



Partner Profile

ConocoPhillips Makes New Commitment to Natural Gas STAR

On October 23, 2006, ConocoPhillips Petroleum Company signed a new Memorandum of Understanding, renewing its commitment to reducing methane emissions through participation in EPA's Natural Gas STAR Program. The new commitment applies to ConocoPhillips'



- ★ Establish a core team to set goals and evaluate technologies.
- ★ Focus efforts on expanding use of the FLIR camera.

Since joining Gas STAR in 2000, ConocoPhillips has reduced more than 1 billion cubic feet (Bcf) of methane emissions from its production and processing operations. The company plans to build on this success by evaluating new technologies, partner reported opportunities (PROs), and best management practices (BMPs) to further reduce fugitive emissions of methane.

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"Upstream Lower 48 Business Unit" (operating in the contiguous United States) and underscores the company's commitment to cost-effectively reducing methane emissions. As part of this effort, ConocoPhillips plans to

**Gas STAR Reporting Season Kicks Off
—2006 Annual Reports Are Due April 30th
(more information on page 7)**

Upcoming Methane to Markets Workshops

Methane to Markets Oil and Gas Subcommittee Meeting

Date: April 30-May 2, 2007

Location: The Marcliffe Hotel
Aberdeen, Scotland

Hosted By: U.K. Department of Trade and Industry and Methane to Markets Partnership

The Methane to Markets Administrative Support Group is pleased to announce the next Oil and Gas Subcommittee meeting will be held on Tuesday, May 1, 2007, in Aberdeen, Scotland. We are very grateful to the U.K. Department of Trade and Industry for hosting this meeting.

In addition to the meeting, we are tentatively planning a site-seeing tour during the day on Monday, April 30 and holding a welcoming reception that evening. The meeting will run all day on Tuesday. We are also in the process of

Methane to Markets Partnership Expo

October 30 – November 1, 2007
Beijing, China

The Methane to Markets Partnership Expo (the Expo) is the premier international forum for promoting methane recovery and use project opportunities and technologies. This event will also provide the opportunity to meet with project financiers, learn about new technologies, and explore technical, policy, and financial issues. The Expo's technical program will include four sector-specific tracks on methane capture and use technologies, policy issues and discussions on the key barriers to project development and how to overcome them. The Expo's comprehensive program will also feature panels and presentations highlighting methane recovery and use projects ripe for immediate financing or implementation, training sessions for site managers and other interested parties on project implementation and finance, and policy forums geared to high-level decision makers.

For additional inquiries about the Expo or sponsorship opportunities, please visit methanetomarkets.org/expo.

scheduling a tour of the BP Terminals in Kinneil and Dalmeny (near Edinburgh) on Wednesday, May 2.

The preliminary agenda, logistical/hotel information and registration form

are now available on the Methane to Markets Web site: methanetomarkets.org/events/index.htm.

We hope you will be able to join us in Aberdeen for this important meeting!

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Technology Spotlight

Chevron Initiates New Infrared Camera Implementation



Information presented at recent Natural Gas STAR workshops directly influenced Chevron's decision to implement gas imaging infrared camera technology at several of its processing facilities. Chevron personnel learned about Leak Surveys Inc.'s (LSI), the "HAWK," a gas imaging infrared camera, while attending the Natural Gas STAR Producers Technology Transfer Workshop in Hobbs, New Mexico, in July 2006. Peter Botes, a Chevron team member, recognized that this technology "ties into so many things [for Chevron]; it goes hand-in-hand with greenhouse gas emissions reductions since reducing methane emissions from oil and gas production equipment is one of the key pieces in Chevron's overall corporate strategy."

The Technology Transfer workshop introduced gas imaging—video recording of fugitive leaks found by an infrared camera—as a technique for leak identification. Fugitive losses can be dramatically reduced by implementing a Directed Inspection and Maintenance (DI&M) program, and infrared detection is one of the most effective screening and measurement techniques for identifying leaks.

Intrigued by the information about the LSI "HAWK" camera, the Chevron team conducted more research into the use of gas imaging infrared cameras and found that several environmental agencies, including the Texas Commission on Environmental Quality and U.S. Environmental Protection Agency use similar cameras to identify various emis-



sions. A Natural Gas STAR partner since 1995, Chevron decided to investigate the feasibility of purchasing its own camera or hiring a third party to conduct facility inspections to identify gas leaks. Chevron has been using infrared technology for thermal imaging in local operations in California since the late 1990s. The California operations use infrared technology to pinpoint areas on electrical equipment where maintenance or repairs are needed and to identify temperature hot spots on other types of equipment. Chevron is also using infrared cameras in refineries and at offshore facilities, but at the time of the Midland workshop, there were no infrared cameras in use at upstream or overseas facilities.

Chevron recently completed a one-week pilot test of the "HAWK" camera to identify leaks in its processing facilities and to obtain flow sample data. During the one-week pilot test, a team consisting of Chevron and LSI personnel surveyed two gas plants, one com-

EPA's New Emission Reduction Quantification Reference Guide

In order to help Gas STAR partners better quantify emission reductions achieved through participation in the Program, EPA has developed a new reference guide to provide assistance in quantifying the methane emission reductions achieved by a particular technology or practice. Where applicable, the Emission Reduction Quantification Reference Guide provides viable calculation methodology options for direct measurement, engineering calculation, and/or emission factors for Gas STAR recommended technologies and practices. EPA hopes that this information will be useful to partners when tracking and reporting emissions reductions achieved through Gas STAR activities and welcomes feedback on this document. The Emission Reduction Quantification Reference Guide is available under the Forms section of the Documents, Tools and Resources section of the Natural Gas STAR Web site at epa.gov/gasstar/resources/forms.htm.

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Technology Spotlight

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pressor station, one carbon dioxide recompression and re-injection facility, and numerous oil and gas tank batteries at sites located throughout Texas, including facilities in the Permian Basin, Andrews, Odessa, Midland, Big Spring, Seminole, and Lamesa.

Chevron personnel identified many uses for the “HAWK” gas imaging camera in addition to identifying methane leaks. Additional uses for the “HAWK” camera include:

- ★ Helping operating personnel visualize methane releases and allowing them to see where gas buildup is occurring in enclosed areas, emphasizing the importance of



keeping compressor buildings well-ventilated.

- ★ Identifying issues to address that could be overlooked before a shutdown, such as leaks that had not been identified or whose source was incorrectly identified.
- ★ Identifying leaking pressure reducing valves, other valves, compressors, and flanges.
- ★ Allowing more efficient and effective shutdown, which in the long term could lead to improved planning.
- ★ Determining the success of repairs made during a shutdown.
- ★ Preventing fluid spills by identifying leaks from small cracks or gaps before they worsen, resulting in a spill.

The use of infrared cameras might go beyond identifying faulty equipment and eventually influence plans for new construction by helping to develop new specifications or best practices. New technologies are continually being instituted, but they are often used in conjunction with old equipment, such as valves and hatches. The results from the “HAWK” camera survey could result in additional funds for new facility construction, which could significantly reduce methane emissions.

LSI is currently processing flow data from Chevron’s pilot test to identify Chevron’s potential savings from using the “HAWK” camera in its facilities. The flow sample data will allow Chevron to identify potential cost savings from reducing lost revenue through leaks and inefficient equipment and processes. Flow data from the pilot period will be provided for each location and will be organized by leak size to prioritize

which leaks Chevron personnel will address first. Chevron is currently planning a survey for one of its overseas platform sites to determine whether an infrared gas imaging camera in that location would be beneficial.

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Partner Profile

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With the 2006 acquisition of Burlington Resources, which more than doubled the size of ConocoPhillips Lower 48 operations, the company is excited about additional opportunities to protect the environment and save money through participation in the Natural Gas STAR Program. The Lower 48 Business Unit is divided into three regions that focus on production and processing operations. Because of the size and geographic area of the Lower 48 Business Unit, ConocoPhillips is planning a programmatic approach to its Gas STAR efforts. As a first step, the company is establishing a core team of operations engineers who have a strong working knowledge of the company's production and processing activities and technologies. This core team will establish goals and determine how the unit can make the best use of Gas STAR's resources and knowledge base. Once the team sets goals, it will assess potential methane emission reduction technologies and practices and compare them against the com-

pany's asset base to identify and prioritize cost-effective methane emission reduction projects.

ConocoPhillips also plans to learn from best practices developed by Burlington Resources, which saved more than 14 Bcf in methane emissions as a Gas STAR partner through cost-effective technologies and practices. As an example, the Lower 48 Business Unit has made it a goal in 2007 to expand its use of the FLIR camera, a technology that was used extensively by Burlington Resources in its Canadian operations to detect methane emission sources. The FLIR camera allows a user to spot methane and other volatile organic compound gas leaks quickly and easily. The camera is capable of rapidly scanning large areas at processing facilities and even miles of pipeline, delivering real-time images of gas leaks. Gas leaks appear as "black smoke" onscreen, allowing the user to quickly identify problem areas.

In 2007, the company plans to initiate FLIR camera efforts at its gas plants and other large processing facilities and then expand further out into the field by evaluating pipelines and ultimately individual well heads. In 2007, ConocoPhillips Lower 48 Gas STAR

support personnel plan to visit all of the Lower 48 Business Unit's gas plants to demonstrate the benefits of the FLIR camera and garner support for Gas STAR activities.

ConocoPhillips Lower 48 Business Unit sees its renewed commitment to Gas STAR as an environmentally friendly, money-saving opportunity. Additionally, participation in Gas STAR gives ConocoPhillips an opportunity to fulfill four of the company's nine Sustainable Development commitments, which include:

- ★ Operating to the highest safety standard.
- ★ Positively impacting communities where the company operates.
- ★ Minimizing the environmental impact of the company's operations.
- ★ Improving the energy and material efficiency of the company's operations.

In the coming year, ConocoPhillips hopes to gain support for the Program, so that in the future, cost-effective methane emission reduction technologies and practices will become part of the company's standard operating procedures.



Technology Spotlight

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Chevron tentatively plans to purchase the infrared gas imaging cameras in the second financial quarter, with implementation in the third quarter. The timeline for implementation depends on many factors such as funding approvals and staff availability. Chevron is committed to buying at least one infrared gas imaging camera for its Midland, Texas, operations and is excited about finding many ways to use the camera. As the natural gas industry gains more experience with the camera and considers its

potential, the industry might find additional uses, and Natural Gas STAR partners will reduce even more methane emissions.

For more information on infrared gas imaging, see the Natural Gas STAR presentations listed under the "Other" equipment section, "Directed Inspection and Maintenance with Optical Imaging," available at epa.gov/gasstar/techprac.htm. U.S. EPA's Natural Gas STAR: Directed Inspection and

Maintenance (DI&M) Using Infrared Laser Detection video is available on the Natural Gas STAR Web site, located at epa.gov/gasstar. Fugitive losses can be dramatically reduced by implementing a DI&M program, and infrared detection is one of the most effective screening and measurement techniques for identifying leaks.

To learn more about Chevron's environmental philosophy visit chevron.com/social_responsibility/environment.

Calendar 2007 UPCOMING EVENTS

2007 GAS STAR TECHNOLOGY TRANSFER WORKSHOPS

★ **Processors Technology Transfer Workshop**

April 24, 2007
DCP Midstream
5718 Westheimer Court, Suite 2000
Houston, Texas 77057
Co-sponsored by: DCP Midstream and the Gas Processors Association (GPA)

★ **Producers Technology Transfer Workshop**

May 17, 2007
Hilton
801 University Drive East
College Station, Texas 77840
Sponsored by: Anadarko

★ **Producers Technology Transfer Workshop**

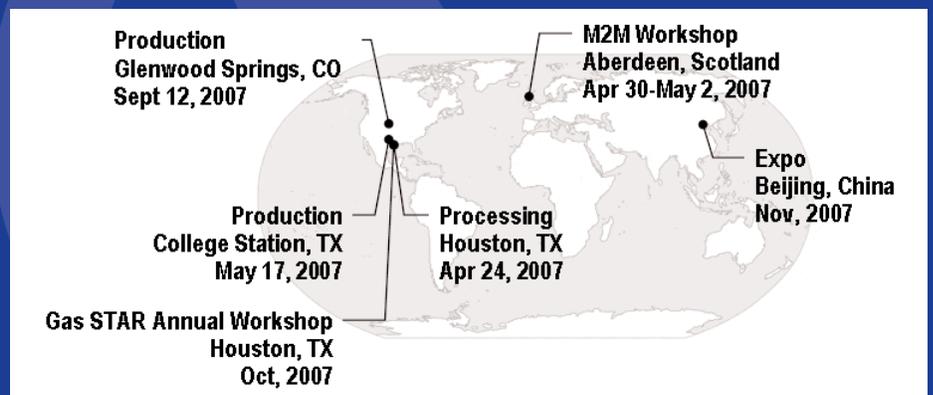
September 12, 2007
Glenwood Springs, Colorado
Sponsored by: Williams

METHANE TO MARKET'S WORKSHOPS

★ **Oil and Gas Subcommittee Meeting**

April 30 – May 2, 2007
The Marcliffe Hotel
Aberdeen, Scotland

Further information and online registration is located at methanetomarkets.org/events/index.htm.



These are events that the Natural Gas STAR Program is currently planning. For updates and further information, please visit epa.gov/gasstar/workshops.htm or contact Carey Bylin at bylin.carey@epa.gov or (202) 343-9669.

Are you a Gas STAR Endorser organization and have an event you would like listed here? If so, please notify Gas STAR.

New Partners

EPA would like to welcome two new partners to the Gas STAR Program.

Laclede Gas Company



Laclede Gas Company is a public utility engaged in the retail distribution of natural gas. The company is the largest natural gas distribution company in Missouri and serves an area in the eastern part of the state with a population of approximately 2 million—including the City of St. Louis, St. Louis County, and parts of eight other counties. As an adjunct to its gas distribution business, the company oper-

ates underground natural gas storage fields and is engaged in the transportation and storage of liquid propane. For more information, please visit the company's Web site at lacledegas.com.

Questar Gas



Questar Gas, a subsidiary of Questar Corporation, provides retail natural gas-distribution service to more than 800,000

customers in Utah, southwestern Wyoming, and a small portion of southeastern Idaho. Questar Gas joins its related transmission company, Questar Pipeline (a Gas STAR partner since 2000), in the Program. Questar Gas is one of the most efficient natural gas utilities in the nation as measured by the ratio of customers to employees. The company that later became Questar Gas began serving customers in 1929. For further information on the company, please visit questargas.com.

Gas STAR Reporting Season Kicks Off— 2006 Annual Reports Are Due April 30th

Every year, Gas STAR announces its annual reporting season—that time is here again. Natural Gas STAR partners will receive annual reporting packages in the mail in mid-March. If you do not receive a reporting packet, please contact EPA or your STAR Service Representative. Partners can find their Representative's name and contact information at epa.gov/gasstar/resources/partnerreps.htm.

Remember, Gas STAR annual reports are due by April 30, 2007. As in past years, partners may submit reports via mail, e-mail, or by using the online reporting forms at epa.gov/gasstar/resources/onlinetools.htm. We look forward to learning about everything our partners accomplished in 2006!



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For additional information on topics in this *Update*, please contact Suzie Young.



Past Workshops

Advancing Project Development in India Through Public Private Partnerships

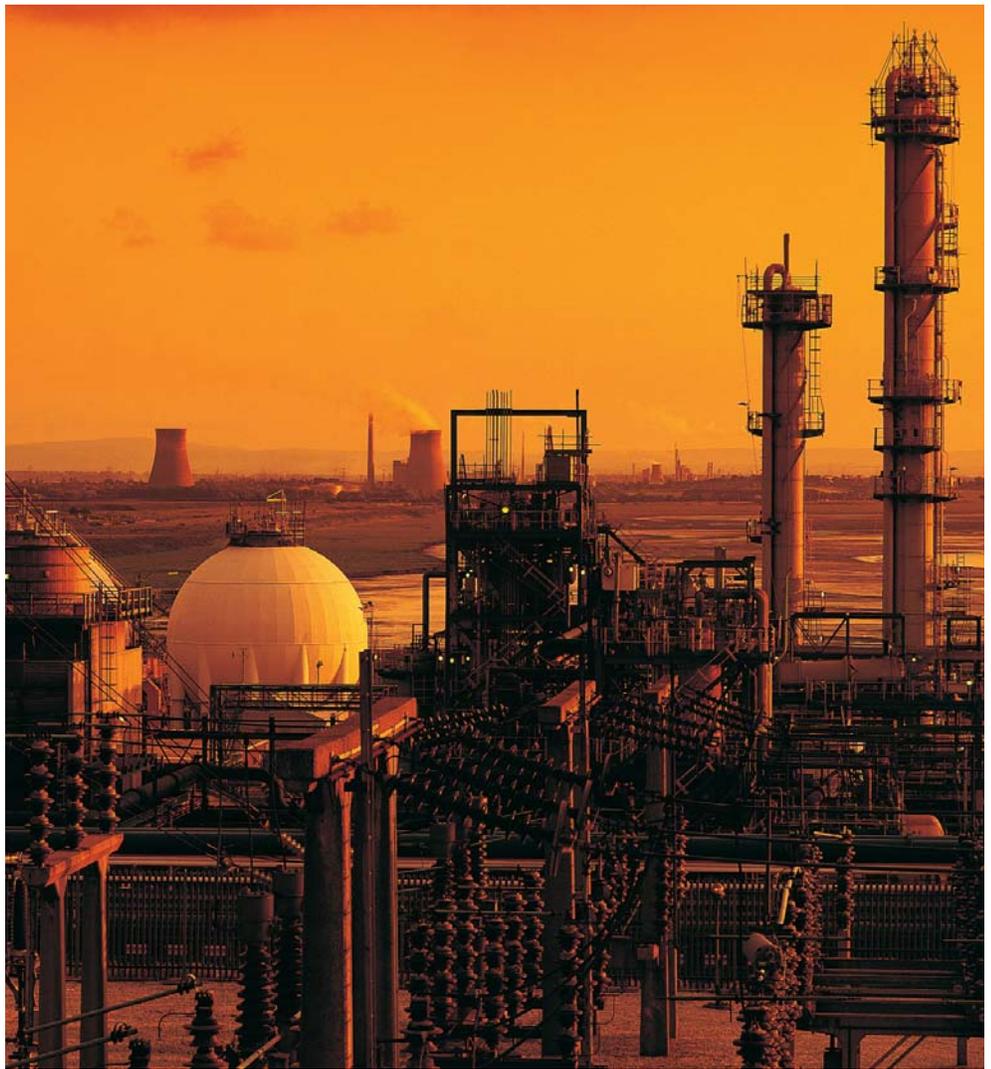
Date: February 22-23, 2007

Location: New Delhi, India

This two-day conference on the Methane to Markets Partnership and methane recovery and use project opportunities in India provided an introduction to the Partnership and specific technical and project level discussions in three industry sectors: coal mining, landfills, and oil and natural gas. The oil and natural gas track included discussions on technologies and practices that can cost-effectively reduce methane emissions and improve energy efficiency in the Indian petroleum and natural gas sector. Natural Gas STAR representatives also took this opportunity to meet directly with Indian oil and gas companies such as ONGC, GAIL, Gujarat State Petroleum Corp., Adani Energy, and Gujarat Gas to discuss opportunities to collaboratively reduce methane emissions. Conference presentations are available online at methanetomarkets.org/events/past.htm.

January 2007 Petroleum Technology Alliance Canada Energy Management Workshop

The meeting titled “The Fuel Gas Challenge—Increasing Revenue Through Fuel Gas Savings and Methane Emissions Reduction” was held on January 16-17, 2007. CETAC-West, Environment Canada, Petroleum Technology Alliance Canada (PTAC),



and the Methane to Markets Partnership sponsored an interactive workshop where plant operators, engineers, and regulators discussed topics such as beneficial technologies and innovations, forward-looking profits from Integrated Audits™, and the impact of regulatory initiatives and government thinking. The workshop provided an opportunity for participants to determine how to increase profits by improving operations efficiency while simultaneously reducing methane emissions. Participants engaged in a peer-based exchange of technical and economic information on practices currently in use. See ptac.org/eet/eetw0701p.html for the final agenda, presentations, and an evaluation summary.

Gas STAR Distributors Technology Transfer Web Cast

A Natural Gas STAR Web cast was held on December 6, 2006. Discussion topics included:

- ★ Directed inspection and maintenance and optical imaging.
- ★ Reducing methane emissions from pneumatic devices and the application of smart regulators/clocking solenoids.
- ★ Partner experiences in methane emission mitigation.

The Web cast presentation is available online at epa.gov/gasstar/pdf/Webcast_presentation.pdf. For more information, please contact Roger Fernandez at fernandez.roger@epa.gov.