

Natural Gas STAR Program



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

Producers Technology Transfer Workshop

**Devon Energy and
EPA's Natural Gas STAR Program
Fort Worth, TX
June 6, 2006**



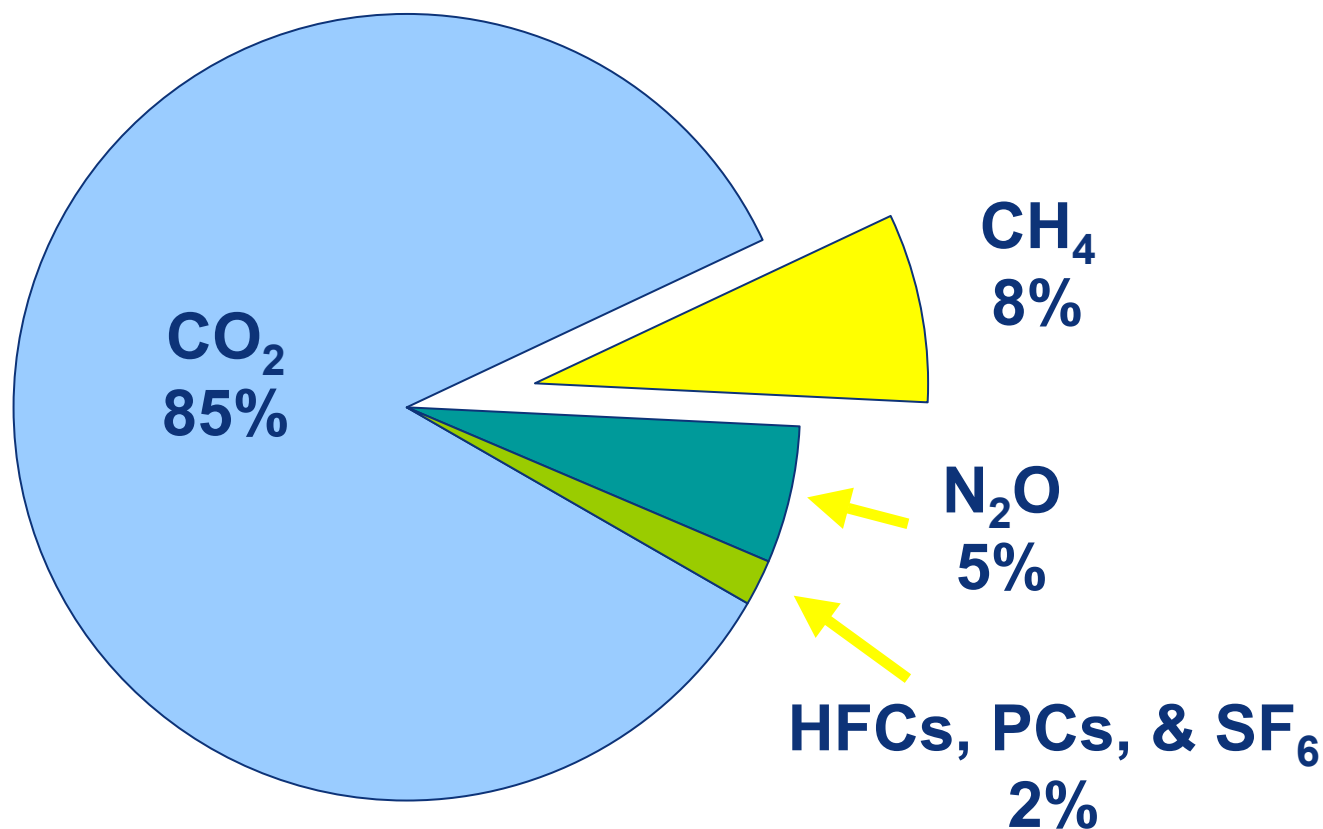
Agenda

- 🔥 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

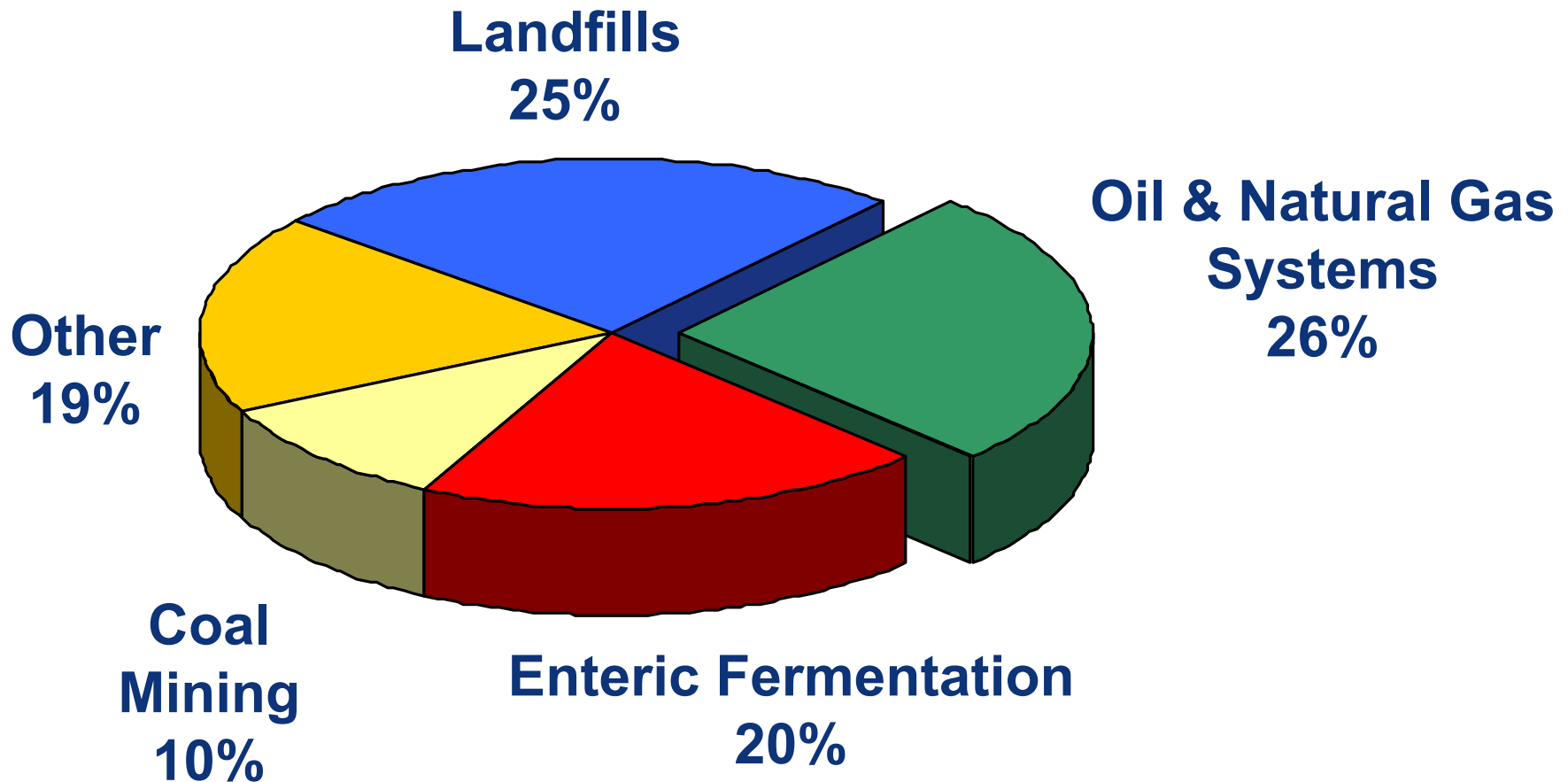
The “So What” – Why are we here?

- 🔥 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

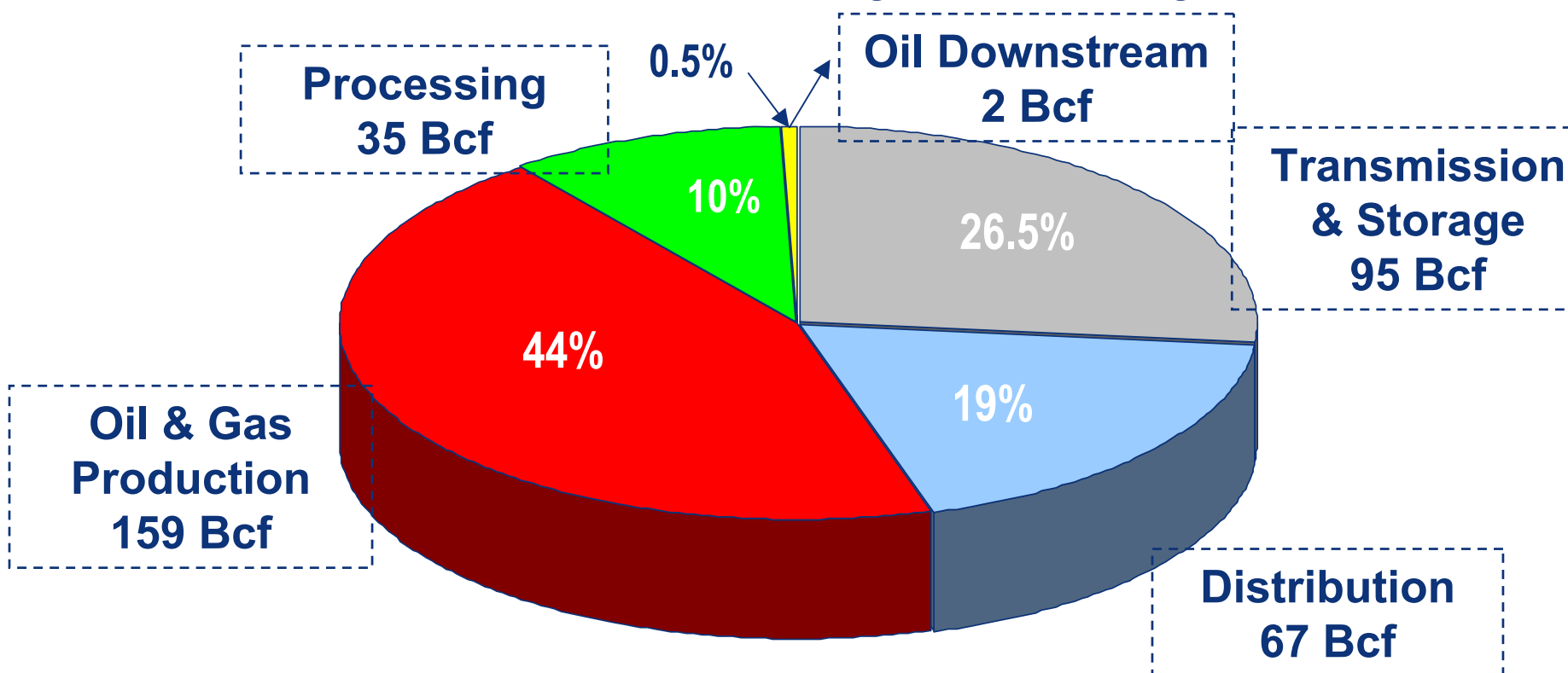


U.S. Methane Emissions



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

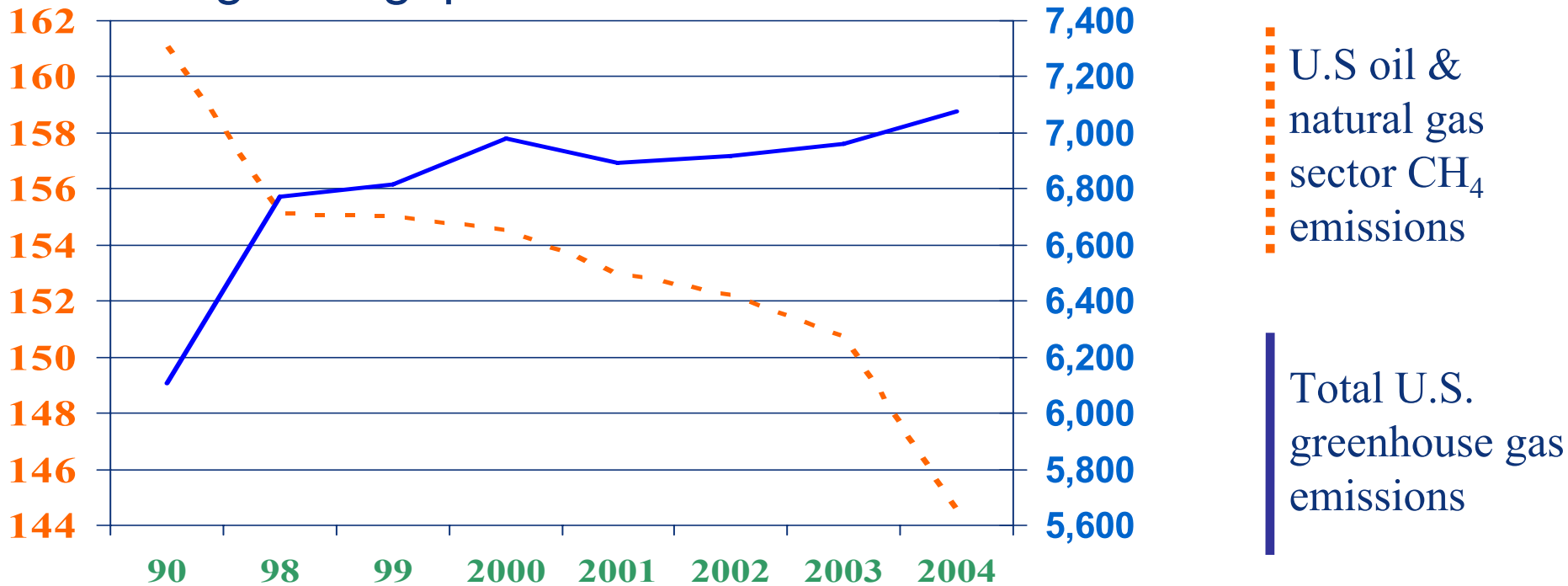


U.S. Oil & Natural Gas Opportunities

- 🔥 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 Partner Accomplishments: Years 1990 - 2004

Natural gas sector reduced emissions while increasing throughput



Units in teragrams of CO₂ equivalent (TgCO₂E)

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.

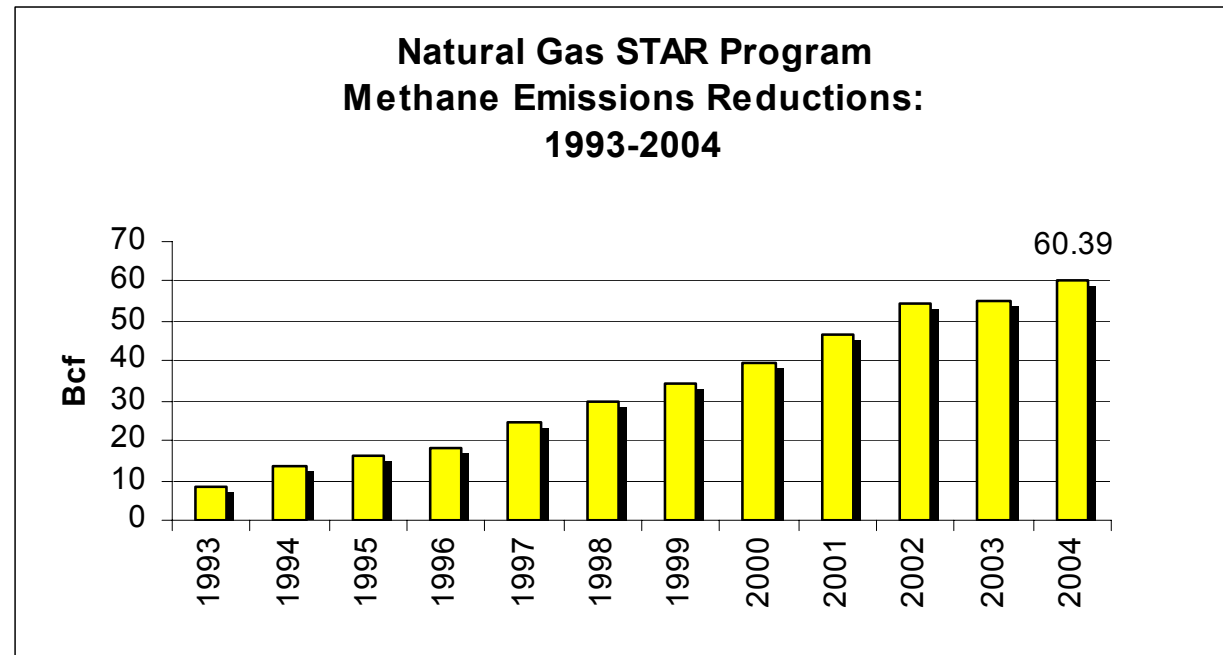
Gas STAR Partners & Endorsers

- 🔥 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)

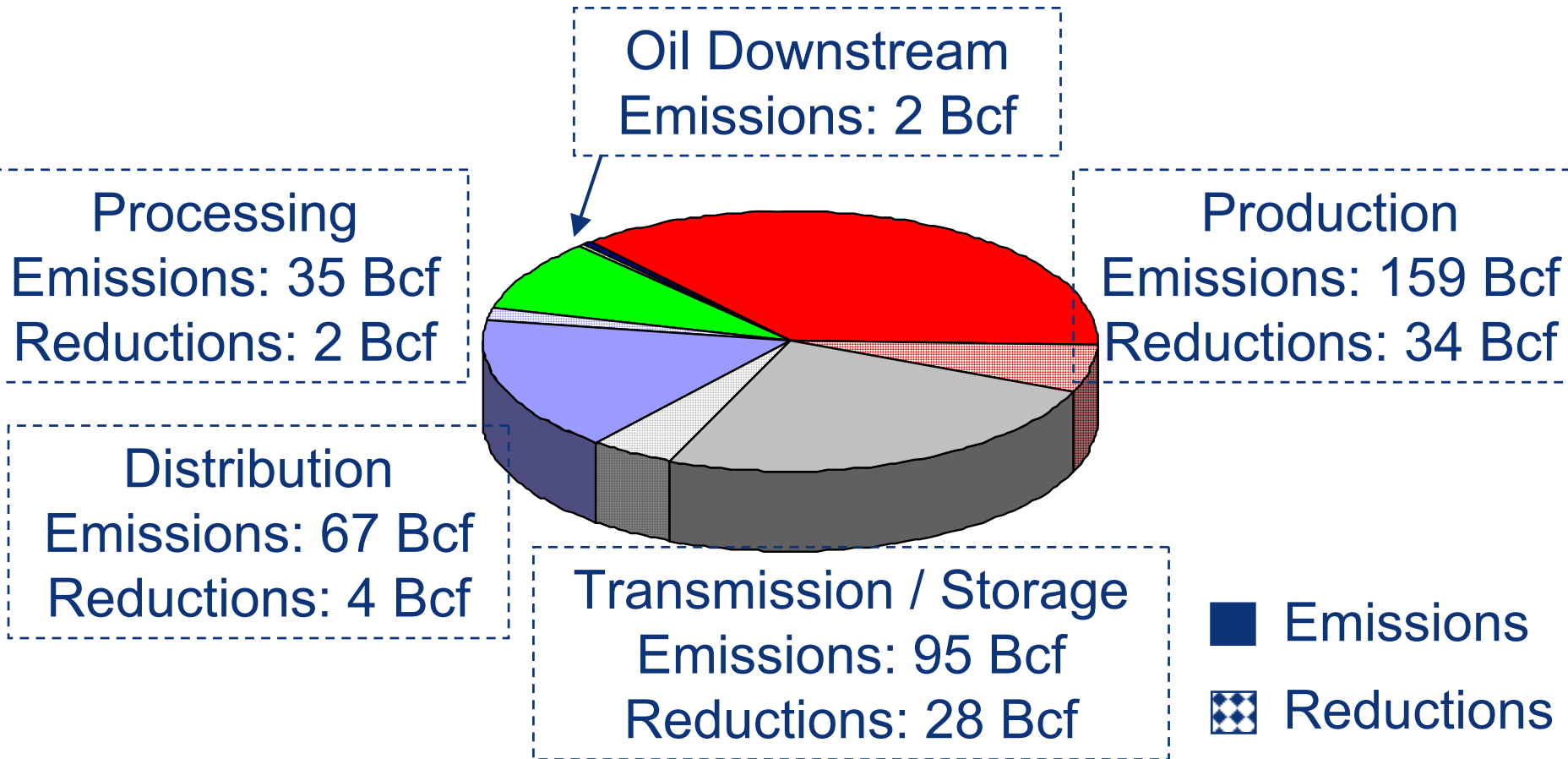
Natural Gas STAR Partner Accomplishments

🔥 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
- 🔥 Technology Transfer workshops
- 🔥 Free and open to the public
- 🔥 Annual record of Partner methane savings
- 🔥 One-on-one technical assistance



The screenshot displays three 'PRO Fact Sheet' cards from the GasStar program. Each card includes a title, applicable sectors, a description of the technology, and a list of partner companies. The 'Convert Engine Starting to Nitrogen' card also features a 'Methane Savings' table and a 'Benefits' section.

Category	Value
Methane Savings (including installation)	~\$100K - \$150K
Operating and Maintenance Costs (annual)	~\$10K - \$15K
Payback (Years)	1-1 to 1-3

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
 - 🔥 **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

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