

# Natural Gas STAR Program



Innovative Technologies for the Oil & Gas  
Industry: Product Capture, Process  
Optimization, and Pollution Prevention

Producers and Processors  
Technology Transfer Workshop

Western Gas Resources and  
EPA's Natural Gas STAR Program  
Gillette & Rock Springs, WY  
May 9 & 11, 2006



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## Agenda

- 🔥 Background – U.S. Methane Emissions
- 🔥 Methane Emissions in the U.S. Oil and Gas Industry
- 🔥 Gas STAR Program Overview & Accomplishments
- 🔥 Gas STAR Program Resources

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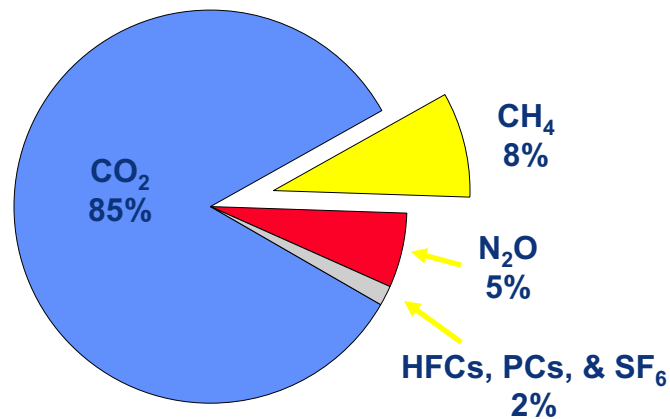
## The “So What” – Why are we here?

- ♠ Reducing methane emissions from the U.S. oil and gas industry has cross-cutting impacts
  - ♠ Addressing environmental and global warming concerns
  - ♠ Potential for increased profits and operational efficiency in the oil & gas sector
  - ♠ Increasing domestic natural gas supply

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## U.S. Greenhouse Gas Emissions – All Sources

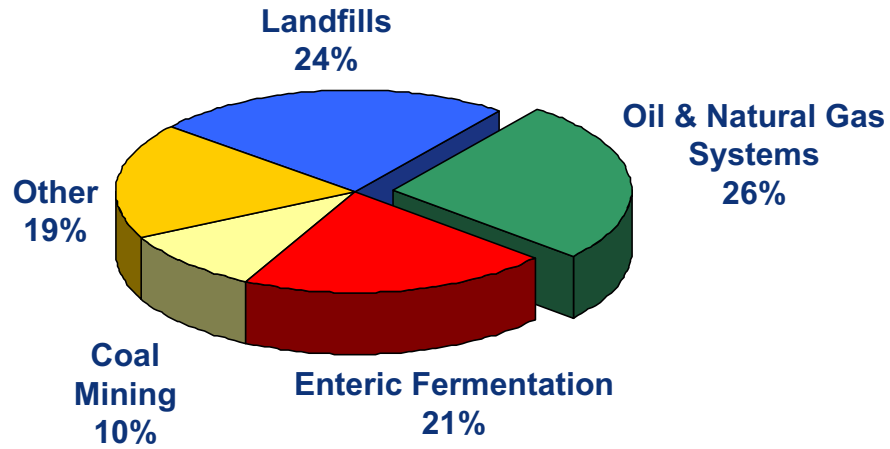


*Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2003, USEPA, April, 2005*

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## U.S. Methane Emissions



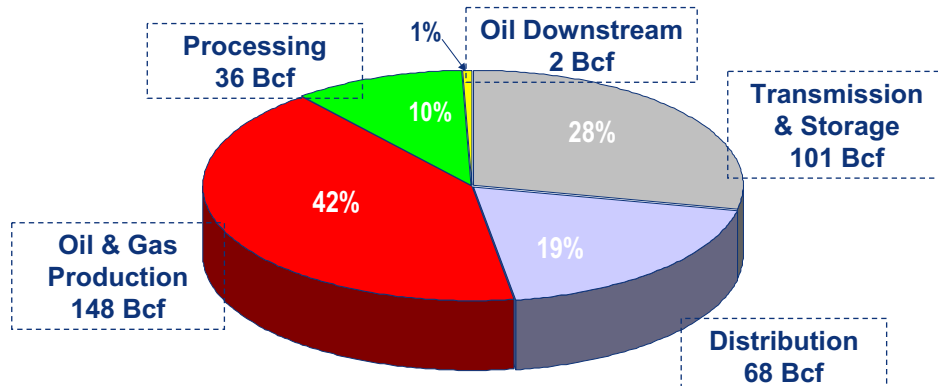
Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2003, USEPA, April, 2005

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## U.S. Oil & Natural Gas Industry

- ♦ Methane losses from the U.S. oil & natural gas industry total 355 Bcf
- ♦ Accounts for 2% of total U.S. greenhouse gas emissions



Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 – 2003, USEPA, April, 2005

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## U.S. Oil & Natural Gas Opportunities

- 💧 355 Bcf of methane emissions per year amounts to
  - 💧 \$2.49B in lost revenue at \$7/Mcf natural gas
  - 💧 Global warming equivalent of putting over 31 million additional cars on the road in the U.S.
  - 💧 Gas supply capable of heating over 5 million U.S. households for a year
- 💧 U.S. oil and gas industry has an opportunity to cost effectively reduce these impacts

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## 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.

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## Gas STAR Partners & Endorsers

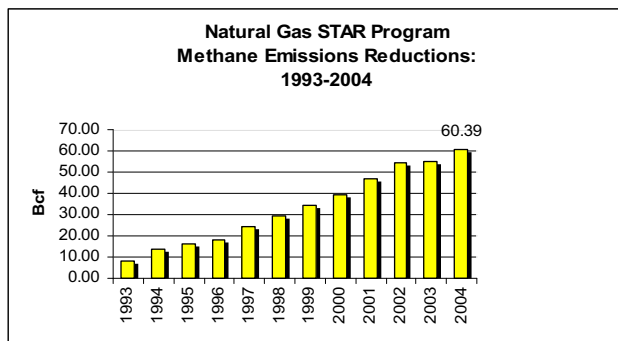
- 🔥 112 Program Partners across all four sectors
  - 🔹 Recommended technologies and practices come directly from partner companies and industry experts
- 🔥 18 endorser associations, including
  - 🔹 American Petroleum Institute (API)
  - 🔹 Domestic Petroleum Council (DPC)
  - 🔹 Gas Processors Association (GPA)
  - 🔹 Independent Producers Association of Mountain States (IPAMS)
  - 🔹 Interstate Oil & Gas Compact Commission (IOGCC)
  - 🔹 Southern Gas Association
  - 🔹 Colorado Oil & Gas Association (COGA)
  - 🔹 Petroleum Association of Wyoming (PAW)
  - 🔹 Petroleum Technology Transfer Council (PTTC)
  - 🔹 Independent Producer's Association of America (IPAA)

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## Natural Gas STAR Partner Accomplishments

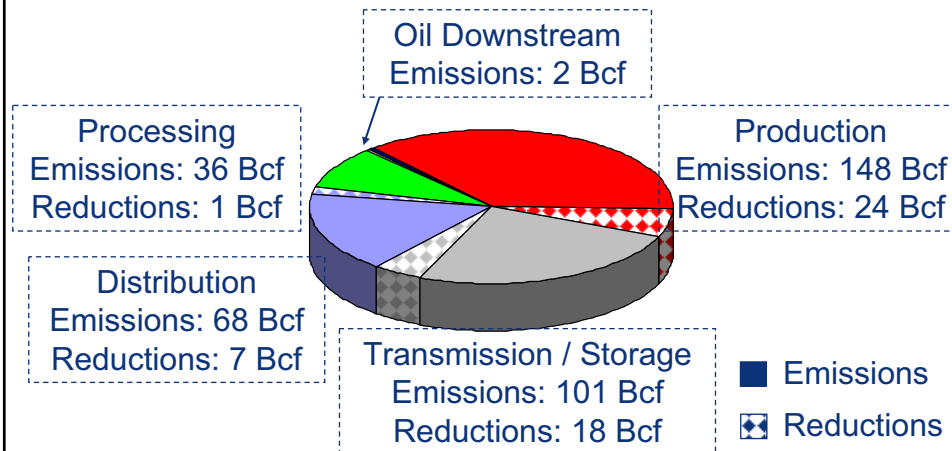
- 🔥 Natural Gas STAR Partners have reduced methane emissions by 403 Bcf
- 🔥 Methane emissions from U.S. oil and gas sector below 1990 levels



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## Oil & Gas Methane Emissions Without Gas STAR Program (2003)



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## Methane Emission Reduction Opportunities

🔥 Partners have reported over 80 technologies and practices for achieving cost effective methane emission reductions

### Best Practices - Production

- 🔥 Perform reduced emission completions
- 🔥 Install vapor recovery units
- 🔥 Install plunger lifts
- 🔥 Install instrument air systems
- 🔥 Eliminate unnecessary equipment and/or systems
- 🔥 Install electric compressors

### Best Practices - Processing

- 🔥 Conduct helicopter leak surveys
- 🔥 Conduct infrared leak surveys
- 🔥 Replace glycol dehydration units with methanol injection
- 🔥 Install electric compressors
- 🔥 Use hot taps for in-service pipeline connections

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## Program Resources

- ⚡ Guidance on recommended practices & technologies
  - ⚡ Detailed implementation guides, including partner case studies
  - ⚡ Economic analysis tools
  - ⚡ Communication tools
- ⚡ Available on [www.epa.gov/gasstar](http://www.epa.gov/gasstar)
- ⚡ Technology Transfer workshops
  - ⚡ Free and open to the public
- ⚡ Annual record of Partner methane savings
- ⚡ One-on-one technical assistance



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## Workshops

- ⚡ Upcoming Technology Transfer Workshops (5 to 6 per year)
  - ⚡ **Producers and Processors Technology Transfer Workshop**  
Sponsored by ConocoPhillips  
May 25, 2006  
Kenai, Alaska
  - ⚡ **Producers Technology Transfer Workshop**  
Sponsored by Devon Energy and PTTC  
June 6, 2006  
Fort Worth, TX
  - ⚡ **Producers Technology Transfer Workshop**  
Sponsored by Occidental Oil and Gas, PTTC, and NMOGA  
June 8 & 9, 2006  
Midland, TX
  - ⚡ **Processors Technology Transfer Workshop**  
Sponsored by Targa Resources, GPA, and NMOGA  
July 27, 2006  
Hobbs, NM

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## White House “Methane to Markets” Initiative

- ⚡ Five year activity to develop verifiable methane emissions reduction projects at landfills, coal mines and natural gas systems.
- ⚡ Goal is to build long-term capacity within developing countries and economies in transition.
- ⚡ Countries include: Argentina, Australia, Brazil, China, Colombia, India, Italy, Japan, Mexico, Nigeria, Russia, Ukraine and UK.
- ⚡ Gas STAR will lead natural gas system-related activities, including upcoming launch of international program
- ⚡ [www.methanetomarkets.org](http://www.methanetomarkets.org)

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