PARTNER UPDATE

SPRING 2012

Register Today – 2012 Annual Implementation Workshop

April 10 to 12, 2012
The Westin Denver Downtown/Tabor Center
Denver, Colorado, USA
epa.gov/gasstar/workshops/annualimplementation/2012.html

Join us for the 2012 Natural Gas STAR Annual Implementation Workshop, taking place April 10 to 12, 2012. We are hosting the 2012 workshop in beautiful Denver, Colorado! The meeting will feature an exhibitor area in addition to facility site tours highlighting various methane emissions detection, measurement, and reduction technologies and practices. This workshop will bring together Natural Gas STAR domestic and international Partners, researchers, and industry experts.

Site tours and a roundtable discussion on how the Natural Gas STAR Program can evolve will be held on Tuesday, April 10, followed by an opening reception that evening. Please consider attending the future of Gas STAR roundtable discussion; your input is valued and welcomed! In conjunction with the Annual Workshop, the Global Methane Initiative (GMI) will hold its Oil & Gas Subcommittee meeting immediately following the conclusion of the workshop on Thursday, April 12.

Online registration is **FREE** and now available!

Topics to be covered in this workshop include:

- ★ Best Practices in Reducing Emissions from Hydraulically Fractured Gas Wells
- ★ Panel Session: Innovative Options for Financing Emission Reduction Projects
- ★ EPA Policy Update: Subpart W and NSPS Rule Updates
- ★ Liquids Unloading Options for Natural Gas Wells

Location: The Westin Denver Downtown
The Westin Denver Downtown is steps away from the famed 16th Street pedestrian mall, Denver Center for Performing Arts, Convention Center, and other downtown attractions.

Sponsorship and Exhibit Opportunities
Please download and submit the sponsor/exhibitor form for more information.

Accommodation
We recommend that you book your overnight accommodations with the hotel for the nights of April 10 to 12. Call The Westin at 800-WESTIN1 (800-937-8461) and reference the EPA Natural Gas STAR Workshop to receive the special conference rate of $209 single/double (plus 14.85 percent state and local tax). This rate will be available until March 17, 2012.

NOTE: The optional meals fee for the workshop is $275 and covers the awards luncheon and coffee breaks. Conference updates, information about no-cost exhibitor space, and registration can be found on the Natural Gas STAR website at epa.gov/gasstar/workshops/annualimplementation/2012.html.

Featured Presentation: North Slope Study on Recovering Seal Oil Degassing Emissions from Centrifugal Compressors

BP will be presenting the results of a recent collaborative study with Natural Gas STAR on options for recovering degassing emissions from centrifugal compressor wet seals. The study took place at the company's operations on the North Slope of Alaska. The goal of the study was to characterize key equipment and evaluate methane emissions capture from seal oil degassing recovery systems, so this project can be implemented globally. Key items to be discussed will include: technology description, preliminary results, applicability, benefits, and next steps.

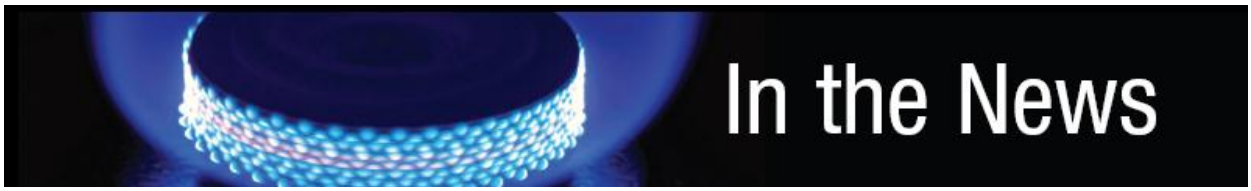
Site Tours
This year's conference will feature optional site tours on Tuesday, April 10 hosted by Xcel Energy (transmission) and Anadarko (production/mid-stream).

Xcel Energy's Marshall Compressor Station contains two natural gas compressor units that move approximately 48,000 million BTU/day of natural gas through Xcel Energy's system. The facility's primary purpose is to meet the growing natural gas requirements of Xcel Energy's Mountain/Southern system. This system consists of approximately 675 miles of high-pressure transmission line, ranging in size from 1.25 to 10 inches in diameter. The system provides service to approximately 46,500 customers that utilize Xcel Energy's natural gas system for sales or transportation service.

Participants will see hands-on demonstrations of infrared cameras and methane emissions measurement instruments and will learn about specific natural gas recovery services.

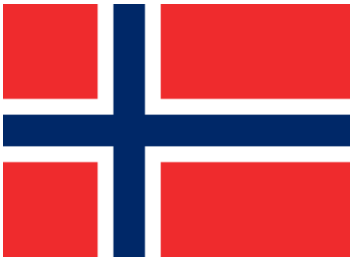
The Anadarko facilities will feature vapor recovery units, low-bleed pneumatic controllers, flares, multi-stage separation equipment and storage tanks, all of which are designed to reduce methane emissions.

Note: Participants on both site tours will be required to bring their own personal protective equipment, including hard hats and eye and ear protection, along with closed-toe shoes, long-sleeve shirts and long pants. Valid government ID will be required.



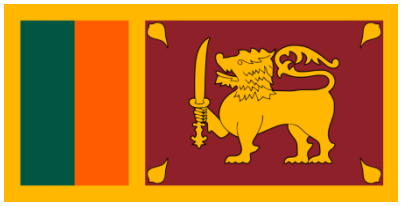
New Global Methane Initiative Member Countries

Norway



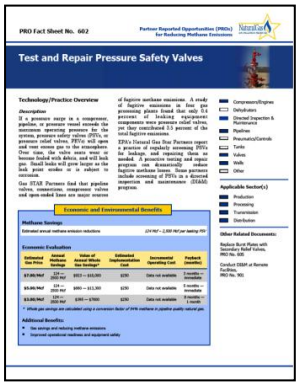
On October 12, 2011, during the Global Methane Initiative (GMI) Partnership-Wide Meeting, the Steering Committee approved Norway's request to join GMI. Delegates from Norway will join the Oil & Gas Subcommittee to share the country's experience and technological competence achieved in offshore oil and gas production. Based on data in the national emission inventory from Statistics Norway and the Climate and Pollution Agency (published in May 2011), Norway's 2010 estimated anthropogenic methane emissions totaled 4.3 million metric tonnes of CO_2 equivalent ($MMtCO_2e$). Oil and natural gas systems represent about 16 percent of Norway's anthropogenic methane emissions—about 700,000 thousand metric tonnes of CO_2 equivalent ($MtCO_2e$), including stationary combustion offshore and in onshore installations (mainly gas terminals)—and an additional 77 percent (3.3 $MMtCO_2e$) comes from the agriculture (enteric fermentation and manure management), coal mining, and landfill sectors.

Sri Lanka



Sri Lanka was welcomed into GMI on July 14, 2011 and will participate in the Agriculture, Landfill, and Wastewater Subcommittees. With its mostly rural population, Sri Lanka plans to expand its development of small- and medium-scale biogas digesters. The country is also interested in implementing projects to reduce methane emissions as they transition to sanitary landfills. By 2020, Sri Lanka aims to achieve a 20 percent contribution from renewable sources, as established by the country's Renewable Energy Policy. Based on data in EPA's Draft Global Non-CO_2 Emissions Projections Report: 1990-2030 (issued August 2011), Sri Lanka's 2010 estimated anthropogenic methane emissions totaled 23 $MMtCO_2e$. Landfills represent more than 50 percent of Sri Lanka's anthropogenic methane emissions—11.6 $MMtCO_2e$ —and an additional 5 percent (1.1 $MMtCO_2e$) comes from the agriculture (manure management) and wastewater sectors.

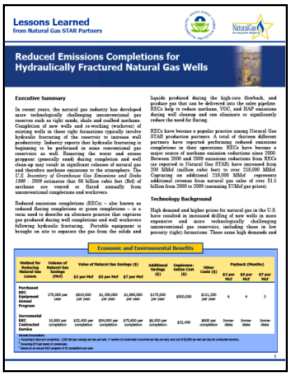
A Fresh Look and Updated Information for Technical Documents on Natural Gas STAR Website



The *Lessons Learned* and *Partner Reported Opportunity* (PRO) fact sheets have been revised with updated information and a new streamlined appearance. Besides a new look, the economic scenarios now include gas prices of $3/Mcf, $5/Mcf, and $7/Mcf to provide a more flexible depiction of project economics under varying market conditions. In addition, several existing *Lessons Learned* and PROs have been combined into new and more detailed *Lessons Learned* documents. The PROs now have an executive summary table on the first page to display all relevant economics.

The technical documents that have been released in the new format include:

- New PROs that are combinations of previous PROs
- A new *Lessons Learned* on "Reduced Emissions Completions for Hydraulically Fractured Natural Gas Wells"
- A new *Lessons Learned* on "Options for Removing Accumulated Fluid and Improving Flow in Gas Wells," which combines previous PROs
- An updated *Lessons Learned* on "Reducing Emissions When Taking Compressors Off-Line," which combines a previous *Lessons Learned* and PROs
- An updated *Lessons Learned* on "Directed Inspection and Maintenance at Compressor Stations," which combines a previous *Lessons Learned* and PROs



The new documents are now available at epa.gov/gasstar/tools/recommended.html.

Latest Developments for Confidential Business Information under Subpart W of Part 98

On February 24, 2012, EPA issued a proposal to determine which data elements reported under Subpart W of Part 98 would be entitled to confidential treatment under the Clean Air Act (CAA). The selected data elements will be reported to EPA in September 2012. In addition, this action proposes to defer until 2015 the deadline for reporting some recently added Subpart W data reporting elements that are proposed to be "inputs to emission equations." For more information, go to epa.gov/climatechange/emissions/CBI.html.

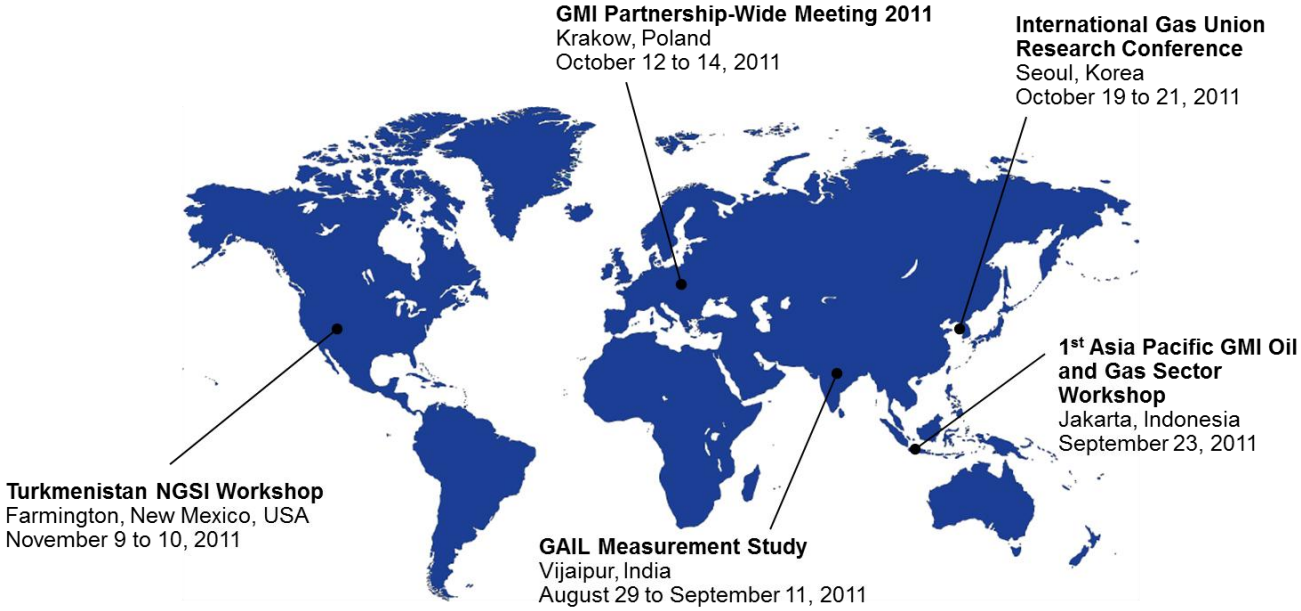
California's Greenhouse Gas Reporting Program Becomes Effective

The California Global Warming Solutions Act requires the reporting of greenhouse gases by major sources. Revisions to the existing Air Resources Board mandatory greenhouse gas reporting regulation were considered at the December 16, 2010 Board Hearing. The California Office of Administrative Law (OAL) then approved the revised regulation and it became effective on January 1, 2012. The revised regulation affects industrial facilities; suppliers of transportation fuels, natural gas, natural gas liquids, liquefied petroleum gas, and carbon dioxide; operators of petroleum and natural gas systems; and electricity retail providers and marketers.

All future reports, beginning with the 2012 submittal of 2011 data, must comply with the new requirements and be submitted via the California electronic greenhouse gas reporting tool. An unofficial electronic version of the regulation is available at the OAL website, as well as the official legal edition and all supporting regulatory documents. For more information, go to arb.ca.gov/cc/reporting/ghg-rep/ghg-rep.htm.

RECENT EVENTS MAP

Both Natural Gas STAR and the Global Methane Initiative (GMI) have been busy at numerous events around the globe since our last issue. See the summaries below to learn more about these events and how to participate in future ones.



Participants Tour Gaz-System's Compressor Station during GMI Partnership-Wide Meeting in Poland, Learn about Methane Leak Detection and Measurement

October 12 to 14, 2011, Krakow, Poland. GMI, in cooperation with the government of Poland, hosted the annual Partnership-Wide Meeting. The meeting featured plenary sessions focused on the reduction and capture of methane emissions and other cross-cutting issues, followed by various sector-specific activities such as site tours, technical and policy sessions, and subcommittee meetings.

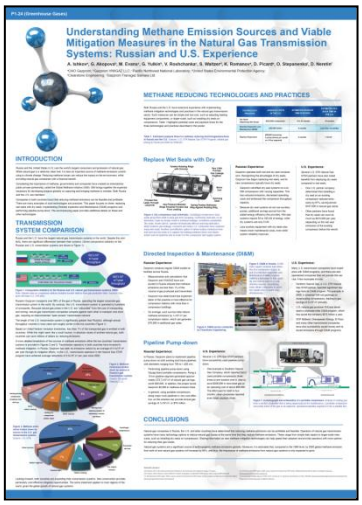
For the oil and gas sector, the event started with a site tour at a Gaz-System compressor station and laboratory. During the tour, demonstrations showing the methane detection capabilities of two infrared cameras were conducted. Representatives from Gaz-System, a Natural Gas STAR International Partner, also presented on a measurement study they had conducted on their system, highlighting the emissions they found—some of which were surprising—and the value derived from undertaking the study.

The next two days featured various GMI and industry speakers presenting on topics such as:

- Gaz-System's experience addressing methane emissions
- Oil and Natural Gas Corporation Ltd.'s (ONGC) experience implementing vapor recovery units on crude oil storage tanks
- Pipeline pumpdowns as a way to minimize emissions during transmission pipeline repair
- BP's application of routing centrifugal compressor seal oil degassing emissions to fuel gas as an alternative to dry seals

There was also a panel session on companies' experiences with methane leak detection and measurement studies as well as activities updates from various member countries. For more information on this event, go to globalmethane.org/news-events/meeting20111012.aspx.

Gazprom and EPA Coauthor a Paper Comparing U.S. and Russian Transmission Systems



October 19 to 21, 2011, Seoul, Korea. For the International Gas Union Research Conference (IGRC), Gazprom and EPA collaborated to present a paper entitled, *Understanding Methane Emissions Sources and Viable Mitigation Measures in the Natural Gas Transmission Systems: Russian and U.S. Experience*. The purpose of this paper was to compare the two transmission systems and document Russian and U.S. experiences in evaluating and deploying technologies and programs for methane mitigation. While the countries' gas transmission systems are inherently different, both found that reducing methane emissions can be feasible and profitable. Examples of technologies in use include replacing wet seals with dry seals, implementing directed inspection and maintenance programs, performing pipeline pumpdowns, applying composite wrap for non-leaking pipeline defects, and installing low-bleed pneumatics. The paper successfully highlights the wide range of viable methane mitigation options available to operators of natural gas transmission systems.

For more information on this event, go to igrc2011.com. The paper can be found at globalchange.umd.edu/data/publications/IGU_Research_Conference_2011_Paper_2011-0715-

finalv2.pdf. The poster can be found at globalchange.umd.edu/data/publications/IGU-charity-D7low-res.pdf.

Global Methane Initiative Conducts First Asia Pacific Oil and Gas Sector Workshop

September 23, 2011, Jakarta, Indonesia. GMI led its first technical workshop on methane emissions reduction opportunities and practices. The workshop explored methods of reducing methane emissions from oil and gas facilities and included a demonstration of infrared camera detection of fugitive and vented methane emissions. Presentation topics included Chevron and ConocoPhillips's experiences in methane emissions mitigation, directed inspection and maintenance (DI&M) and an overview of emissions reduction best practices for sources such as tank venting, reciprocating and centrifugal compressors, pneumatic devices, and dehydrators. For more information on this event, go to globalmethane.org/news-events/event_detailsByEventId.aspx?eventId=353.

Natural Gas STAR International Conducts Emissions Measurement Study of Recent New Partner, GAIL

August 29 to September 11, 2011, Vijaipur, India. Natural Gas STAR recently inducted GAIL (India) Limited as a new international Partner at a meeting at GAIL's New Delhi headquarters. ONGC representatives also attended the meeting and shared their experiences participating in the Program.

Following the meeting, Natural Gas STAR and GAIL conducted a two-week-long measurement study at GAIL's Vijaipur, India, facility. This fieldwork built on a desktop study of GAIL's Vijaipur facility that had been conducted previously. The desktop study estimated methane emissions from a compressor station, two liquefied petroleum gas (LPG) facilities, a gate station, and a pig station. The measurement study sought to establish an emissions estimate of the Vijaipur facility, and also showcased the advantages of conducting leak inspection using an infrared camera to further encourage the use of methane emissions-reducing technologies and practices. Leaks were measured using a Hi Flow® Sampler, a turbine meter, or an acoustic leak detection device. A significant outcome of the study included obtaining emissions measurements using a turbine meter from the seal oil degassing vents of six wet seal centrifugal compressors.

Natural Gas STAR International Shares Methane Emissions Reductions Experiences with Turkmenistan

November 9 to 10, 2011, Farmington, New Mexico. A delegation of representatives from the government of Turkmenistan met with Natural Gas STAR International (NGSI) and various Partners to learn more about methane emissions reduction best practices, technologies, and implementation. Presentation topics on the first day of the workshop included Chevron and BP's experiences in methane emissions mitigation; casinghead gas recovery; centrifugal compressor best practices; and a demonstration of optical imaging technologies. The workshop also included presentations from the New Mexico Oil and Gas Association (NMOGA) and the New Mexico Environment Department (NMED). On the second day, attendees listened to a Weatherford presentation on its Asset Capture System, which is an equipment package that can be used to capture gas during post-fracturing cleanouts. Other possible applications for this technology include well testing, completions, pipeline pigging/evacuation, early production, and some aspects of drilling. Attendees then toured the NMED air quality monitoring site at Lake Navajo.

For more information on this event, go to epa.gov/gasstar/workshops/techtransfer/2011/farmington_en.html.

NGSI and the Turkmenistan government had previously conducted a four-day workshop from April 26 to April 29, 2010, in Ashgabat, Turkmenistan. This *Turkmenistan Symposium on Natural Gas System Management* featured such topics as: opportunities for methane emissions reductions in gas production, processing, compressor stations, and transmission pipelines; an overview of leak detection, quantification, and repair activities; and key considerations for financing successful emissions reduction programs. The event's agenda and presentations can be found at epa.gov/gasstar/workshops/techtransfer/2010/ashgabat_en.html.

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