

EPA Natural Gas STAR Program Accomplishments

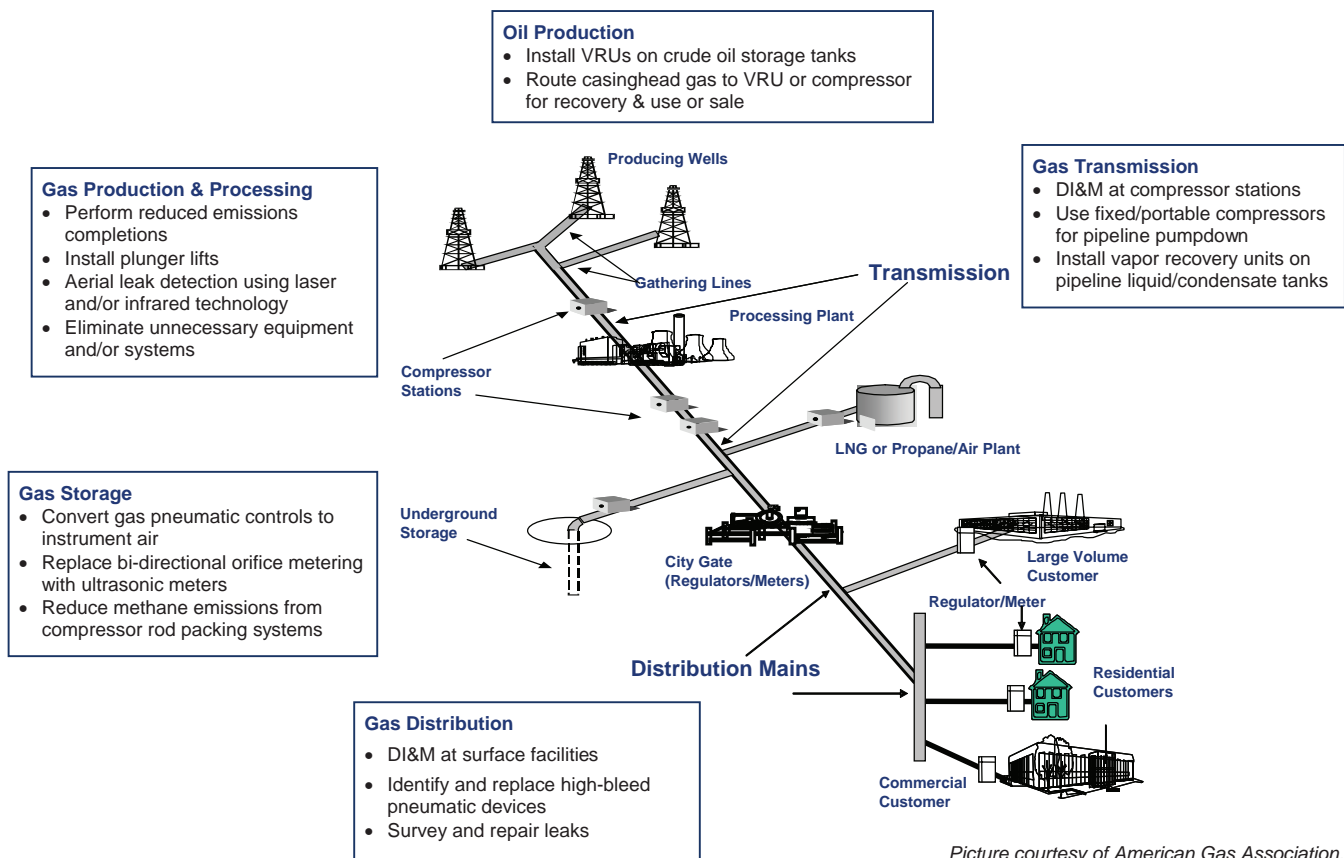
Introduction

Established in 1993, the Natural Gas STAR Program is a flexible, voluntary partnership that encourages oil and natural gas companies—both domestically and internationally—to adopt proven, cost-effective technologies and practices that improve operational efficiency and reduce methane emissions. Given that methane is the primary component of natural gas and is a potent greenhouse gas—23 times more powerful than carbon dioxide (CO₂) in trapping heat in the atmosphere over a 100-year period—reducing these emissions can result in environmental, economic, and operational benefits.

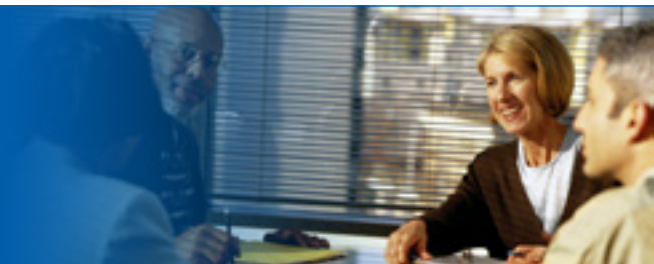


Natural Gas STAR industry partners have operations in all of the major industry sectors—production, gathering and processing, transmission, and distribution—and represent 60 percent of the natural gas industry in the United States, including 19 of the top 25 natural gas production companies. Also, with the launch of Natural Gas STAR International in 2006, the Program expanded to include companies worldwide, significantly increasing opportunities to reduce methane emissions from oil and natural gas operations. Today, the Program has more than 130 partner companies and is endorsed by 20 major industry trade associations.

This document highlights the methane emissions reductions Natural Gas STAR partners have achieved to date under this important voluntary partnership program. It also highlights a variety of technologies and practices implemented by partners to reduce methane emissions. The following diagram shows some of the top methane emission reduction opportunities for each sector.



Picture courtesy of American Gas Association.



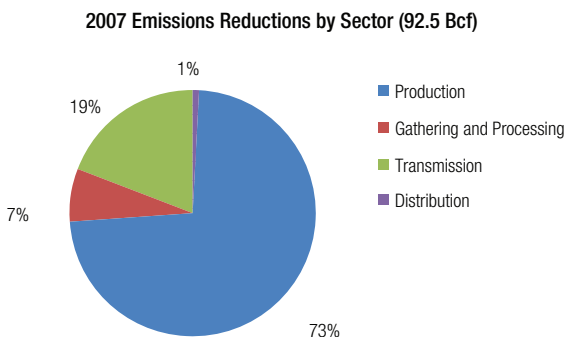
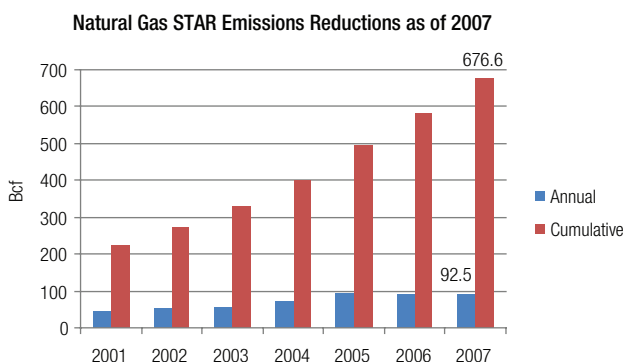
2007: Continuing Excellence

Now in its 15th year, the Natural Gas STAR Program continues to achieve success through its partnerships with the oil and natural gas industry. Since 1993, the oil and natural gas industry has eliminated nearly 677 billion cubic feet (Bcf) of domestic methane emissions through the implementation of more than 120 cost-effective technologies and practices.

For calendar year 2007, Natural Gas STAR partners reported domestic emissions reductions of approximately 92.5 Bcf. These emissions reductions, voluntarily undertaken by Natural Gas STAR partner companies, have cross-cutting benefits on domestic energy supply, industrial efficiency, revenue generation, and greenhouse gas emissions reductions.

The 2007 voluntary domestic emissions reductions are equivalent to:

- The additional revenue of nearly \$648 million in natural gas sales (assumes 2007 average natural gas price of \$7.00 per thousand cubic feet).
- The avoidance of 37.4 million tonnes CO₂ equivalent.
- The CO₂ emissions from the electricity use of nearly 5 million homes per year.
- The annual greenhouse gas emissions from approximately 6.8 million passenger vehicles.
- The carbon sequestered annually by 8.5 million acres of pine or fir forests.



Technology Transfer Activities

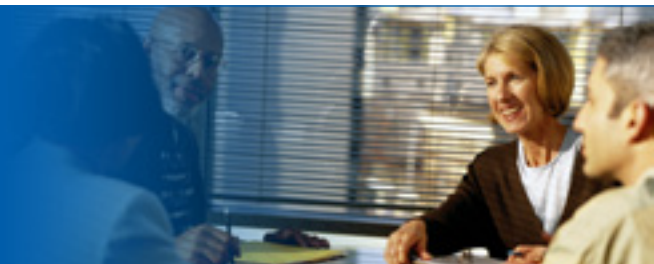
Natural Gas STAR methane emission reducing technologies and practices have become widely implemented by partners as a result of technology transfer and sharing partner experiences across the industry. This is achieved through Natural Gas STAR technical documents, technology articles in the quarterly newsletter, and partner sponsored Technology Transfer Workshops and Webcasts.

In 2008, Natural Gas STAR held five domestic Technology Transfer Workshops and is organizing an international Technology Transfer Workshop on the topic of flaring and venting planned for December 2008 in Amsterdam. Additionally, there was one Webcast addressing methane emission reduction opportunities from the distribution sector on July 16, 2008, with a similar Webcast planned for the transmission sector in October 2008.

Domestic workshops covered much of the oil and natural gas producing regions, with events in Colorado, Louisiana, North Carolina, Texas, and

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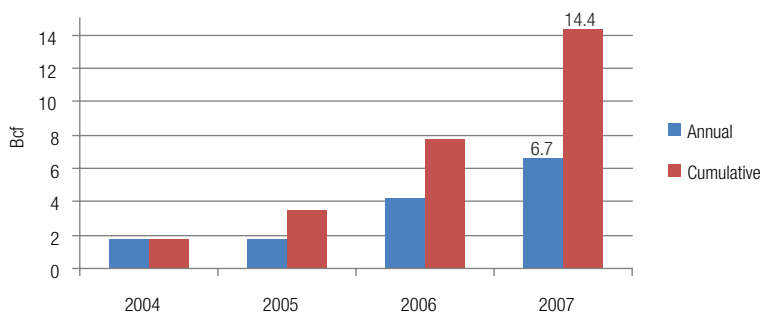
Natural Gas STAR International

In addition to the growth experienced under the domestic Program since 1993, international progress is also being made in reducing methane emissions under Natural Gas STAR International. The Natural Gas STAR International Program requirements mirror that of the domestic Natural Gas STAR Program, and membership is open to all oil and natural gas companies worldwide. This was the first year that international partners submitted Annual Reports to the Program. For 2007, Natural Gas STAR International partners reported nearly 6.7 Bcf in emissions reductions and a total of 14.4 Bcf since the inception of the Natural Gas STAR International Program.

The 2007 voluntary international emissions reductions are equivalent to:

- The additional revenue of nearly \$47 million in natural gas sales (assumes 2007 natural gas price of \$7.00 per thousand cubic feet).
- The avoidance of 2.7 million tons CO₂ equivalent.
- The CO₂ emissions from the electricity use of nearly 360,000 homes per year.
- The annual greenhouse gas emissions from nearly 500,000 passenger vehicles.
- The carbon sequestered annually by 615,000 acres of pine or fir forests.

International Natural Gas STAR Emissions Reductions as of 2007



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Wyoming. Co-sponsored by industry partners, these workshops provide an opportunity for participants to engage in a peer-based exchange of technical and economic information related to cost-effective methane emission reduction technologies and practices and other best practices. More information on these workshops can be found on the Natural Gas STAR Web site at epa.gov/gasstar/workshops/index.html.

Thanks to our Technology Transfer Workshop Sponsors:

American Gas Association
Chevron Corporation
EnCana Oil & Gas
Independent Petroleum Association of Mountain States
Marathon Oil Company
New Mexico Oil & Gas Association
Petroleum Association of Wyoming
Shell Exploration & Production Company
Southern Gas Association
Texas Oil & Gas Association





New Tools and Resources

In recent years, Natural Gas STAR has introduced several new tools and resources to further the goals of identifying, analyzing, and promoting methane emission reduction activities in the oil and natural gas industry.

The Natural Gas STAR Web Site - All New!

In addition to developing new tools and resources, this past year the Natural Gas STAR Program redesigned its entire Web site. As part of this redesign, all of the Gas STAR Web pages have been revised, reformatted, and “refreshed” to include the most up to date information in an informative and user-friendly way.

To learn more about the redesigned Web site, please visit epa.gov/gasstar.

Nodal Analysis Tool

This tool allows policy makers, project developers, project financiers, environmental professionals, and others in the oil and natural gas industry to explore information on all facets of the oil and natural gas production process. Users can learn how aspects of the oil and natural gas industry and their associated processes interrelate, drill down to detailed diagrams of the supply chain, and find current best practices, guidance documents, and technologies to reduce methane emissions. Each node includes a built-in glossary of key terminology and control technology information on ways to reduce methane emissions. Users can also upload information about their projects to engage others.

To learn more about the Nodal Analysis Tool, please visit www.gastool.methanetomarkets.org/m2mtool/index.html.

Partner Challenge Service

The goal of the Natural Gas STAR Partner Challenge service is to assist partner companies in identifying and implementing new methane emission reduction opportunities by developing estimates of a partner’s methane emissions, identifying key emission sources, and proposing economically and environmentally beneficial mitigation activities. The end product is a detailed report that quantifies methane emissions volumes by source and provides detailed economic emissions analyses for implementing targeted emission reduction opportunities.

To learn more about the Partner Challenge Service, please visit epa.gov/gasstar/tools/partner-challenge.html.

STARtracker Software

Devon Energy Corporation, in collaboration with COMM Engineering and Louisiana State University, developed STARtracker, a Web-based application for tracking and reporting methane emissions reductions. The application, to be hosted on individual companies’ Web servers, allows users to set up the tool to reflect their operations in order to track and catalog methane emissions reductions across their company.

To learn more about the STARtracker Software, please visit epa.gov/gasstar/tools/star-tracker.html.

Emissions Reduction Quantification Reference Guide

In order to help Natural Gas STAR partners and other stakeholders better quantify emissions reductions achieved through participation in the Program, EPA has developed a new reference guide to provide assistance in quantifying the methane emissions reductions achieved by a particular technology or practice.

To learn more about the Emissions Reduction Quantification Reference Guide, please visit epa.gov/gasstar/tools/index.html#technical.

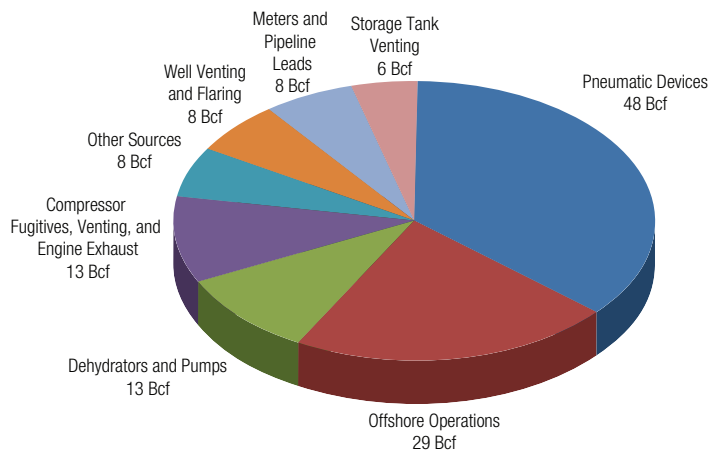


Emissions Reductions by Sector

The following section illustrates the major sources of methane emissions from each industry sector and the technologies and practices implemented by partners to reduce methane emissions. The information showing the breakdown of emission sources was taken from the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks, and the information showing Natural Gas STAR partner activities, was taken from partner reports and Natural Gas STAR historical data.

Production Sector Accomplishments

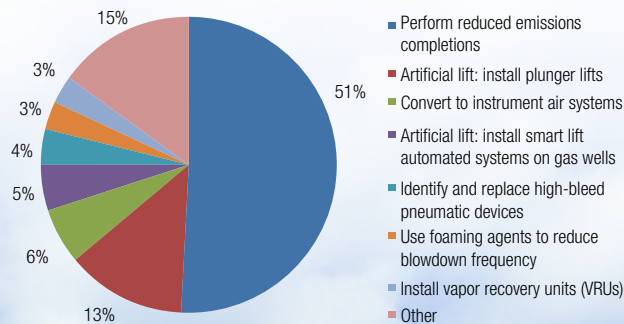
Production Sector
Top Emission Sources in 2006



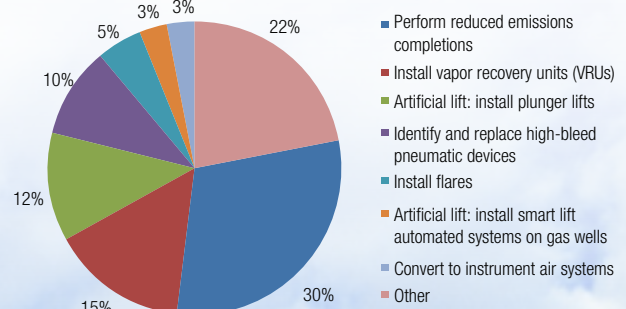
Source: EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2006, April 2008

Production partners reported approximately 67.1 Bcf of methane emissions reductions in 2007—and a total of 416.5 Bcf since 1990. The technologies and practices employed by production sector partners include:

Top Technologies in 2007
Total Sector Reductions in 2007 = 67.1 Bcf



Top Technologies Since 1990
Cumulative Sector Reductions = 416.5 Bcf

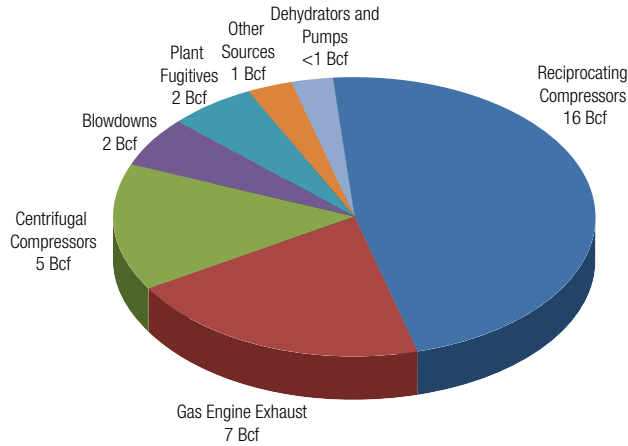




Gathering and Processing Sector Accomplishments

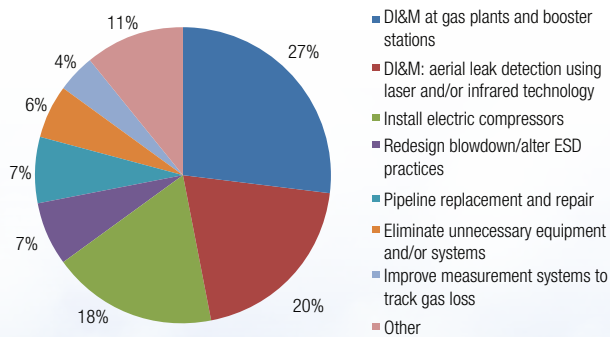
Gathering and Processing Sector Top Emission Sources in 2006

Source: EPA Inventory of U.S.
Greenhouse Gas Emissions and
Sinks 1990-2006, April 2008

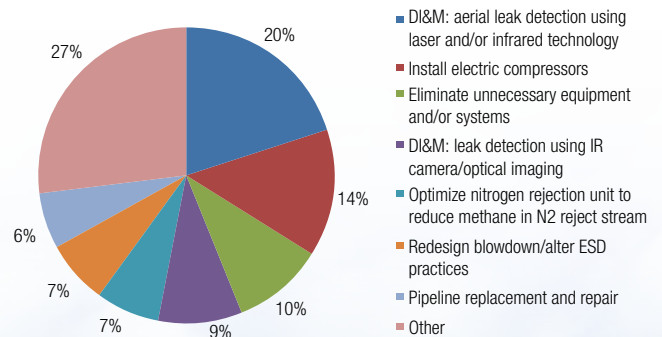


Gathering and processing partners reported 6.5 Bcf of methane emissions reductions in 2007—and a total of 34.3 Bcf since 1990. The technologies and practices employed by gathering and processing sector partners include:

Top Technologies in 2007 Total Sector Reductions in 2007 = 6.5 Bcf



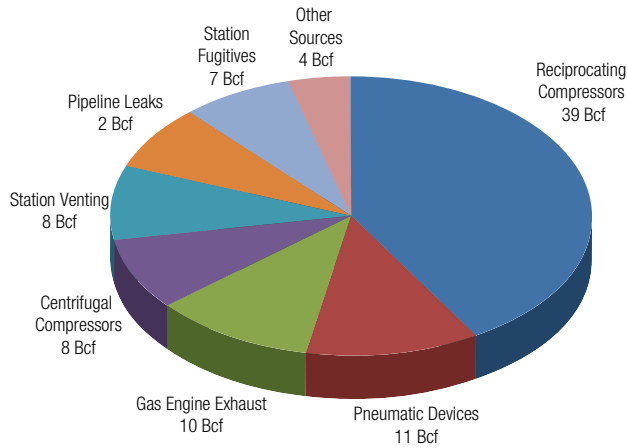
Top Technologies Since 1990 Cumulative Sector Reductions = 34.3 Bcf





Transmission Sector Accomplishments

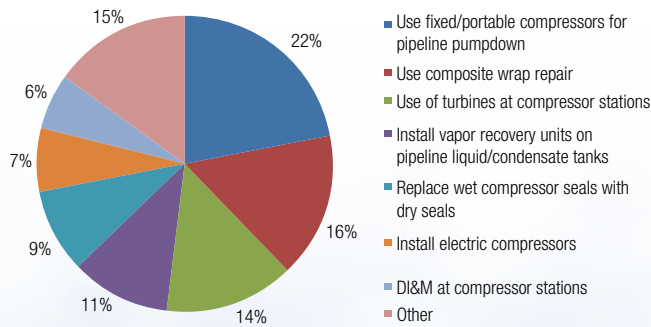
Transmission Sector
Top Emission Sources in 2006



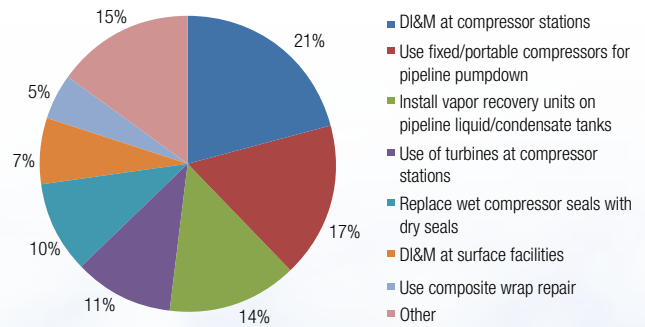
Source: EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2006, April 2008

Transmission partners reported 17.7 Bcf of methane emissions reductions in 2007—and a total of 195.1 Bcf since 1993. The technologies and practices employed by transmission sector partners include:

Top Technologies in 2007
Total Sector Reductions in 2007 = 17.7 Bcf



Top Technologies Since 1993
Cumulative Sector Reductions = 195.1 Bcf

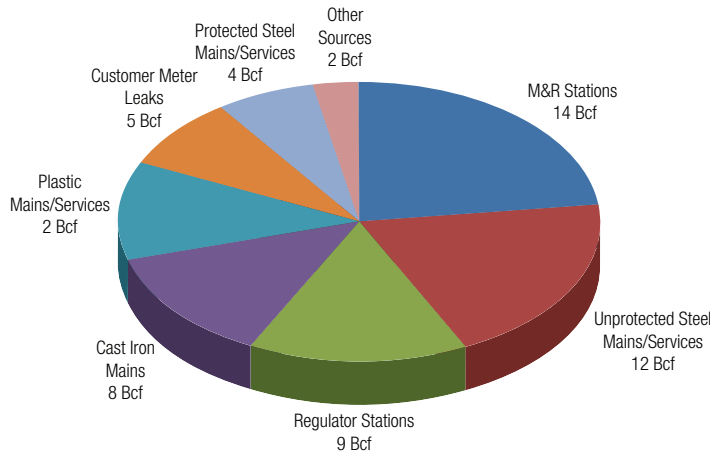




Distribution Sector Accomplishments

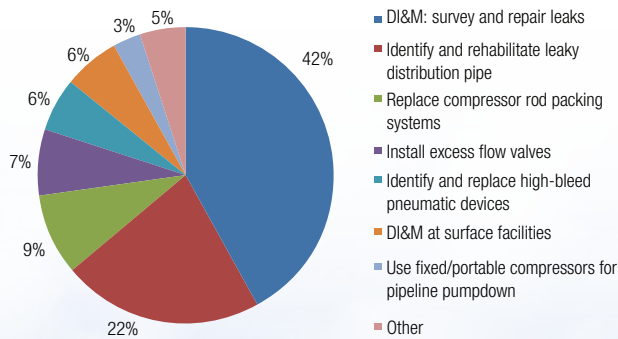
Distribution Sector
Top Emission Sources in 2006

Source: EPA Inventory of U.S.
Greenhouse Gas Emissions and
Sinks 1990-2006, April 2008

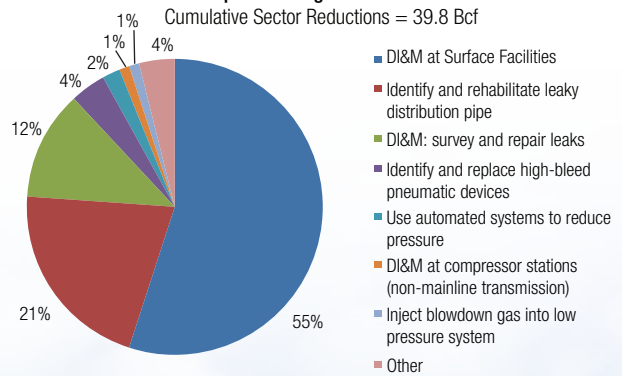


Distribution partners reported 1.5 Bcf of methane emissions reductions in 2007—and a total of approximately 39.8 Bcf since 1993. The technologies and practices employed by distribution sector partners include:

Top Technologies in 2007
Total Sector Reductions in 2007 = 1.5 Bcf



Top Technologies Since 1993
Cumulative Sector Reductions = 39.8 Bcf





Natural Gas STAR Partners and Endorsers

Production

Anadarko Petroleum Corporation
Apache Corporation
BP
Chesapeake Energy
Chevron Corporation
ConocoPhillips Alaska Natural Gas Corporation
ConocoPhillips Petroleum Company
Devon Energy
El Paso E & P Company, L.P.
EnCana Oil & Gas (USA) Inc.
Erogen Resources
ExxonMobil Production Company
Hess Corporation's Americas Exploration and Production
Hunt Oil Company
Linn Energy, LLC
Marathon Oil Company
Murphy Exploration and Production Company
Newfield Exploration Company
Noble Energy, Inc.
Occidental Oil and Gas Corporation
Quicksilver Resources
SandRidge Energy
Shell Exploration & Production Company
Southwestern Energy Company
Torch Energy
Total E&P USA
Venoco Inc.
Williams Production RMT Company
XTO Energy

Gathering and Processing

BP
Chevron Corporation
ConocoPhillips
DCP Midstream
Enbridge Energy Partners, L.P.
Enogex LLC
ExxonMobil Production Company
ONEOK Partners
Pioneer Natural Resources USA, Inc.
ROC Gas Company (a wholly owned subsidiary of SandRidge Energy)
Targa Resources, Inc.
Western Gas Resources (a wholly owned subsidiary of Anadarko Petroleum Corporation)

Transmission

Alliance Pipeline LP
ANR Pipeline Company (a TransCanada Company)
Carolina Gas Transmission (a SCANA Corporation Company)

Colorado Interstate Gas Company (An El Paso Transmission Company)
Columbia Gas Transmission Corporation (a NiSource Transmission Company)
Columbia Gulf Transmission Company (a NiSource Transmission Company)
Consumers Energy
DTE Energy - MichCon
El Paso Natural Gas Company
Enbridge, Inc.
Florida Gas Transmission (a Southern Union Gas company)
Granite State Gas Transmission, Inc. (a NiSource Transmission Company)
Great Lakes Gas Transmission Company
Gulf South Pipeline
Iroquois Gas Transmission System
Kinder Morgan
Northern Natural Gas
ONEOK Partners
Pacific Gas and Electric Company
Panhandle Eastern Pipeline (a Southern Union Gas company)
Piedmont Natural Gas
Public Service Company of New Mexico
Questar Pipeline Company
Sea Robin Pipeline (a Southern Union Gas company)
Source Gas LLC
Southern California Gas Company
Southern Natural Gas Company (An El Paso Transmission Company)
Spectra Energy Transmission
Tennessee Gas Pipeline Company (An El Paso Transmission Company)
Transcanada - Gas Transmission Northwest
Trunkline Gas (a Southern Union Gas company)
Williams Gas Pipeline
Williston Basin Interstate Pipeline Company

Distribution

AGL Resources
Alliant Energy
Aquila Networks
Atmos Energy Corporation
Bay State Gas Company (a NiSource Distribution Company)
Berkshire Gas
CenterPoint Energy Arkla/Entex
CenterPoint Energy Minnesota Gas
Central Hudson Gas & Electric Corporation
Citizens Gas and Coke Utility
Columbia Gas of Kentucky, Inc. (a NiSource Distribution Company)
Columbia Gas of Maryland, Inc. (a NiSource Distribution Company)
Columbia Gas of Ohio, Inc. (a NiSource Distribution Company)
Columbia Gas of Pennsylvania, Inc. (a NiSource Distribution Company)
Columbia Gas of Virginia, Inc. (a NiSource Distribution Company)
Connecticut Natural Gas Corporation
Consolidated Edison Company of New York, Inc.
Constellation Energy/Baltimore Gas and Electric Company
Consumers Energy
Corning Natural Gas Corporation
Delmarva Power
DTE Energy - MichCon
Duke Energy Ohio/Kentucky
Equitable Gas Co.
Kansas Gas Services (a ONEOK Distribution Company)
KeySpan Energy Delivery (a National Grid Company)
Kinder Morgan
Kokomo Gas and Fuel Company (a NiSource Distribution Company)
Laclede Gas Co.
Maine Natural Gas
National Grid
New Jersey Natural Gas Company
New York State Electric & Gas Corporation
Nicor Gas
Northern Indiana Fuel & Light Co. (a NiSource Distribution Company)
Northern Indiana Public Service Company (a NiSource Distribution Company)
Northern Utilities (a NiSource Distribution Company)
Oklahoma Natural Gas (a ONEOK Distribution Company)
Orange and Rockland Utilities, Inc.
Pacific Gas and Electric Company
PECO Energy Company
Piedmont Natural Gas
PSNC Energy
Public Service Company of New Mexico
Public Service Electric and Gas Company
Puget Sound Energy
Questar Gas Co.
Rochester Gas & Electric Corporation
Source Gas LLC
South Carolina Electric & Gas Company (a SCANA Corporation Company)
Southern California Gas Company
Southern Connecticut Gas Company
Southwest Gas Corporation

Texas Gas Services (a ONEOK Distribution Company)
UGI Utilities, Inc.
Washington Gas
Wisconsin Public Service Company
Xcel Energy

International

Comgas
ConocoPhillips Canada Ltd.
Devon Energy Corporation
Enbridge, Inc.
ExxonMobil Corporation
Marathon Oil Corporation
Occidental Oil and Gas Corporation
Oil and Natural Gas Corporation Ltd. (ONGC)
Transcanada

Endorsers

The Air & Waste Management Association (AWMA)
American Exploration & Production Council
American Gas Association (AGA)
American Institute of Chemical Engineers (AIChE) Institute for Sustainability
American Petroleum Institute (API)
Colorado Oil and Gas Association (COGA)
Gas Processors Association (GPA)
Gulf Coast Environmental Affairs Group (GCEAG)
Independent Petroleum Association of America (IPAA)
Independent Petroleum Association of Mountain States (IPAMS)
Interstate Natural Gas Association of America (INGAA)
Interstate Oil & Gas Compact Commission (IOGCC)
Montana Petroleum Association (MPA)
Natural Gas Supply Association (NGSA)
New York State Energy Research and Development Authority (NYSERDA)
Northeast Gas Association (NGA)
Petroleum Association of Wyoming (PAW)
Petroleum Technology Transfer Council
Southern Gas Association (SGA)
Texas Alliance of Energy Producers