

# Natural Gas STAR Program



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

**Producers Technology Transfer Workshop**

**Occidental Oil and Gas and  
EPA's Natural Gas STAR Program  
Midland, TX  
June 8, 2006**



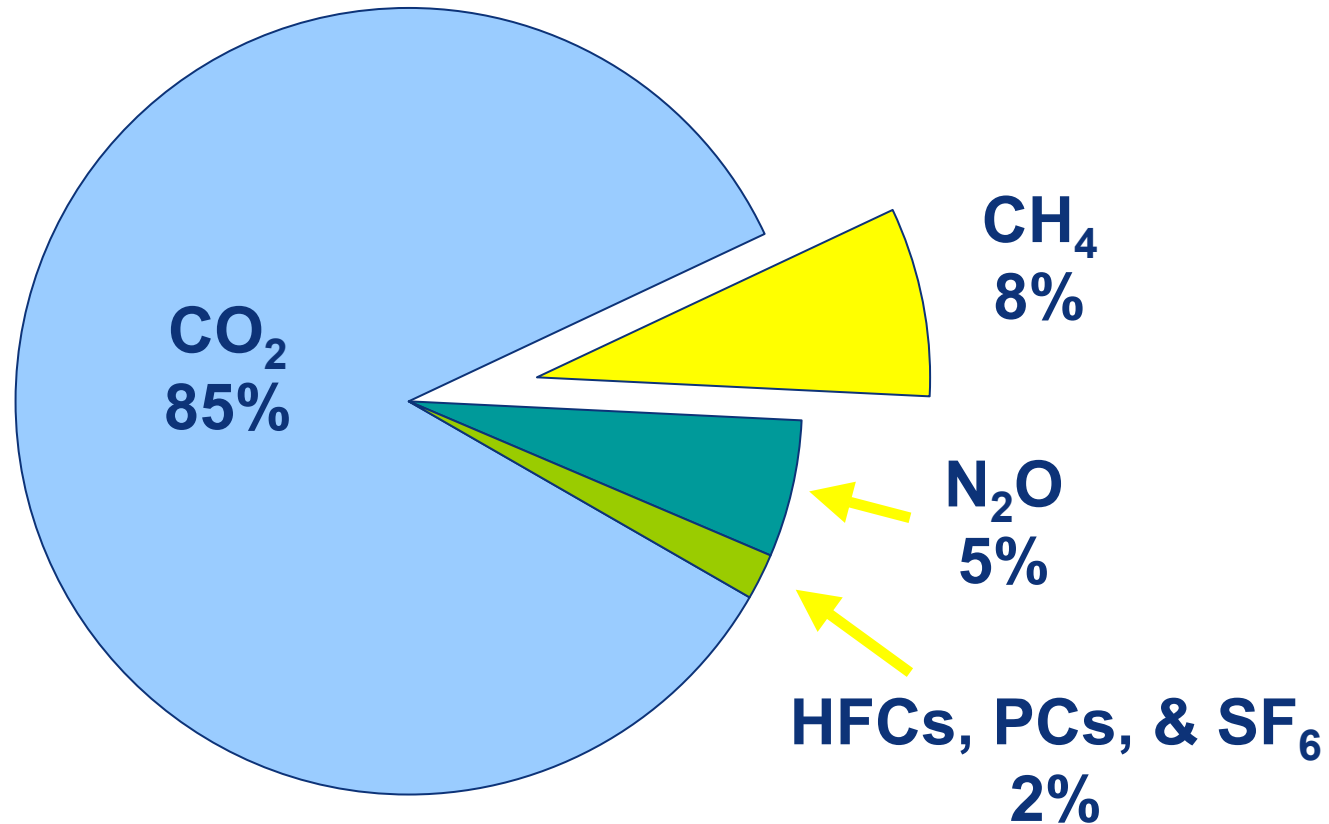
# Agenda

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

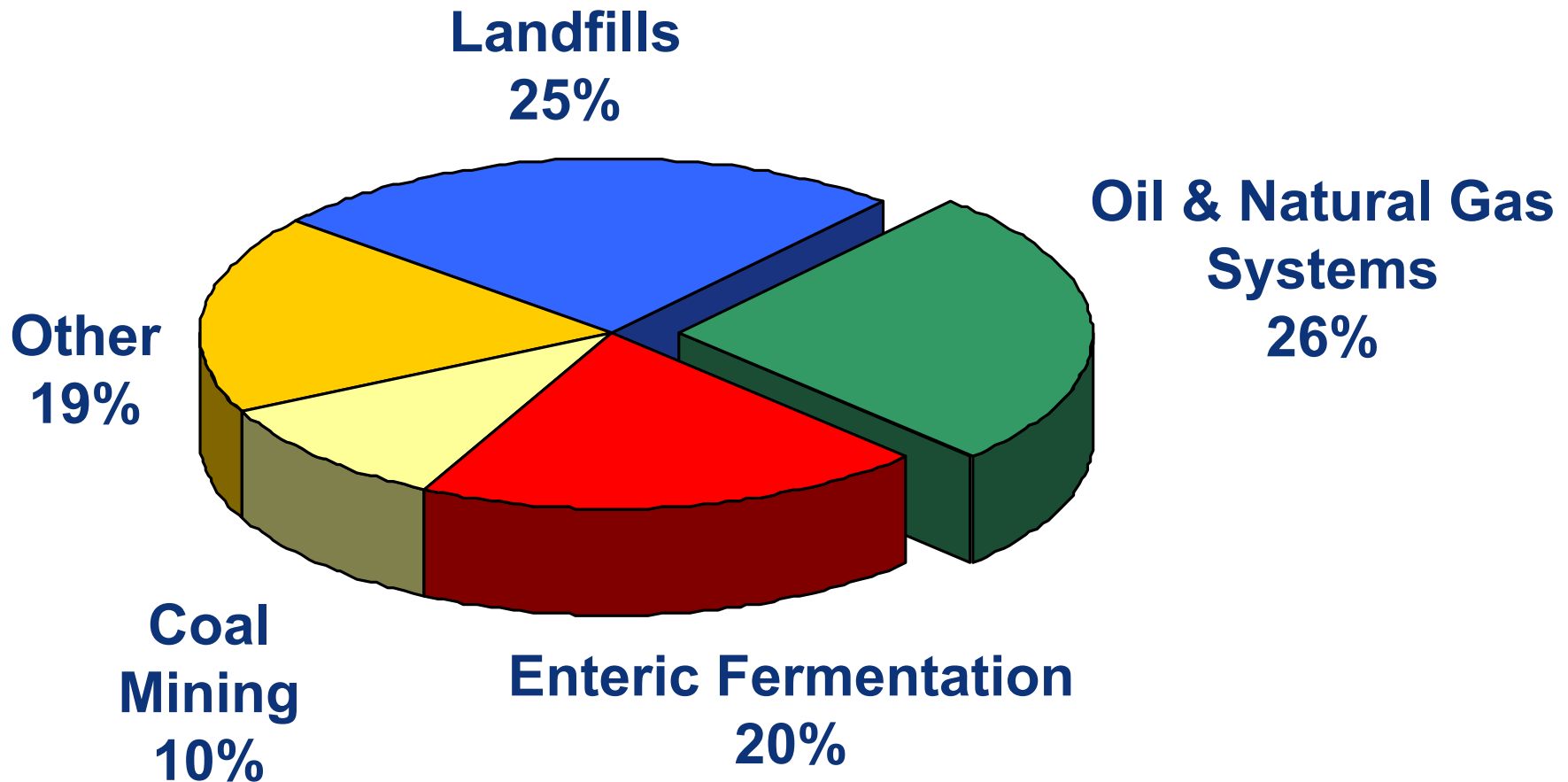
# The “So What” – Why are we here?

- 🔥 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

# U.S. Greenhouse Gas Emissions – All Sources

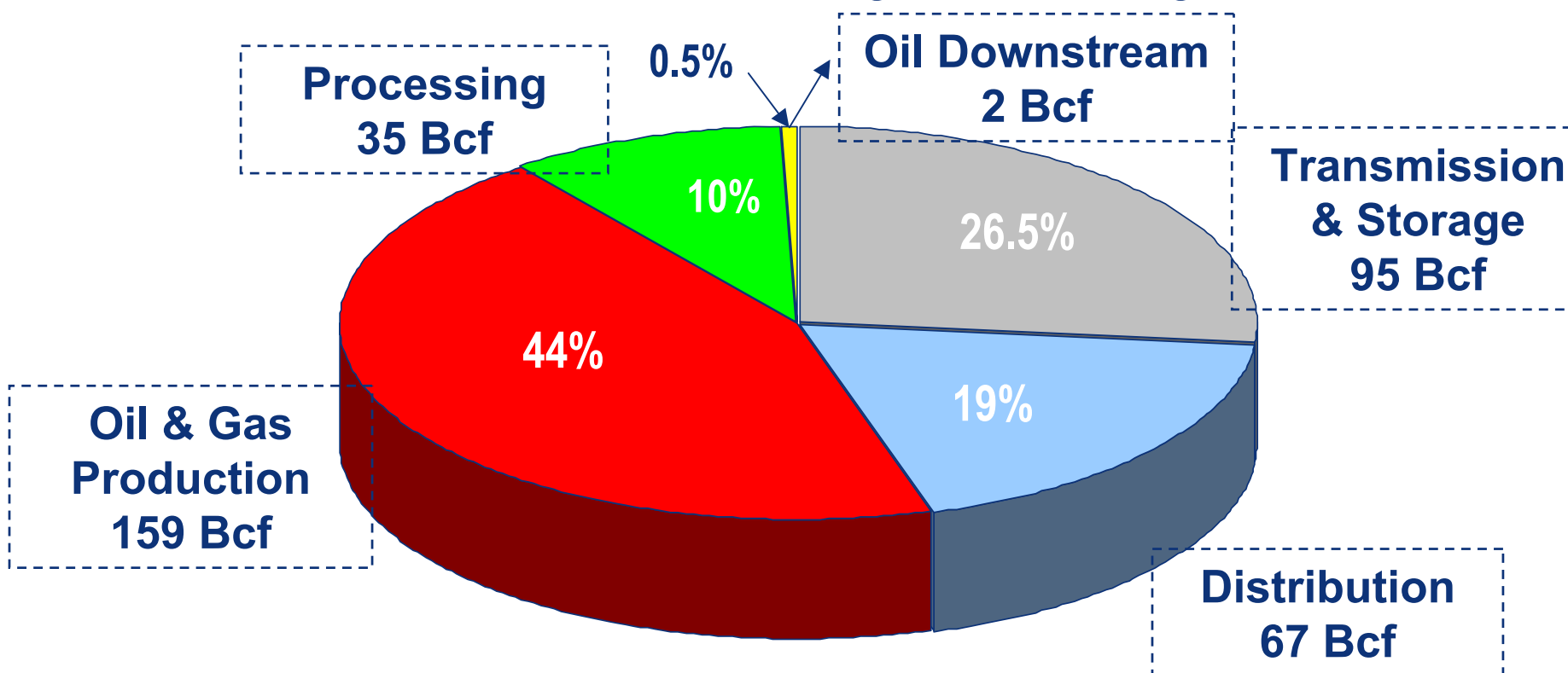


# U.S. Methane Emissions



# U.S. Oil & Natural Gas Industry

- 🔥 Methane losses from the U.S. oil & natural gas industry total 358 billion cubic feet (Bcf)
  - 🔥 Accounts for 2% of total U.S. greenhouse gas emissions



# U.S. Oil & Natural Gas Opportunities

- 🔥 358 Bcf of methane emissions per year amounts to
  - 🔥 \$2.51 Billion 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

# 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.



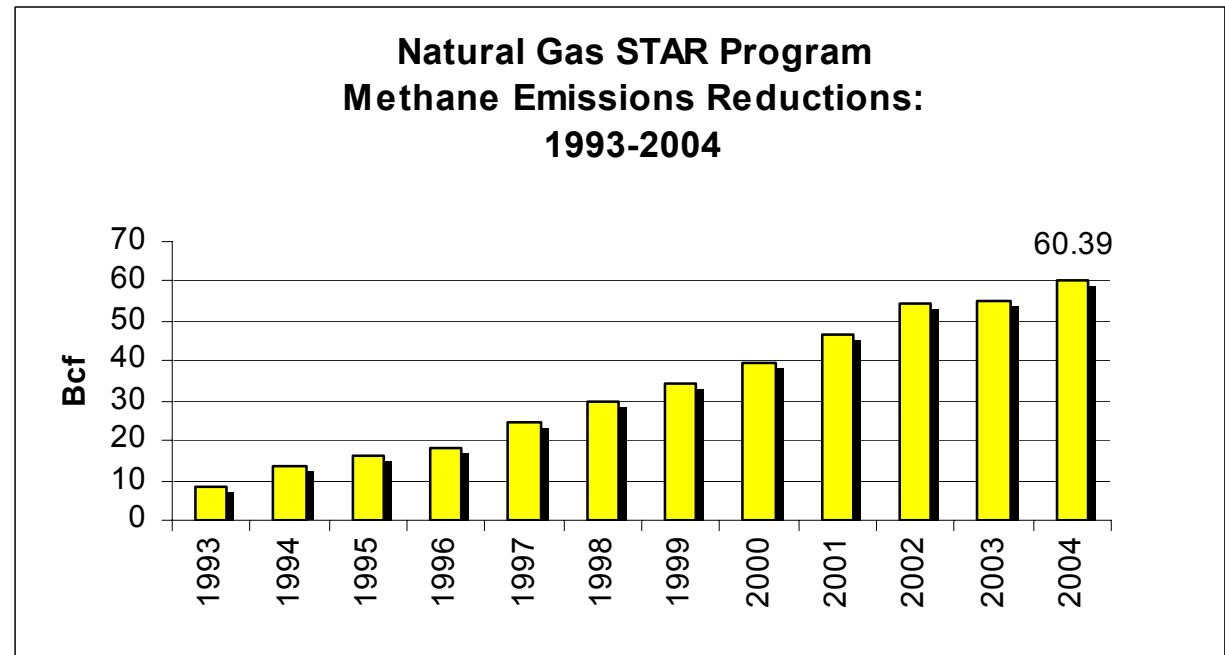
# Gas STAR Partners & Endorsers

- 🔥 114 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)
  - 💧 Colorado Oil & Gas Association (COGA)
  - 💧 Domestic Petroleum Council (DPC)
  - 💧 Gas Processors Association (GPA)
  - 💧 Interstate Oil & Gas Compact Commission (IOGCC)
  - 💧 Independent Producer's Association of America (IPAA)
  - 💧 Independent Producers Association of Mountain States (IPAMS)
  - 💧 Petroleum Association of Wyoming (PAW)
  - 💧 Petroleum Technology Transfer Council (PTTC)
  - 💧 Southern Gas Association (SGA)

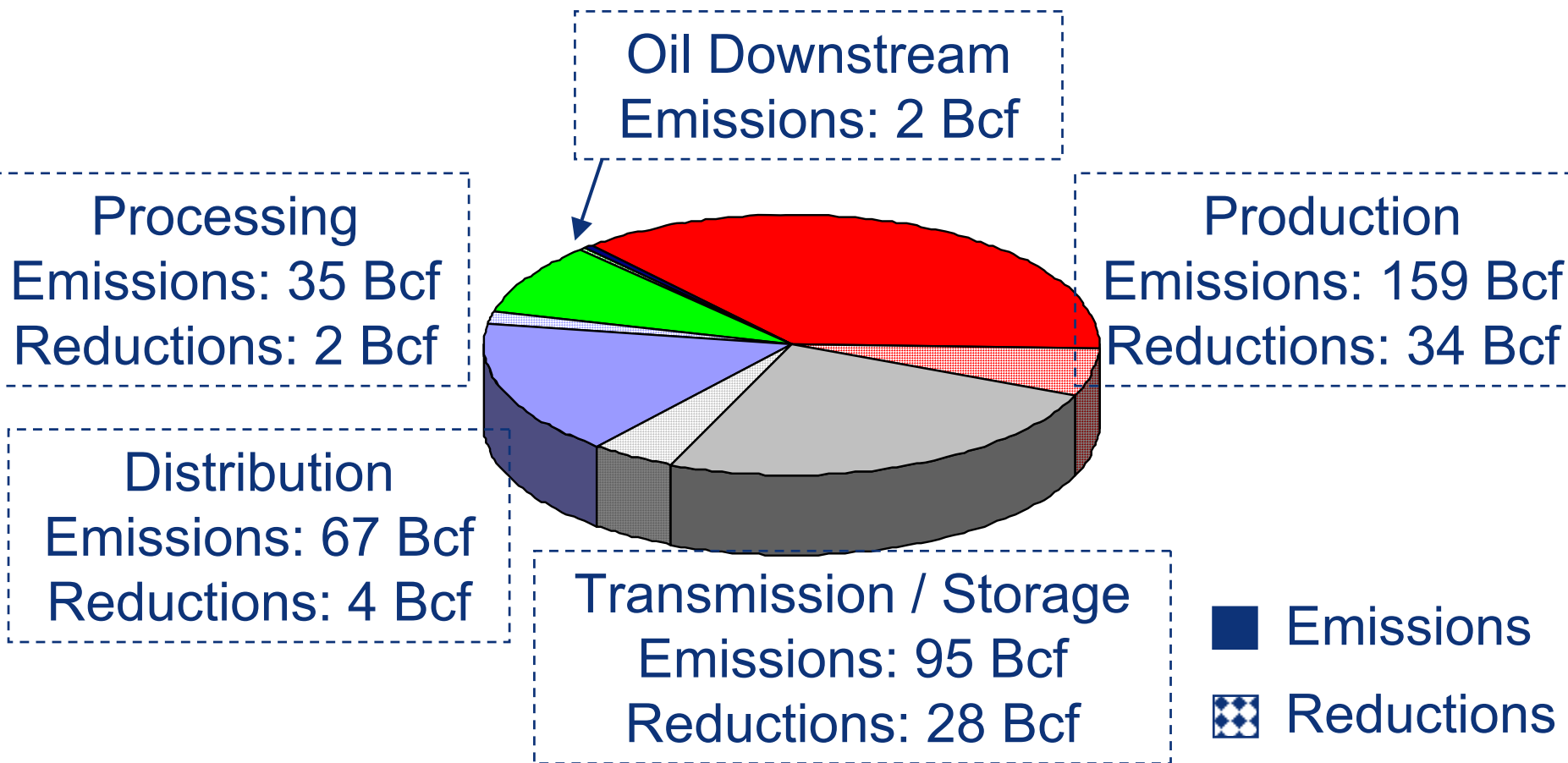
# Natural Gas STAR Partner Accomplishments

🔥 Natural Gas STAR partners have reduced methane emissions by 403 Bcf

🔥 Methane emissions from U.S. oil and gas sector below 1990 levels



# Oil & Gas Methane Emissions Without Natural Gas STAR Program (2004)



# 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

# 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



**Nitrogen Rejection Unit Optimization**  
PRO Fact Sheet

**Zero Emissions Dehydrators**  
PRO Fact Sheet

**Convert Engine Starting to Nitrogen**  
PRO Fact Sheet No. 101

**Methane Emissions Reductions**  
Conversion to nitrogen completely eliminates the venting of methane to the atmosphere and the leakage of methane through the gas shut-off valve. Typical production site compressor engine startups vent 1 to 5 Mcf of gas with each attempt, while bad engine often require multiple attempts. Breakdown values of a size and pressure differential similar to the gas shut-off valve leak up to 100 acf per hour or 1.2 MMcf per year.

# Workshops

- 🔥 Upcoming Technology Transfer Workshops (5 to 6 per year)
  - 🔥 **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
  - 🔥 **Annual Implementation Workshop**  
October 23-25, 2006  
Houston, TX

# 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, Canada, China, Colombia, Ecuador, Germany, India, Italy, Japan, Mexico, Nigeria, Republic of Korea, Russia, Ukraine, U.K. and U.S.
- 🔥 Natural 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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