Natural Gas STAR Program

Overview and Accomplishments

Producers Technology Transfer Workshop
New Orleans, LA
May 6, 2008

Agenda

- Background
- Natural Gas STAR Program Overview & Highlights
- Program Resources and Tools
- Greenhouse Gas Reporting Rulemaking
Background

Current U.S. Greenhouse Gas Emissions Estimates

U.S. Greenhouse Gas Emissions All Sources

- CO$_2$: 84%
- N$_2$O: 6%
- HFCs, PCs, & SF$_6$: 2%

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

U.S. Methane Emissions by Sector

- Oil & Gas Systems: 26%
- Landfills: 24%
- Enteric Fermentation: 21%
- Coal Mining: 10%
- Other: 19%

Oil and gas systems are the largest man-made source of methane emissions (26%)

Oil and Gas Industry Methane Emissions: U.S. & International

- U.S. contributes 12% of worldwide methane emissions from oil and gas systems

![Bar chart showing methane emissions from various regions.](chart.png)


---

U.S. Oil & Natural Gas Opportunities

- 346 Bcf of methane emissions per year amounts to:
  - $2.42B in lost revenue at $7/Mcf natural gas
  - Annual greenhouse gas emissions from 25,630,000 passenger vehicles
  - CO₂ emissions from the electricity use of 18,535,000 home for one year
  - Carbon sequestered annually by 31,804,000 acres of pine or fir forests
- U.S. oil and gas industry has an opportunity to cost-effectively reduce these impacts
Overview & Program
Highlights

Natural Gas STAR Program

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 120 Program Partners across four sectors
- Eight International Partners
- 19 Endorser Associations
Participation Matters

The Natural Gas STAR Program only works if our Partners participate. Participation means:

- **Don’t just check the box**: expand on your existing and future efforts to identify and implement new ways to reduce gas losses, save money, and make an impact on the environment.

- **Implement robust methods for quantifying leaks and vented emissions**: this will only increase in importance over time.

- **Report successes to Gas STAR**: which is currently the main knowledge base for the industry’s efforts to reduce methane emissions.

---

2006 Another Successful Year for Methane Emission Reductions

- Gas STAR Partners reduced methane emissions by 86 Bcf in 2006
  - 577 Bcf in cumulative reductions since 1990

![Graph showing annual and cumulative methane emissions reductions from 2000 to 2006.](image-url)

Natural Gas STAR Partner Accomplishments (1990 – 2005)

U.S. Oil & Natural Gas sector methane emissions are 10% under the 1990 level emissions

Total U.S. greenhouse gas emissions (left axis)
U.S. oil & natural gas sector methane Emissions (right axis)

Units in teragrams of CO₂ equivalent (TgCO₂E)

Natural Gas STAR International

Natural Gas STAR International launched September 26, 2006 now has eight partners

ConocoPhillips  devon  ONGC
ENBRIDGE  ExxonMobil
Marathon Oil Company  OXY  TransCanada
Program Resources and Tools

Key Components

- Guidance on new technologies & practices
  - Technical documents on over 80 cost-effective technologies and practices
  - Free Technology Transfer workshops
  - One-on-one technical assistance to identify and prioritize cost-effective methane emission reduction opportunities
- Annual record of Partner voluntary actions and methane savings

Technical Information

Workshops

Annual Reports

Project Demonstrations
**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 within 10 years: 87%
- Payback within 3 years: 77%
- Payback within 12 months: 47%
- Immediate payback: 1%

Answer: Depends on company specific circumstances.

---

**Methane Emission Reduction Technologies & Practices**

**Gas Production & Processing**
- Reduced Emission Well Completions
- Install Plunger Lifts on Gas Wells
- Identify, Measure & Fix Leaks in Processing Plants
- Install Flash Tank Separators on Dehydrators

**Gas Transmission**
- Identify, Measure & Fix Leaks in Compressor Stations, Pipelines
- Use Pipeline Pumpdown
- Replace High-Bleed Pneumatics

**Oil Production**
- Install VRUs on Crude Oil Storage Tanks
- Route Casinghead Gas to VRU or Compressor for Recovery & Use or Sale

**Gas Distribution**
- Identify, Measure & Fix Leaks in Pipelines & Surface Facilities
- Inject Blowdown Gas into Low Pressure Mains

*Picture courtesy of American Gas Association*
2008 Technology Transfer Workshops

Natural Gas STAR will host, with partner organizations, the following Technology Transfer workshops in 2008:

- **Production**
  - Rock Springs, WY
  - May 1, 2008

- **Production and Processing**
  - Midland, TX
  - July 23, 2008

- **Transmission**
  - Charlotte, NC
  - June 25, 2008

- **Offshore**
  - New Orleans, LA
  - May 6, 2008

- **All Sectors**
  - San Antonio, TX
  - Nov 11-13, 2008

  - Huadong, China
  - April 17-18, 2008

  - Rock Springs, WY
  - May 1, 2008

  - Midland, TX
  - July 23, 2008

For more information, visit [http://www.epa.gov/gasstar/workshops.htm](http://www.epa.gov/gasstar/workshops.htm)

---

New Tool: Emission Reduction Calculation Guidance

Guidance for quantifying methane emission reductions from recommended technologies and practices:

[http://www.epa.gov/gasstar/docs/quantifying_ngs_methane_reductions.xls](http://www.epa.gov/gasstar/docs/quantifying_ngs_methane_reductions.xls)
Communications Tools/Materials

Effort underway to revise and update Gas STAR communications materials and Gas STAR website
- PowerPoint presentations
- Program Implementation Guidance

Goal: Make the tools and resources more useful and accessible

Your feedback is important!
Natural Gas STAR “Partner Challenge”

- EPA offers assistance quantifying partners’ methane emissions and corresponding emission reduction opportunities
  - Uses customized data
  - Quantifies emission reductions and environmental benefits
  - Details economic and operational benefits of reduction technologies & practices

Overview:
Greenhouse Gas Reporting Rulemaking
GHG Reporting Rulemaking

What is the 2008 Omnibus Appropriations Bill (HR 2764)?

The 2008 Omnibus Appropriations Bill (HR 2764) was signed into law in December 2007. The legislation signed by President Bush authorizes EPA to develop and publish a draft rule to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy.

Appropriations Language and Legal Authority

FY2008 Consolidated Appropriations Amendment:

“… not less than $3,500,000 shall be provided for activities to develop and publish a draft rule not later than 9 months after the date of enactment of this Act, and a final rule not later than 18 months after the date of enactment of this Act, to require mandatory reporting of greenhouse gas emissions above appropriate thresholds in all sectors of the economy…”

Legal Authority:

Sections 114 and 208 of the CAA allow for data collection and measurement and recordkeeping from stationary or mobile related sources

Appropriations language provides EPA with $3.5 million in FY 2008 to develop proposed & final rules
Purpose and Scope

Objective(s) of the Program – to provide data that will inform and support development of national climate policy

Scope of Coverage
- Define gases- “…to require mandatory reporting of greenhouse gas emissions”
  - CO2, CH4, N2O, HFC, PFC, SF6
- Both upstream and downstream sources- “The Agency is further directed to include in its rule reporting of emissions resulting from upstream production and downstream sources…”
  - Upstream: Fuel and Chemical producers/importers (e.g., oil refineries, natural gas processors, HFC producers)
  - Downstream: GHG emitters (e.g., power plants, iron and steel plants, cement manufacturers)

Areas of flexibility:
- Emissions threshold: “The Administrator shall determine appropriate thresholds of emissions above which reporting is required…”
- Frequency of Reporting: “…and how frequently reports shall be submitted to EPA”

Methods:
- “The Administrator shall have discretion to use existing reporting requirements…”
- Build on methods from existing mandatory and voluntary reporting systems
  - Federal reporting programs- e.g., Title IV, Climate Leaders, 1605(b)
  - State Programs- e.g., California, The Climate Registry, RGGI, other state programs
  - Corporate Programs- e.g., WRI/WBCSD
  - Industry Protocols- e.g., API Compendium, CSI Protocol (cement), International Aluminum Institute
Timing and Process

- Proposed rule by September 2008, final rule by June 2009
- An ambitious timetable but we will work towards these deadlines
- EPA welcomes stakeholder input and plans to reach out to stakeholders
- EPA will involve agency and interagency expertise
  - Have already worked extensively with interagency counterparts on measurement and reporting issues (e.g., US GHG inventory, IPCC guidelines)

Contact Information

- Jerome Blackman
  202-343-9630
  blackman.jerome@epa.gov
- Carey Bylin
  202-343-9669
  bylin.carey@epa.gov
- Roger Fernandez
  202-343-9386
  fernandez.roger@epa.gov
- Suzie Waltzer
  202-343-9544
  waltzer.suzanne@epa.gov

www.epa.gov/gasstar
www.methanetomarkets.org