

The CETAC-WESTerner

Alberta Leading in Energy Efficiency and Conservation

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ERCB's Mike Bruni Backs Fuel Gas Conservation Initiatives

Recent years have seen a marked trend within government and industry in recognizing and encouraging fuel gas conservation. Senior officials from the provincial government and the Canadian Association of Petroleum Producers (CAPP), while speaking at CETAC-WEST's Fuel Gas Best Management Practices Workshop, repeatedly drew attention to that turnaround in attitude on the part of government and industry.

Alberta Energy Assistant Deputy Minister Mike Ekelund noted that, in the past, several factors contributed to less-than-optimal use of fuel gas and the fact that "fuel gas was not always being valued properly." Past barriers to optimization have included the mind-set that fuel gas is free; lack of monitoring and benchmarking of fuel gas use; absence of industry buy-in; distraction by high rates of industry activity in other areas; limited staff expertise; and insufficient incentives to conserve fuel gas.

Ekelund pointed out that a 10-per-cent saving in fuel gas in Alberta's UOG industry amounts to enough gas to heat about 300,000 homes a year.

He drew attention to the Fuel Gas Efficiency Committee formed in April 2006, with membership from CAPP, the Small Explorers and Producers Association of

Canada, the Gas Processing Association of Canada, Alberta Energy, the Energy Resources Conservation Board, Natural Resources Canada and other industry players. The committee's work resulted in the Best Management Practices (BMPs) that were a focus of the three-day Fuel Gas Efficiency Workshop held in Kananaskis November 24-26. The BMPs consider how fuel savings can be achieved using current equipment and systems, as well as how to capture savings through equipment modifications, upgrades and replacement.

Ekelund stressed that "efficient use of energy will extend the life of facilities by lowering operating costs over the long term."

A subcommittee of the Fuel Gas Efficiency Committee now is working on fuel gas benchmarking, which Richard Leslie, Manager, Alberta Operations, with CAPP, said will:

- permit tracking of improvements of fuel gas use over time;
- help identify winners; and
- lead to sharing of success stories.

He added CAPP is receptive to the challenge of using less fuel gas by:

- encouraging industry to make individual commitments to reduce fuel gas consumption; and
- supporting the adoption and implementation of the BMPs.



Panelists (left to right) Goldie Edworthy, Mike Ekelund, Richard Leslie and Mike Bruni.

ERCB Board Member Mike Bruni conceded that as recently as four years ago, "Interest in reducing fuel gas consumption was there, but was not widespread."

He agreed the industry may have been too focused on other initiatives to pay much heed to fuel gas. Now conservation has gained a higher profile, something partly reflected in the name change that saw the former Alberta Energy and Utilities Board reorganized to recreate the Energy Resources Conservation Board. It returns the agency to the name of an earlier incarnation of the organization, when the mandate to ensure stewardship of Alberta's petroleum resources was more conspicuous.

"Conservation," Bruni stressed, "is back in our name."

But unlike the old ERCB, which may have been more geared toward conserving underground

resources, the new ERCB is likely to take a broader view by also giving attention to conserving petroleum resources once they leave the ground.

"Conservation is back in our name," ERCB Board Member Mike Bruni.

"We examined whether fuel gas consumption is significant enough to warrant attention and concluded the prize is big enough to pursue," Bruni told the workshop.

Both the ERCB and CAPP speakers pointed out that efficiency per unit is decreasing as fuel gas use increases while total raw gas production declines.

Bruni said he prefers voluntary efforts rather than regulation to bring about lower fuel gas use. However, the ERCB can foster efficiencies by encouraging:

- consolidation of processing plants to ensure they are producing closer to capacity;
- greater education on fuel gas efficiency; and
- sharing "good news stories" on fuel gas conservation.

Finally, Bruni recommended using "the current downturn as an opportunity to catch up and implement low-risk measures for improving fuel gas efficiency and reducing operating costs."

Alberta Environment's Goldie Edworthy (Section Head, Intergovernmental Relations – Environmental Stewardship) suggested that initiatives to save fuel gas and curb emissions respond to public expectations and align with ongoing government commitment to environmental stewardship.

CETAC-WEST President Joe Lukacs Blazed the Trail Toward Fuel Gas Conservation



Fuel Gas Best Management Practices Workshop at Kananaskis drew record participation.

A series of Fuel Gas Best Management Practices (BMPs) unveiled in the spring of 2008 and supported by several industry and government organizations didn't just come about overnight. The BMPs, aimed at conserving and making better use of Alberta's fuel gas, can be traced back to efforts by CETAC-WEST, starting as far back as 2000, to apply eco-efficiency principles to the upstream oil and gas (UOG) industry.

CETAC-WEST President Joe Lukacs sees logic in the Alberta-based organization he founded focusing on the oil and gas sector. It was set up in 1994 as a not-for-profit company with backing from federal and provincial governments. CETAC-WEST has a mandate to promote commercialization and market acceptance of innovative technologies and environmentally sustainable solutions.

Even a decade ago, Alberta's oil and gas producers and processors found themselves facing environmental challenges as well as resulting concerns from increasingly vocal

sectors of the public. Today, many of those voices come from beyond Alberta and Canada.

To his credit, Premier Ed Stelmach has taken it upon himself to respond to that criticism at home and abroad. But to counter that opposition, the Premier needs evidence that Alberta – and particularly the oil and gas sector – is responding proactively to environmental challenges, including the fuel gas challenge.

The initiatives that CETAC-WEST has spearheaded to use fuel gas more effectively and efficiently not only can yield financial returns and environmental benefits (savings of up to \$300 million a year) but also can serve as proof in responding to Alberta's detractors.

CETAC-WEST's work started in 2001, when, with financial backing from Alberta Energy, it launched a pilot initiative known as the Eco-Efficiency Program. It sought to identify and demonstrate key opportunities for

process improvement as well as innovative technologies and practices to enhance energy efficiency and to reduce emissions by the UOG sector. The Eco-Efficiency Program had four distinct components:

- pilot integrated audits;
- benchmarking;
- new technology demonstrations; and
- industry rollout and technology transfer.

Each element contributed to the program's success. Under the pilot integrated audits, begun in 2002, experts hired through CETAC-WEST sniffed, calibrated and tested their way through selected gas plants of varied vintage and size. The audit teams examined up to 10 unit operations at each plant, starting with liquid separation, moving on through compressor systems and sulphur-recovery units, right to the incinerators and flare stacks. Fugitive emissions throughout the plants were also measured, as were the efficiencies of utility systems. The audits not only identified where there was room for improvement at specific plants, they pointed to a larger challenge. It lay in forgone opportunities for economic capture of vast amounts of process gas escaping into the atmosphere due to inefficiencies, intentional venting via instrumentation, and inadequate preventive measures and controls.

Further audit candidates were added over the years, and, using initial tests as benchmarks, over time the already-tested plants were measured to check improvements or slippage in their eco-efficiency.

As part of the industry rollout and technology transfer, these results were shared through a series of CETAC-WEST-organized Eco-Efficiency Workshops. The workshops were attended by consultants involved in the audits; operators engaged in the day-to-day running of gas plants and related

facilities; regulators; government officials and other UOG representatives. Other significant workshop participants were firms and individuals with current or developing technologies offering enhanced energy efficiencies and environmental improvements for UOG operations.

Since March 2002, CETAC-WEST has organized five workshops, including the latest held in Kananaskis Nov. 24-26, 2008, which attracted a record attendance of over 100. Building on new insight from additional integrated audits and the exposure to new technologies, the latest workshop provided a forum for discussion and evaluations of the principles that underlie the 17 Fuel Gas Best Management Practices modules. The modules were made public in the spring of 2008 by Alberta Energy, the Canadian Association of Petroleum Producers, the Small Explorers and Producers Association of Canada, the Gas Processing Association Canada, the Energy Resources Conservation Board, Natural Resources Canada, and CETAC-WEST.

The BMPs have set the standards leading to fuel gas conservation but without follow-through they will remain nothing more than good intentions.

For Joe Lukacs: "The BMPs represent an important milestone on the road toward improved efficiency and better environmental stewardship within the upstream oil and gas industry. But our work is not done. We must continue to get the message out to all levels – the plant operators, middle and senior management within companies, as well as to government officials."

And he concludes: "There should be a continuing role for CETAC-WEST in maintaining the vision and momentum and in keeping the fuel-gas issue in the forefront."

Workshop Provides Platform to Showcase Fuel Gas Best Management Practices

The past year proved to be a milestone for fuel gas conservation in Alberta. Following years of sometimes lonely calls urging more prudent and productive fuel gas use in upstream oil and gas (UOG) extraction, transportation and processing, in 2008 CETAC-WEST gained some important allies.

Tangible commitment came from the Canadian Association of Petroleum Producers (CAPP), the Alberta Department of Energy, the Small Explorers and Producers Association of Canada (SEPA), the Gas Processors Association of Canada (GPAC), the Energy Resources Conservation Board (ERCB) and Natural Resources Canada.

These government and industry organizations showed their support in releasing a set of Fuel Gas Best Management Practices (BMPs) geared toward UOG field, gas-processing and common operations. The BMPs were unveiled last spring and were the centrepiece of a rollout breakfast attended by senior government and industry representatives in Calgary in late May.

The 17 individual BMP modules are built on groundwork done by CETAC-WEST and consultants hired in recent years to audit fuel gas use in various locations, including production batteries and gas-processing plants. Literally hundreds of recommendations and suggestions that emerged from the audits were used to develop the BMPs.

Technologies and practices suggested in the BMPs provide useful tools for companies to manage fuel gas consumption better. Details of the BMPs are posted on CAPP's website at www.capp.ca/default.asp?V_DOC_ID=1270.

The Nov. 24-26 Fuel Gas Best Management Practices Workshop organized by CETAC-WEST highlighted the BMPs to an audience of mainly UOG operations and management personnel. Experts in the areas covered by the BMPs outlined potential social, environmental, operational and economic benefits of applying these best management practices.

Key gains and advantages of the BMPs are outlined below. (Modules are numbered using the same system as on the CAPP website but are grouped according to conference presenters, some of whom dealt with more than one BMP)

Module 1
Efficient Use of Fuel Gas in Gas Gathering Systems
 Presenter:
 Yori Jamin – Clearstone Engineering
Yori.Jamin@clearstone.ca
Why Gains from BMP Matter

Gathering systems and associated equipment (such as compressors, heaters and pumps) are major fuel consumers, accounting for approximately 20 per cent of the total fuel gas used in the UOG industry. Improved fuel efficiency can be achieved by implementing:

- capital upgrades – including adding compression and looping flow lines;
- good operating practices – including effective pigging, corrosion mitigation, viscosity reduction agents and methanol for hydrate mitigation.

Capital upgrades and improved practices promise to reduce fuel consumption and improve performance associated with oil and gas gathering systems.

Module 4
Efficient Use of Fuel Gas in Flaring Operations
 Presenter:
 Yori Jamin – Clearstone Engineering
Yori.Jamin@clearstone.ca
Why Gains from BMP Matter

An estimated 570 million m³ a year of fuel gas is consumed by flaring in Alberta. The potential fuel gas savings through BMP application is approximately 57 million m³ with a value of \$16 million a year, plus potential GHG reductions of 123,000 tonnes CO₂ equivalent.



Module 2
Efficient Use of Fuel Gas in Pumpjacks
 Presenter:
 Russ Pahl
pahlscorp@shaw.ca
Why Gains from BMP Matter

It is estimated that:

- Pumpjack engines at 20,000 oil wells use gas-fired engines.
- 2,500 units are added annually.
- The average pumpjack engine burns 113 m³/d of gas.
- Total annual fuel gas consumption (510 million m³) is valued at more than \$135 million.



Improved maintenance and retrofits – including replacing gas engines with more efficient electric motors – could yield average fuel savings of 7,080m³/year per unit. If 10 per cent of gas-fired Alberta pumpjacks were properly maintained each year, it could save 170,000m³ of fuel gas and \$4.5 million a year. There is potential to convert half (10,000) the existing units (located mainly in Southern and Central Alberta) now running on gas to electric power. This could result in total annual savings of \$6.4 million and CO₂ equivalent reductions of 123,000 tonnes annually.



Module 3
Efficient Use of Fuel Gas in Pneumatic Instruments
 Presenter:
 Tim Hearn – Sirius Instrumentation and Controls
thearn@siriuscontrols.com
Why Gains from BMP Matter



Tim Hearn
 Sirius Instrumentation and Controls

It is estimated that over 50,000 high-bleed gas-operated pneumatic instruments are currently used in Canada and more than 5,000 such instruments are added annually. As a result of pneumatic instruments:

- about 570 million m³ a year of gas is being vented;
- gas-operated pneumatic instruments account for five per cent of fuel gas used by the oil and gas industry;
- instruments vent an estimated 8 mega-tonnes of CO₂ equivalent annually.

Replacement instruments or retrofit kits can reduce usage by as much as 90 per cent. The average annual savings if 10 per cent (5,000) of high-bleed devices were replaced or retrofitted would be:

- 44 million m³ of gas
- \$11.5 million
- 625,000 tonnes CO₂ equivalent.

Module 5
Efficient Use of Fuel Gas in Chemical Injection Pumps
 Presenter:
 Tim Hearn – Sirius Instrumentation and Controls
thearn@siriuscontrols.com
Why Gains from BMP Matter

Fuel-gas-driven pumps are widely used to inject chemicals into process streams to enable the production and processing of petroleum products. Several thousand pumps are added each year. Certain pumps may vent \$10,000-worth of fuel gas annually.

Replacing pneumatic pumps with low-emission pumps, solar pumps or AC pumps can reduce emissions by 100 per cent and lead to annual savings averaging \$2,800 per unit.

Module 6
Efficient Use of Fuel Gas in Fired Heaters
 Presenter:
 Al Wakelin – Sulphur Experts
al.wakelin@sulphurexperts.com
Why Gains from BMP Matter

There are currently more than 25,000 fired heaters used in upstream oil and gas operations, with a further 1,000 added each year. They account for about 25 per cent of the UOG fuel-gas usage. A 10-per-cent improvement – including improvement through efficiency testing and evaluation – is possible on many units. It would result in potential fuel-gas savings of 25 million m³, worth \$70 million a year.



Al Wakelin
 Sulphur Experts

Modules 7 & 8
Efficient Use of Fuel Gas in Engines and in Compressors
 Presenter:
 Frank Zahner – Accurata
fzahner@telus.net
Why Gains from BMP Matter



Engines and compressors represent the biggest (60 per cent) overall users of fuel gas within the UOG sector. Improved operating practices – including better load and combustion management, enhanced monitoring and addition of automated controls – make 10-per-cent fuel gas conservation attainable. With the total value

of fuel gas used in compressors and engines placed at \$1.68 billion (at \$7.50 GJ) burning 10 per cent less fuel would save \$168 million a year and lower GHG emissions by 1.2 mega-tonnes of CO₂ equivalent. Increased oil and gas production is a further bonus from better-maintained compressors and engines.

Capital investment in new technology offers significant further reductions in fuel-gas use beyond those associated with improved operation and maintenance.

Module 9
Efficient Use of Fuel Gas in Glycol Dehydrators
 Presenter:
 Rod Leland – RCL Environmental
rcl_environment@shaw.ca
Why Gains from BMP Matter

Glycol dehydrators are used to reduce pipeline corrosion, control hydrate formation and meet pipeline water-content specifications. There are approximately 3,000 glycol dehydrators in operation, 75 per cent of which use gas-driven pumps and 25 per cent have flared emissions. Many dehydrators operate less than optimally. Operation could be improved through various initiatives, such as enhanced training and data collection, as well as by reducing glycol circulation and slowing down gas-driven pumps. Assuming that two-thirds require optimization, it could prompt a 1.7 million-tonne annual reduction in CO₂ equivalent (mostly methane) emissions and save \$44 million-worth of fuel gas.



Module 10
Efficient Use of Fuel Gas in Desiccant Dehydration
 Presenter:
 Mike Sheilan – Amine Experts
mike.sheilan@amineexperts.com
Why Gains from BMP Matter

Desiccant dehydration is the most expensive means of drying gas but permits the operation to meet extremely low dewpoint targets. More than 50 such units operate in Western Canada.

The desiccant dehydration system in a gas plant handling 50 million cubic feet (1.4 million m³) a day requires approximately 500,000 m³ of fuel gas a year to run. At such a plant, the desiccant dehydration system would generate about 950 tonnes of CO₂ equivalent emissions. Optimization could result in a 10-per-cent reduction in fuel gas use, which could save the same plant \$12,000-worth of fuel-gas use a year and reduce CO₂ equivalent emissions over the same period by 100 tonnes.

Module 11
Fuel Gas Measurement and Reporting
 Presenter:
 Graham Latonas – Energy Experts
Graham.Latonas@SulphurExperts.com
Why Gains from BMP Matter



Graham Latonas
 Energy Experts

Fuel Gas BMP Module 11 provides general and specific recommendations that can help with fuel-gas-use reporting and measurement (or estimating by qualified personnel when actual measurement is not practical). For example, the module recommends, where possible, installing measurement meters, and properly calibrating and maintaining them.

A measurement strategy should include developing an inventory of unit operations and fuel sources for each site and developing a baseline estimate of how much fuel gas various unit operations consume. Tools specified in the BMP – including measurement/reporting flow charts; measurement strategies and equipment inventory forms – can aid measurement and reporting.

Improved measurement will play a vital role in demonstrating the effectiveness of BMPs in achieving fuel gas conservation goals – an overall 10-per-cent reduction in fuel gas consumption in Alberta is worth about \$300 million per year. The corresponding reduction in GHG emissions is worth a further \$40 million annually.

Module 12
Efficient Use of Fuel Gas in Refrigeration
 Presenter:
 Neil Franklin – Tartan Engineering
franklinn@tartaneng.com
Why Gains from BMP Matter

Refrigeration is used to remove dewpoint problems in natural gas and to improve product value through NGL recovery.

- There are approximately 500 refrigeration units of all sizes in Canada (both fuel-driven compressors and motor-driven compressors).
- The total annual fuel gas consumption (843 million m³) is valued at more than \$240 million.

Improved maintenance and operation could

Measurement and Reporting – Fundamental to Management

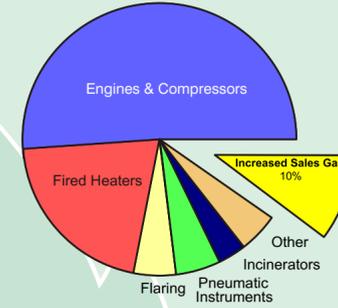
Are Alberta's upstream oil and gas (UOG) operations measuring up? In short no. Certainly not to the extent that they should or could.

Of total gas production in Alberta, fuel gas used in all production accounted for about 12 per cent in 2007. If all that fuel gas somehow could have been conserved and sold, it would be worth \$5 billion a year.

As the accompanying graph shows, certain UOG activities covered by the Best Management Practices modules – for example, operation of engines and compressors – account for a significant proportion of fuel gas consumption. But often producers and processors neither measure nor know the amounts of fuel gas used by specific units, equipment or processes within their operations.

Not only is about a dime's worth of fuel gas used for every dollar's worth of sales gas produced, the proportion of fuel gas used keeps creeping up relative to overall production.

For this reason, the Fuel Gas Measuring and Reporting Module (Module 11) is central to the success of other Best Management Practices (BMPs) highlighted on these pages. To demonstrate the value and impact of these BMPs on specific companies and



A 10% reduction in fuel gas consumption is worth approximately \$295 million.

yield average fuel savings of 85 to 170 million m³. This could result in total annual savings of \$24-48 million and CO₂ equivalent reductions of 159,000-318,000 tonnes annually. (These savings are in propane compression only.)

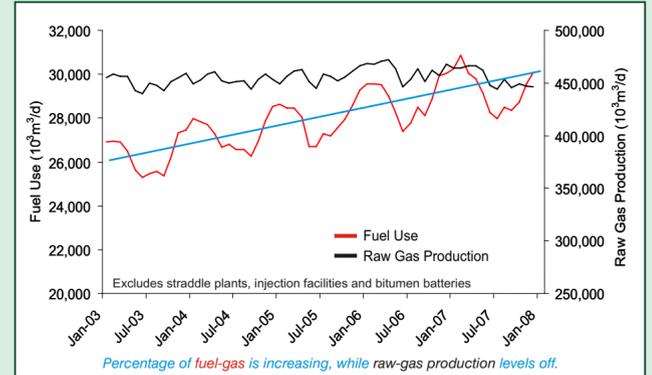


Module 13
Efficient Use of Fuel Gas in Fractionation
 Presenter:
 Neil Franklin – Tartan Engineering
franklinn@tartaneng.com
Why Gains from BMP Matter

Fractionation is used to improve product value through recovery of purer products.

- Approximately 45 plants of greatly varying size use reboiler-driven fractionation to a significant degree in Canada.
- The total annual fuel gas consumption (345 million m³) is valued at more than \$98 million.

Improved maintenance and operation could yield average fuel savings of 34 million m³. This could result in total annual savings of \$10 million and CO₂ equivalent reductions of 65,000 tonnes annually. (Note that these savings include heat for deethanizers in refrigeration units, plus additional product fractionation.)



Percentage of fuel-gas is increasing, while raw-gas production levels off.

operations, it is essential to measure the changes in fuel gas use resulting from the technologies and procedures recommended in the BMPs.

Fuel gas measurement and reporting are important because:

- They are required by regulators.
- Since gas not consumed in processing can be sold, conserving fuel gas makes good business sense.
- They bring social and environmental benefits through enhanced conservation – especially by curbing release of greenhouse gases (reduction of which can lead to sale of CO₂ offsets).

"There is no magic bullet in reporting," noted Graham Latonas of Energy Experts in outlining the Fuel Gas Measuring and Reporting Module at the CETAC-WEST-sponsored Fuel Gas Efficiency Workshop.

In the absence of a single approach that fits all, Latonas recommended that individual companies take into account their specific operational and corporate characteristics while fashioning and applying their measuring requirements. Furthermore, any effort to attain fuel efficiency must be balanced by prudent approaches that don't sacrifice safety for the sake of energy efficiency or savings.

When it comes to fuel gas, Lord Kelvin's words "If you cannot measure it, you cannot improve it" ring as true as ever.

Module 14
Efficient Use of Fuel Gas in Amine
 Presenter:
 Ben Spooner – Amine Experts
Ben.Spooner@amineexperts.com
Why Gains from BMP Matter

About 150 amine treatment units are in use in Alberta, the function of which is to remove hydrogen sulphide and carbon dioxide from sour gas. These amine units treat from 30,000

to 14 million m³ of gas a day. In the course of a year, the amine units consume the equivalent of 725 million m³ of fuel gas. Use of recommended modifications outlined in the BMP could lead to a 10-per-cent

annual reduction in energy consumption amounting to 72.5 million m³ or \$21 million-worth of fuel gas. The recommended modifications could lead to yearly GHG reductions of 140,000 tonnes of CO₂ equivalent.



Modules 15 & 16
Efficient Use of Fuel Gas in Sulphur Recovery Units and Tail Gas Incinerators
 Presenter:
 Jason Grundler – Energy Experts
Jason.Grundler@sulphurexperts.com
Why Gains from BMP Matter

There are 45 sulphur recovery units and tail-gas incinerators in Alberta. Sulphur recovery from the plants ranges from 10 to 4,000 tonnes a day. Modified Claus-based sulphur recovery plants actually produce energy – equivalent to that produced from 700 million m³ of fuel gas. However, tail gas incinerators use up to 20 per cent of the fuel in sulphur-extraction facilities or some three per cent of total fuel gas used in UOG activities. Tail-gas incinerators have been the focus of considerable attention over the last 25 years. This has resulted in reduction of fuel use (by \$28 million a year) but there remains room for further fuel (45 million m³/y) and dollar (\$12.7 million) savings through enhanced management practice and implementation of regulatory reforms.



Operations Personnel Call for Ways to Implement Fuel Gas BMPs

Who is closest to the action when it comes to conserving fuel gas? Undoubtedly those closest are the people who actually operate upstream oil and gas (UOG) production, transportation and processing facilities.

Therefore, it made sense that the personnel on the ground had a chance to voice their views about the practicality of the Fuel Gas Best Management Practices (BMPs) modules that formed the centrepiece of presentations at CETAC-WEST's Nov. 24-26 Fuel Gas Best Practices Workshop.

Following discussion within breakout groups about the BMPs and fuel gas use, participants broadened their discussion by sharing recommendations and observations during the workshop's concluding session. The suggestions were directed at the UOG industry along with requests for further support on fuel gas conservation from government and other agencies.

Workshop participants urged the oil and gas industry to dedicate funding for energy efficiency projects. However, there was consensus that individual companies and the industry as a whole must be willing to accept lower rates of investment return on energy-efficiency projects than they might obtain from other capital projects.

Companies, with backing from senior management, should designate one or more recognized "champions" who would be mandated to promote energy efficiency. The champions' mandates should extend to:

- identifying and implementing fuel gas efficiency projects,
- increasing visibility by sharing success stories within companies,
- empowering operators at the plant level to monitor and control fuel gas usage,
- facilitating training programs for

operators to transfer knowledge on the use and implementation of the BMPs, and

- updating design standards and specifications for new equipment to incorporate energy efficiency considerations.

Joanna Williams of Shell Canada Energy, stressed the need to: "Get endorsement and support from upper management. But instead of telling operations what they're going to do, get them engaged and get



Workshop facilitators Blaine Lee (left) and John Sames (right).

them to take ownership of it."

Fuel gas savings do not enjoy the high visibility of increased production and, Don Leung of Canadian Natural Resources Ltd. pointed out: "If you open up a company annual report, it will say 'we are a major oil and gas producer.' It does not say 'we are a major oil and gas conserver.'"

Participants further agreed that companies should be encouraged to:

- confirm measurements to establish baselines via audits and benchmarking;
- establish targets for emission reduction; and
- incorporate fuel gas into the budgeting process along with all other operating expenses.

Again, Joanna Williams noted: "Budgeting fuel gas as a separate line item would give it more visibility."

Based on discussion in his group, Lee Wagner of EnCana added: "We felt that equally important as the economics and funding is having defined targets to enable scheduling and implementing of the (eco-efficiency) projects."

Active assistance for BMP implementation is requested from

industry organizations, notably the Canadian Association of Petroleum Producers (CAPP). Specifically, CAPP can contribute by:

- continuing to lead the benchmarking initiative;
- increasing visibility by tracking and publishing success stories and disseminating results;
- engaging executive-level management through initiatives such as the executive breakfast held in May 2008 to roll out the BMPs;
- leading and funding efforts to develop GHG verification protocols beneficial to the industry; and
- establishing a central project



Break-out sessions discussed BMPs.

registry that would allow access for all interested parties to review projects from planning to completion.

In the case of completed projects, the registry would include results and a final report. Supporting case studies could provide information and statistics on the actual implementation cost as well as the short-term and long-term benefit of implementing the BMPs. CAPP participation would bolster credibility with industry, and counter industry skepticism about claims made by service providers.

In addition, CETAC-WEST, in collaboration with Petroleum Technology Alliance Canada (PTAC), should assist industry by creating a *Clean Technology Funding Guide*, which would identify outside funding opportunities and how to apply for them.

Workshop participants emphasized that industry cannot go it alone on

fuel gas conservation. Government departments and agencies must also contribute. Workshop attendees called on Alberta Environment to work with industry to implement innovative solutions that:

- recognize that implementing technologies at multiple sites can have a significant cumulative effect on the environment, and
- reduce the administrative burden on implementing new technologies.

Alberta Environment could also contribute by reducing administrative delays. It was noted that approvals of stack-top temperature-reduction protocols that could save fuel gas are taking two or more years.

Other areas where Alberta Environment could help include:

- re-examining regulations to ensure that compliance regulations do not create more emissions than what is saved;
- developing and coordinating incentives with Alberta Energy for development, demonstration and adoption of energy-efficient technologies.

According to the workshop participants, Alberta Energy should lead through policy development and provide the clarity that industry requires to plan and implement programs.

Alberta's Energy Resources Conservation Board (ERCB) should champion energy conservation and establish guidelines for expectations.

The industry needs to know the ERCB's future regulatory direction and priorities, and industry must be allowed an opportunity to implement a voluntary program. The ERCB should review fuel gas reporting relative to GHG – for example, by allocating instrument gas to vent gas and not treating it as fuel gas. In addition, the ERCB should work with CAPP to benchmark and monitor fuel gas reporting. There is a role for the ERCB in harmonizing fuel gas reporting among all provinces in Western Canada.

"It would be nice to have a petroleum registry across all the producing provinces so that we have that data availability. It would help from a production accounting point of view as well as from a greenhouse gas point of view," said Paul Slobodnik of ConocoPhillips.

Parting Words of Encouragement

At the final session of at the Fuel Gas Best Practices Workshop, Shell Canada Energy's Joanna Williams offered the following encouragement to other workshop participants.

"I want everyone to walk away as a new-found evangelist for energy-efficiency improvement. Start spreading the word and start taking some of the passion out of here.

"There is a real business case for energy efficiency. It is a win-win situation all around. There are some real things that we can be doing and everyone can make a difference.

"The first step that I want to take is to go back to my company and to do an inventory. What is it that we are doing? What are we **not** doing? Then let's get a short list of the quick, easy wins that we can immediately implement."



Joanna Williams

Meeting the Fuel Gas Challenge by Moving Beyond BMPs

Nowadays, many drivers can peek at the dashboard and get an immediate reading of how much gasoline they are burning while driving at a certain speed.



CETAC-WEST President Joe Lukacs

Why not make it just as easy, Joe Lukacs wonders, to find out in real time how much natural gas Alberta's upstream oil and gas (UOG) processing or extraction facilities are using?

The CETAC-WEST President posed the question while opening a three-day Fuel Gas Best Management Practices Workshop at Kananaskis on November 24.

Based on surveys of 40 gas-processing plants in the province, CETAC-WEST has valued the fuel used by Alberta UOG operations at \$3 billion each year.

Lukacs suggested that too often companies, management and field personnel remain indifferent to or unaccountable for the amount of fuel gas their facilities use and report. When fuel gas savings are achieved, too often the results are neither heralded – through

company newsletters, annual reports or other means – nor are those responsible for the fuel savings given due recognition.

From 2001 to 2006, the CETAC-WEST-led Eco-Efficiency Program sought to improve fuel gas efficiency and to tackle indifference about it by using a three-pronged initiative to:

- measure the efficiency of plants and facilities through integrated audits done by expert teams;
- benchmark plant and facilities' performance; and
- demonstrate new technologies able to capture and save fuel gas.

The Eco-Efficiency Program resulted in several key findings. Notably, Lukacs explained: "Integrated audits done on individual plant (within UOG) operations can serve as a powerful tool. Secondly, we found that inefficiencies led to excessive use of fuel gas and waste of our resources. Finally, the 'unit operations' concept allowed us to understand our inefficiencies and fix them cost effectively. If you can understand the unit operations, you can understand the whole operation much better."

These findings led to a set of Best Management Practices (BMPs) that CETAC-WEST was instrumental in developing. (The BMPs formed the focus of the November workshop and are posted

on the Canadian Association of Petroleum Producers website www.capp.ca/default.asp?V_DOC_ID=1270)

"In other words," Lukacs adds, "the Eco-Efficiency Program empowers us to put a value on fuel waste and provides us with a tool to improve upon it."

He reminded the workshop participants that the value of fuel gas used by the largest sweet-gas plant in Alberta amounts to \$25 million a year and the figure doubles to \$55 million in the case of the largest sour gas plant. But while fuel gas represents a significant proportion of operating cost, only a few companies budget use of fuel gas – which is not paid for or taxed – into their operating costs.

Knowing how much fuel gas a plant uses overall won't by itself curb fuel gas use. For that to happen, individual units within the plant must be made to run more efficiently. Improving these "unit operations" and knowing the optimal fuel gas use for each unit holds the key to achieving the efficiencies and conservation of the kind targeted by the BMPs. Lukacs suggested that by combining the BMPs and information about optimal fuel gas use for individual units "benchmarking at the unit operations level becomes a meaningful and practical tool."

Knowing what the current fuel consumption per processing unit is and

what it ought to be are vital in setting companies and facilities on track toward meeting optimal targets. The resulting conservation will benefit both the environment and corporate balance sheets by turning currently wasted fuel gas into marketable sales gas. Not only that, but Alberta-generated technologies employed to bring about such fuel gas savings can themselves become saleable export commodities and services that will benefit Alberta's economy.

The fuel gas challenge can be met, the CETAC-WEST President concluded, by pursuing a five-point Voluntary Industry Program (VIP) that is as simple as "A, B, C, D, E."

A V.I.P. Initiative

1. **A**ssessing and analyzing energy usage on a regular basis utilizing the integrated audit process;
2. **B**enchmarking and budgeting for fuel gas energy use like all other operating costs;
3. **C**ommitting to implementing the Best Management Practices and deploying "clean technology" driven by economics;
4. **D**isplaying fuel use and rewarding conservation; and
5. **E**xporting Alberta Clean Technology.

