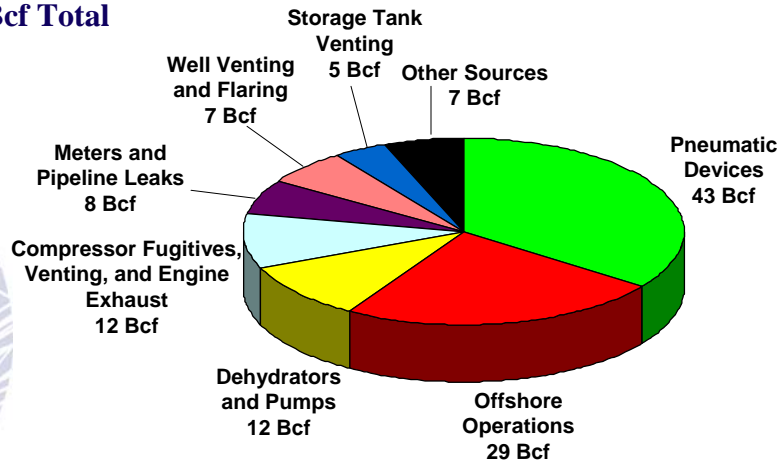
Source: EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2007*. April, 2009.
Note: Natural Gas STAR reductions from gathering and boosting operations are reflected in the production sector.

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2007 Production Sector Methane Emissions

123 Bcf Total



EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2007*. April, 2009. Available on the web at: epa.gov/climatechange/emissions/usinventoryreport.html
Natural Gas STAR reductions from gathering and boosting operations have been moved to the production sector.

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

🔥 331 Bcf of methane emissions per year amounts to:

- ◇ \$2.3B worth of gas lost (at \$7/Mcf)
- ◇ CO₂ emissions from the electricity use of 17.7 million homes for one year
- ◇ Annual greenhouse gas emissions from 24.5 million passenger vehicles

🔥 U.S. oil and natural gas industry has an opportunity to cost-effectively reduce methane emissions resulting in:

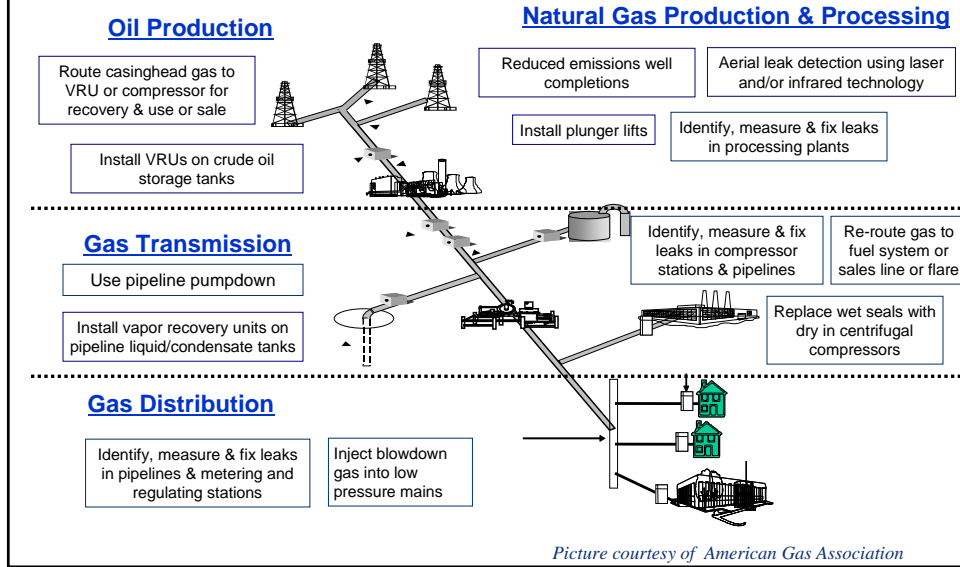
- ◇ Improved safety
- ◇ Increased operational efficiency
- ◇ Increased domestic natural gas supply
- ◇ Increased revenue/profits
- ◇ Improved environmental performance



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Cost-Effective Methane Mitigation Opportunities



What is Cost Effective?

The simple payback is the number of years it takes to pay back the capital cost of a project (based on \$3/Mcf)

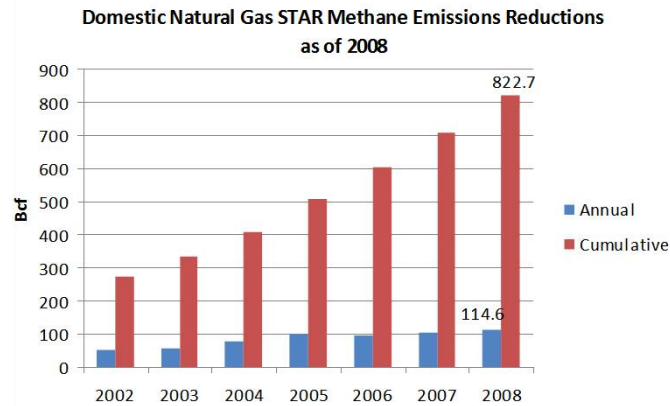
Payback period	Percentage	Percentage of Gas STAR Recommended Technologies and Practices at each payback level
Payback within 10 years	87%	
Payback within 3 years	77%	
Payback within 12 months	47%	
Immediate payback	1%	



2008 Another Successful Year Domestic Methane Emission Reductions

Gas STAR Partners reduced methane emissions by 114.6 Bcf in 2008

822.7 Bcf in cumulative reductions since 1990



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Natural Gas STAR International

EPA expanded Program to include international operations in 2006 under the Methane to Markets Partnership.

Currently 13 International Partners

Participation involves:

- Developing an implementation plan
- Identifying and implementing cost-effective projects
- Reporting progress

Available Support from Gas STAR International:

- Identify top cost-effective methane reduction project opportunities
- Conduct project pre-feasibility analysis
- On-site training and workshop development

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Program Resources and Services



Web site: www.epa.gov/gasstar

U.S. ENVIRONMENTAL PROTECTION AGENCY

Natural Gas STAR Program Bookmark

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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.


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](#)



Highlights

FLARING AND VENTING REDUCTION & NATURAL GAS UTILISATION FORUM
 AMSTERDAM 3-5 DECEMBER 2008
WWW.NATURALGASSTAR.ORG

- » Nov 11-13 - 15th Annual Natural Gas STAR Implementation Workshop
- » The Natural Gas STAR Partner Update - Fall 2008
- » Other Current News

Methane Home

- Natural Gas STAR Home
- Basic Information
- Accomplishments
- Partners
- Join the Program
- Guidelines to Participation
- Documents, Tools & Resources
- Newsroom
- Workshops/Conferences
- Natural Gas STAR International
- Frequent Questions



Key Program Resources

- ❖ Lessons Learned and PRO documents available in several languages!
 - ❖ Russian
 - ❖ Spanish
 - ❖ Chinese
 - ❖ Arabic
- ❖ Service Provider Directory
- ❖ Partner Challenge

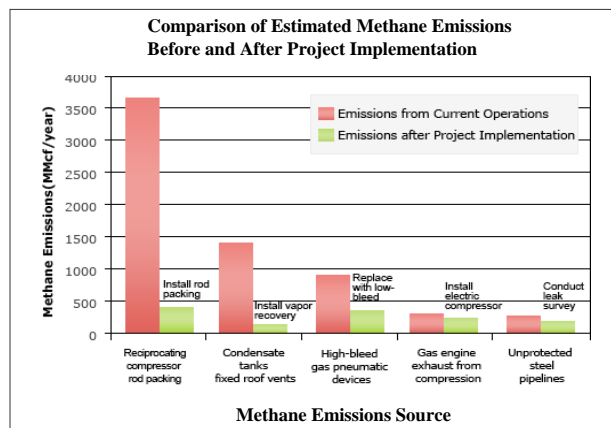
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Natural Gas STAR “Partner Challenge”

- ❖ EPA offers one-on-one technical assistance to partners in identifying and prioritizing cost-effective methane emission reduction opportunities

- ❖ Uses company-specific data
- ❖ Quantifies Partners’ methane emissions and identifies corresponding emission reduction opportunities
- ❖ Details economic and operational benefits of reduction technologies & practices



www.epa.gov/gasstar/tools/partner-challenge.html



Opportunities for Involvement

- 🔥 Technology Transfer Workshops
- 🔥 Webcasts
- 🔥 Study Tours
- 🔥 Annual Implementation Workshops

For more information and workshop announcements:
www.epa.gov/gasstar/workshops/index.html

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2010 Technology Transfer Workshops



Production
Vernal, UT
Mar. 23-24, 2010



Production
Farmington, NM
May 11, 2010



**Annual Implementation
Workshop**
New Orleans, LA
Nov. 1-3, 2010

For more information, visit epa.gov/gasstar/workshops/index.html



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Mandatory Greenhouse Gas Reporting Rule



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More Information about the Mandatory GHG Reporting Rule

Rule for “petroleum and natural gas systems”
signed on 3/22/10

Visit EPA’s web site:

www.epa.gov/climatechange/emissions/ghgrulemaking.html

For comments and questions:

- ◆ Telephone: 1-877-GHG-1188
- ◆ Email: GHGMRR@epa.gov