Natural gas has been a key part of the Canadian economy and energy mix for many decades, and the Western Canadian Sedimentary Basin (WCSB)—and more specifically Alberta—has led the way.

Canada is the third-largest natural gas producer in the world, with about 80 per cent of the country’s gas being produced in Alberta. In 2010, Alberta produced 4.1 trillion cubic feet of marketable natural gas, including production of approximately 3.8 trillion cubic feet from conventional sources and 0.3 trillion cubic feet from coalbed methane (CBM).

According to provincial figures, at the end of 2010, remaining established reserves of conventional natural gas stood at 36.4 trillion cubic feet while remaining established CBM gas reserves stood at 2.4 trillion cubic feet. Reserve additions as a result of new drilling replaced 46 per cent of 2010 gas production. The province estimates the remaining ultimate potential of marketable conventional natural gas at 74 trillion cubic feet.

Although conventional natural gas remains a very important part of western Canadian production and Canada’s natural gas supply, a new era is upon us. The industry has now advanced new technology, such as horizontal drilling and multistage fracturing, to the point that allows for development of natural gas from a new source—unconventional natural gas resources. Aside from CBM, Alberta’s unconventional natural gas resources include tight gas (natural gas trapped in low-permeability sedimentary rocks, such as sandstone or limestone) and shale gas (trapped in shale rock).

The Canadian Society for Unconventional Resources has estimated that the recoverable, marketable portion of Canada’s unconventional resource is from 376 trillion cubic feet to 947 trillion cubic feet. Remaining gas in place in conventional reservoirs is estimated to be 692 trillion cubic feet, and 357 trillion cubic feet of that resource is expected to be recoverable and marketable, with a total marketable resource from both conventional and unconventional resources of 733 trillion cubic feet to 1,304 trillion cubic feet.

Most of the unconventional natural gas resources occur within the WCSB, a thick package of oil- and gas-prone rocks that cover much of Alberta, Saskatchewan, parts of British Columbia, southwestern Manitoba and northwards into the Northwest Territories.

But there’s more to the province’s natural gas industry than drilling wells and producing resource, as to make it accessible to Albertans and for export to other markets, a vast infrastructure network is required. Approximately 97 per cent of all oil and gas products move by pipelines in Canada, representing more than three million barrels of crude oil and over 15 billion cubic feet flowing every day through Canada’s 580,000 kilometres of pipelines. And this vital transportation network is centred largely in Alberta.

Approximately 70 per cent of natural gas produced in Alberta is exported to other provinces and the United States. Alberta is the largest supplier of natural gas to the United States and currently delivers all of its exports (excluding Canadian provinces) to its southern neighbours, the majority of which goes to the Midwest. Disposition of Alberta’s natural gas production in 2010 was approximately:

- 45 per cent to the United States;
- 29 per cent within Alberta; and
- 26 per cent to the rest of Canada.

Alberta’s natural gas pipelines deliver natural gas across the provincial border to the Canadian Mainline, B.C. System, the Foothills System and others, connecting provincial energy production to locations as far away as the ports of Metro Vancouver and Prince Rupert and various hubs in the United States.

There are over 392,000 kilometres of energy-related pipelines (including oil and natural gas) as well as extensive storage facilities in the province. This infrastructure is an essential lifeline linking Alberta’s natural gas resource to national and U.S. markets.

On the environmental front, Alberta has received international attention for its successes in natural gas flaring and venting reductions. Since 1996, solution gas flaring in Alberta has been reduced by 76 per cent. In 2007, the upstream oil and gas industry conserved nearly 96 per cent of all solution gas produced in Alberta for use and sale, rather than flaring and venting it.

By reducing the amount of natural gas that is wasted, Alberta helps ensure that it makes the most effective use of its natural gas resources, and continues the province’s record as one of the global leaders in conservation and flaring reductions.
Mapping natural gas

Alberta’s natural gas bounty is plentiful and is produced from both conventional and unconventional reserves. While the vast majority of the province’s natural gas is still produced from conventional sources, growing natural gas volumes from coal, shale and tight formations will also be strong contributors going forward.

Alberta has a large natural gas resource base, with remaining established reserves of about 39 trillion cubic feet and estimated potential of up to 500 trillion cubic feet of natural gas from the coalbed methane resource. In addition, a large-scale resource assessment of shale gas potential in Alberta is underway and could significantly add to the natural gas prospects for the province.
Government update

NEW CABINET TEAM FOCUSED ON GROWING ALBERTA’S FUTURE

Premier Alison Redford recently named a new Cabinet, focused on providing a strong fiscal framework, caring for all citizens and promoting responsible resource development. One significant change is the creation of the position of deputy premier. Thomas Lukaszuk, MLA for Edmonton-Castle Downs, will also chair the operations policy committee that ensures that policies reflect Albertans’ needs and that government consults regularly with Albertans.

This streamlined structure will allow Doug Horner, president of treasury board and minister of finance, to focus on one of the premier’s main priorities: results-based budgeting. Ken Hughes has been appointed as Alberta’s new energy minister. The departments of Environment and Sustainable Resource Development have been merged and will be led by Diana McQueen.

The new Cabinet will take the helm of a revitalized government structure that will target three priority areas:

• Investing in families and communities—supporting healthy and strong families and communities is an investment in Albertans and Alberta’s future;

• Securing Alberta’s economic future—making strategic investments in both human capital and infrastructure to strengthen Alberta, grow our knowledge-inspired economy and improve Alberta’s competitiveness in the global marketplace; and

• Advancing world-leading resource stewardship—developing our natural resources responsibly to protect our environment and grow our markets.

The spring sitting of the Alberta Legislature began on May 23, 2012.


NEB ANNOUNCES HEARINGS ON NGTL’S NEXT MODEL IMPLEMENTATION

The National Energy Board issued a hearing order on May 4, 2012, starting the process to hear an application by NOVA Gas Transmission Ltd. (NGTL) for approval of amendments to the NGTL Gas Transportation Tariff.

The applied-for amendments would implement the Natural Gas Liquids Extraction Rights model for the administration of natural gas liquids extraction on the Integrated Alberta System (the integrated systems of NGTL and ATCO Pipelines).

Among the issues the board expects to consider are the purpose for implementing the model, any positive or negative impacts of implementation, compliance with the National Energy Board Act and how the model will be implemented.

GOVERNMENT IMPROVES VULNERABLE ALBERTANS’ UTILITY CHOICES

The Alberta government is helping ensure vulnerable consumers will have more choices in Alberta’s energy market, including competitive electricity and natural gas contracts with fixed rates. Premier Alison Redford’s plan ensures that consumers have options available to give them more stable and predictable electricity prices.

The Alberta government amended the Energy Marketing and Residential Heat Sub-metering Regulation to allow Albertans with poor or no credit history to have access to fixed-rate contracts by negotiating a deposit with energy marketers according to rules set out by the regulation.

Under the regulation, these deposits must be returned within one year and door-to-door marketers are prohibited from collecting cash deposits. Marketers will also be required to fully refund deposits to consumers who cancel the contract during the regulated cooling-off period of 10 days for contracts signed at the door or over the Internet and 60 days after the first billing for consumers who sign up over the phone. Enabling more choices for consumers is yet another way the Alberta government is addressing volatile electricity prices while maintaining strong consumer protection.

The new rules give Albertans immediate access to competitive fixed-price contracts. This amendment directly fulfills one of the goals of the premier’s four-point plan to help address both the volatility and costs associated with electricity. The other three goals of this plan include a review of the variable regulated-rate option, a freeze on ancillary costs on power bills, and the extended mandate for the Alberta Utilities Commission to encourage efficiencies and lower prices.

FOCUS FOR NATURAL GAS DRILLING SHIFTS TO NGLS

The high value of natural gas liquids (NGLs) products that can be recovered while producing natural gas is encouraging companies to seek out deposits rich in these compounds as opposed to dry gas plays, says a recent energy market assessment from the National Energy Board (NEB). NGLs include such compounds as propane, butane and pentanes plus.
In the report, *Short-term Canadian Natural Gas Deliverability 2012-2014*, the NEB examines trends for natural gas deliverability in Canada (the ability to produce natural gas from new and existing wells). This report includes lower-, mid- and high-range price cases for natural gas based on varying market factors. The mid-range price case expects natural gas deliverability to decrease from 14.5 billion cubic feet per day in 2012 to 13.2 billion cubic feet per day in 2014.

The board projects annual Canadian natural gas demand to grow by 600,000 million cubic feet per day between 2012 and 2014. Most of this increase in natural gas demand would be from increased usage for oil sands development in Alberta.

**CANADIAN NATURAL GAS PRODUCTION SEEN FALLING AS DEMAND RISES: NEB STUDY**

Canadian natural gas deliveries could drop as much as 2.6 billion cubic feet per day from 2011 to 2014, as drilling activity slows in dry gas plays and prices remain low, Canada’s National Energy Board says in a new report. The report also predicts Canadian gas demand will rise nearly one billion cubic feet per day to 9.8 billion cubic feet per day over the same period. The slowdown in estimated marketed gas production is tied to low gas prices and producers’ focus on higher-priced liquids.

The report presents different scenarios depending on the future price of natural gas.

In the lower-price case, where gas remains below 2011 levels for the next three years, deliverability in Canada would drop from 14.6 billion cubic feet per day in 2011 to 12 billion cubic feet per day in 2014. This scenario assumes a continuation of oversupply conditions due to “significant contributions” from solution gas, associated gas and more liquids-rich gas production in the United States, says the study. It also states that the potential transition toward oil and away from natural gas would tend to shift some capital investment away from gas-prone British Columbia and into oil-prone Saskatchewan, while the impact would be mixed in Alberta.

In the report’s higher-price case scenario, there would be a closer balance between supply and demand and an eventual move back toward drilling for dry natural gas. That case assumes prices rise to $6 per million British thermal units by 2014. With those higher prices, deliverability of natural gas in Canada would decline from 14.6 billion cubic feet per day in 2011 to 13.6 billion cubic feet per day in 2014, the report says.

Canadian demand is projected to increase from 8.9 billion cubic feet per day in 2011 to 9.8 billion cubic feet per day in 2014. Most of the increase would come from a boost in demand from oil sands development in Alberta, according to the report. Oil sands operations use natural gas to create heat and steam to separate the oil from the sand. Natural gas-fired power generation is competing with some of the older and less-efficient coal-fired units in some markets, which increases gas demand and could gradually reduce the oversupply situation.

**ERCB ISSUES REPORT ON ALBERTA GAS EFFICIENCY IN THE UPSTREAM GAS AND CONVENTIONAL OIL INDUSTRY**

The Energy Resources Conservation Board (ERCB) conducted a study evaluating the efficiency of Alberta’s oil and gas industry and made projections for the future of this industry. The report contains two major parts. Part one consists of provincial statistics largely summarized from Petroleum Registry of Alberta data. Part two contains information from a survey of the top 20 fuel gas consumers. The upstream oil and gas industry represents a significant opportunity for companies in terms of both improvement and efficiency in savings.

Part one of this report found that annual gas production and gas plant receipts held fairly steady until about 2006 before declining year-over-year. The decline in gas production, due to higher costs moving gas to markets, contributes to lower facility utilizations and operating pressures. Gas production is declining in part due to lower energy prices. Low prices are detrimental to fuel gas efficiency project economics.

In part two, the ERCB surveyed the top 20 fuel gas consumers, representing 76 per cent of the fuel gas consumed in the upstream gas and conventional oil industry. The 17 fuel gas consumers who responded were asked to share how they were making decisions on fuel gas efficiency projects, and to describe the successes and challenges they have had while improving fuel gas efficiency and reducing fuel gas use. In 2011, companies estimated the largest savings to be in the areas of consolidation and evaluations, waste heat recovery and compressors. For some companies, the most economic projects may have already been implemented, but changing operating conditions will provide new opportunities for future savings. Programs, motivators and areas to reduce fuel consumption were identified, along with ways to reduce barriers to implementation.

The complete report is available online at the ERCB website (www.ercb.ca).
What's new in natural gas

NEW REPORT OUTLINES WAYS TO BOOST ECONOMICS OF UNCONVENTIONAL GAS

In response to low natural gas prices and the economic challenges this is causing in western Canada, the industry must examine and implement improvements that will effectively lower development and operational costs, according to a new study released in May.

The technical study, produced for Productivity Alberta by authors Mike Dawson, president of the Canadian Society for Unconventional Resources; Peter Howard, president of the Canadian Energy Research Institute; and Mark Saliekeld, president of the Petroleum Services Association of Canada, was put together to highlight possible operational practices and protocols that will improve the productivity of operations to help in the economic development of unconventional gas projects.

“The concept of project development and employing the multi-well concept can accommodate many of the processes identified,” the report stated.

It noted that while some of the larger companies have embraced a number of the processes, there are a large number of operators that are still conducting exploration based on the one-well, one-location mindset.

“This approach does not enable cost savings to be achieved and in many cases relies on a drilling window approach for services,” the report said. “Many junior companies, who may have a limited inventory of well prospects and a limited exploration budget, rely on acquiring their service providers in small windows of opportunities when the equipment comes available from larger projects.”

In this scenario, often the oil and gas company that is relying on this window to drill and complete their one well will not only be time constrained, but also will not realize the cost savings of a multi-well drilling program, the report said.

“We all recognize there are some significant challenges in the oil and gas sector right now, particularly in the gas sector,” Dawson said. “We see it in terms of prices; we see it in terms of companies shifting their focus away from dry gas opportunities.”

While the industry is looking at global opportunities through liquefied natural gas exports off the West Coast, he pointed out that realistically won’t happen until 2015 or 2016 at the earliest.

“What can we do to try and improve or help the industry, particularly the gas industry, in the short term, over the next three to four years? That’s what this study was looking at,” Dawson noted.

TRANSCANADA SELECTED TO BUILD AND OPERATE $4-BILLION LNG PIPELINE

TransCanada Corporation has been chosen by Shell Canada Limited and its partners to design, build, own and operate the proposed Coastal GasLink project, an estimated $4-billion pipeline that will transport natural gas from the Montney gas-producing region near Dawson Creek, B.C., to the recently announced LNG Canada liquefied natural gas export facility near Kitimat, B.C.

The LNG Canada project is a joint venture led by Shell, with partners Korea Gas Corporation, Mitsubishi Corporation and PetroChina Company Limited. The project was officially announced May 16, 2012. Shell and TransCanada are working toward the execution of definitive agreements on the Coastal GasLink project.

“We look forward to having open and meaningful discussions with aboriginal communities and key stakeholder groups, including local residents, elected officials and the Government of British Columbia, where we will listen to feedback, build on the positive and seek to address any potential concerns,” said Russ Girling, TransCanada’s president and chief executive officer.

“Coastal GasLink will add value to British Columbians, particularly Aboriginals and communities along the conceptual route, by creating real jobs, making direct investments in communities during construction and providing economic value for years to come.”

TransCanada currently has approximately 24,000 kilometres of pipelines in operation in western Canada including 240 kilometres of pipelines in service in northeastern British Columbia, with another 125 kilometres of proposed additions either already having received regulatory approval or currently undergoing regulatory review. These pipelines form an integral and growing part of TransCanada’s NOVA Gas Transmission Ltd. (NGTL) System. The company also owns other natural gas pipelines that have been safely operating in British Columbia for more than 50 years as part of its Foothills pipeline system.

“Business evolves over time and in response to market needs,” said TransCanada spokesman Shawn Howard. “Coastal GasLink is a large market-driven project and it makes sense for us to be involved in it. The interconnectivity with the NGTL makes good sense for all stakeholders in our system.”

The potential Coastal GasLink pipeline project includes a receipt point near Dawson Creek and a delivery point at the proposed LNG facility near Kitimat. Natural gas supplies will come from B.C.’s Montney, Horn River and Cordova basins and elsewhere from the Western Canadian Sedimentary Basin. The pipeline length will be 700 kilometres of large-diameter pipe with an initial capacity of over 1.7 billion cubic feet per day.

It is estimated the project will create between 2,000 and 2,500 direct construction jobs over two to three years. Detailed cost information will be developed following completion of project scoping and planning. The current estimate is approximately $4 billion.
Applications for required regulatory approvals are expected to be made through applicable provincial and federal processes. The estimated in-service date will be toward the end of the decade, subject to regulatory and corporate approvals. 

In addition to the transportation of B.C. natural gas to the West Coast, Coastal GasLink will provide options for shippers to access gas supplies through an interconnection with the NGTL System and the liquid NOVA Inventory Transfer trading hub operated by TransCanada.

A proposed contractual extension of TransCanada’s NGTL System using capacity on the Coastal GasLink pipeline, to a point near the community of Vanderhoof, B.C.—about an hour’s drive west of Prince George—will allow NGTL to offer delivery service to its shippers interested in gas transmission service to interconnecting natural gas pipelines serving the West Coast. NGTL expects to elicit interest in and commitments for such service through an open-season process in late 2012.

GAS PROCESSING STUDY POINTS TO VALUE OF INDUSTRY COORDINATION

Better utilization of surplus gas-processing capacity in northwestern Alberta could significantly reduce capital and operating costs and increase recoveries from the growing tight natural gas and liquids-rich Duvernay plays, a new study has concluded.

The joint multi-client study by Ziff Energy Group and Gas Processing Management Inc. (GPMI) has identified specific opportunities to reduce capital investment by $2.7 billion through 2020 with coordinated industry development. At the same time, area competitiveness could be improved with a $170-million annual reduction in gas plant operating expenses and maintenance capital, it found.

“We are happy with the interest that has been expressed by the major players, and we are hoping that the prize that we are able to develop at a high level will provide some impetus to do some things,” Bill Armstrong, a GPMI principal and one of the study’s co-authors, said in an interview following the release of the study. “But really, the hard work is yet to be done, and it has to be done by the producers and processors themselves.”

“We have had lots of interest and everybody agrees that it’s worthwhile doing; it’s just hard to get the ball rolling,” he added. However, it also will take more effort and cooperation and could take more time to do these sorts of things, Armstrong acknowledged.

“The impetus is to get started on it,” he said. “My feeling is that if we don’t start along a different path, we will lose the opportunity to do that and people will get into doing it the same way we have always done it.”

The 220-page study, Integrated Tight Gas and Duvernay Growth Resource and Infrastructure Analysis in Alberta, covers the Elmworth/Wapiti, Simonette, Kaybob, Whitecourt, Edson, Rosevear and Hanlan areas.

“It focuses on optimizing capital, operating expenses, product recoveries, and cycle times as if the team owned all the resources and assets,” said Bill Gwozd, vice-president of gas services for Ziff and a study co-author.

“The Duvernay and the Montney in the area present exciting opportunities to develop and grow significant new gas and natural gas liquids production through 2020,” said Armstrong. Gas production from those areas is expected to increase by 50 per cent to six billion cubic feet per day by 2020, even in the current low price environment, it found.

REPORT SAYS PETROLEUM INDUSTRY WILL NEED TO FILL AT LEAST 9,500 JOBS BY 2015

Canada’s oil and gas industry will need to fill a minimum of 9,500 jobs by 2015, according to a report released in May by the Petroleum Human Resources Council of Canada.

Highlights from the report, Canada’s Oil and Gas Labour Market Outlook to 2015, state that between now and 2015, Canada’s oil and gas industry is at risk of losing about three per cent of its workforce overall, because of persistently low natural gas prices. However, two primary factors—growth in certain operations and age-related attrition across the industry—will offset most job losses and in fact contribute to increased overall hiring needs.

Changes in the number of jobs will not be equal across all industry sectors. For example, the oil and gas services sector, although impacted by commodity price volatility, will still need to fill about 5,400 jobs between 2012 and 2015.

The exploration and production sector, hardest hit by prolonged low natural gas prices, may see some workforce contraction but will also experience skill and experience gaps as it loses workers due to retirements and turnover, especially for industry-specific roles. By 2015, employment in the oil sands sector is projected to increase by 29 per cent over 2011 levels, or approximately 5,850 jobs. The pipeline sector will add about 530 jobs over the same period. Both sectors will also need to do significant hiring to replace retiring workers and for turnover.

“This is a complex labour story,” said Cheryl Knight, executive director and chief executive officer of the Petroleum Human Resources Council. “Hiring will increase, but total number of jobs will remain relatively flat. Certain sectors and operations will add jobs, while others will lose some positions. And employee turnover is the wild card that could have recruiters working to fill hundreds of additional job openings over the next four years.”
“At a more granular level, we’re seeing high demand for—and reduced supply of—skilled workers in specific occupations, many of which are unique to the oil and gas industry. Retirements are the greatest cause of this growing skill and experience gap. The technical capabilities and knowledge of retiring, experienced workers are just not easily replaced by new entrants.”

*Canada’s Oil and Gas Labour Market Outlook to 2015* includes labour-demand projections for 38 core occupations in Canada’s oil and gas industry within four industry sectors (exploration and production, oil sands, oil and gas services, and pipeline). Analysis is also provided for key operating regions in western Canada (British Columbia, Alberta and Saskatchewan) as well as for the rest of Canada.

### ALTAGAS SEEING GROWING NATURAL GAS DEMAND

AltaGas Ltd. said natural gas demand is on the rise for power, industrial use and trucking, and prices will likely eventually increase but they will never again reach their historical peaks. The company is expecting “modest” gas price increases through 2014 with the potential for hikes if and when liquefied natural gas (LNG) exports begin, but gas prices won’t return to “the heydays of $8–$10 [per] thousand cubic feet. We think the resource is just too large to see that type of price increase,” said David Cornhill, chairman and chief executive officer.

AltaGas is seeing an increase of four to seven billion cubic feet per day in power demand for natural gas in North America due to its economic edge over coal, as well as industrial growth, he told the company’s annual general meeting.

The company is forecasting the need for 2,200 megawatts of new power generation in Alberta over the next 10 years to offset growth and the retirement of several coal-fired plants starting in 2017, and it will be mainly natural gas that will fill that void, Cornhill told the meeting.

“Petrochemicals are back and a lot of the industries that moved off the continent are looking to come back with the cheap natural gas,” he said.

Compressed natural gas is a growing fuel of choice for long-haul truckers, the meeting heard. AltaGas is becoming quite active in Nova Scotia’s trucking industry and the company is looking for additional opportunities in Alberta and British Columbia.

“The big wild card is LNG export. Whether it’s on the Gulf or the West Coast and clearly in the 2015 time frame we could start seeing significant gas moving offshore through LNG,” Cornhill told the meeting.

Demand growth could be surprisingly fast, but the question is when will that demand meet supply and when will there be a price reaction, he added.

Between the construction of power plants, gas plants, pipelines and LNG facilities, AltaGas estimates that more than $35 billion will be spent over the next seven to 10 years on LNG development in British Columbia, said Cornhill.

### JAPANESE COMPANY INVESTS $600 MILLION FOR CBM DEVELOPMENT

Encana Corporation has reached an agreement with Toyota Tsusho Wheatland Inc., a subsidiary of Toyota Tsusho Corporation, which will see the Japanese company invest approximately C$602 million to acquire a 32.5 per cent royalty interest in natural gas production from a portion of Encana’s coalbed methane (CBM) resource play.

The agreement includes production from a total of about 5,500 existing wells and potential future drilling locations in southern Alberta.

“This investment from a global partner recognizes the significant value identified in Encana’s CBM lands, which rank among the company’s lowest-cost, lowest-risk assets and signifies another step as Encana pursues a range of opportunities to manage its portfolio and enhance the long-term value creation of its vast inventory,” Randy Eresman, president and chief executive officer, said in a prepared statement.

The company’s CBM resources cover a great expanse that includes approximately 2.1 million net acres in the Horseshoe Canyon fairway. The vast majority of this acreage is fee lands, where Encana holds the mineral rights in perpetuity, and are estimated to contain significant amounts of recoverable natural gas. This relationship with Toyota Tsusho offers strong synergies that have the potential to foster expanded business opportunities, he added.

“Further, this agreement serves as a model for other investment opportunities and supplies capital investment to preserve the value and efficient development of Encana’s shallow gas lands in Alberta that have contributed long life production for more than five decades,” Eresman added.

Encana has been selling midstream assets, inked a joint venture deal and is looking for more. Earlier this year, the natural gas producer said it was executing its plan to leverage the exploration and development of certain of its oil- and liquids-rich assets through partnership opportunities designed to maximize recognition of the value inherent in its large asset base. In February, the company completed the Cutbank Ridge partnership agreement with Mitsubishi Corporation. The company also sold off interests in the Cabin Gas Plant.

In a press release, Toyota Tsusho said it regards North America as a strategic business region for building a natural gas value chain through transactions. It noted that growing supplies may “serve as a future LNG [liquefied natural gas] source for Japan in the near future.”

The Japanese company added that unlike many CBM projects around the world, Horseshoe Canyon coals do not produce water and production can be developed without environmental concerns and costs related to dewatering of the coals prior to production.

“In addition, Encana’s world-class experience and technical capabilities in CBM projects reduce business risks.”

Encana, along with Apache Corporation and EOG Resources, Inc., are part of the KM LNG Operating General Partnership.
The group proposes to construct an LNG export facility near Kitimat, B.C. A final investment decision is expected this year. The project received its 20-year export licence approval from the National Energy Board late last year.

Under the agreement, Toyota Tsusho paid $100 million with the closing of the transaction in April and will invest approximately $502 million over seven years to acquire a 32.5 per cent royalty interest, before deductions, in production from approximately 4,000 existing wells and approximately 1,500 potential future drilling locations.

These wells are located in an area covering about 480,000 net acres along the eastern edge of the Horseshoe Canyon fairway—an area that represents about 24 per cent of Encana’s total CBM net acreage. The existing wells on these lands are currently producing a total of about 120 million cubic feet equivalent per day of natural gas.

The area contains approximately 480 billion cubic feet equivalent of proved-plus-probable reserves and 140 billion cubic feet equivalent of best-estimate economic contingent resources as of Dec. 31, 2011. Under the agreement, Encana will be operator and Encana and Toyota Tsusho have established a management committee that will provide overall supervision and direction of development operations.

“Our integrated CBM wells produce low-pressure, sweet natural gas that is essentially pure methane, and as a result is a cleaner energy source, producing the fewest emissions of any hydrocarbon—a natural gas resource capable of delivering long-term, affordable energy supplies to domestic and export markets,” Eresman said.

### ALBERTA KING OF FIRST-QUARTER LAND SALE BONUS BIDS

Scott Land & Lease Ltd. was the top land buyer in the first quarter, spending $137.37 million in the three months ending March 31 on behalf of unknown producers, with $102.58 million of that spent in Alberta.

Overall, companies bought the rights to 840,612 hectares in the first quarter, spending a total of $428.39 million in bonus bids at an average of $509.62. The Lion’s share of bonus revenue was spent to acquire land in Alberta where the province collected $310.69 million in bonus bids.

Ranking second overall in terms of land purchasers was Standard Land Company Inc., which spent $59.07 million in total bonus bids to acquire 100,610 hectares at an average of $587.14.

The top producer acquiring land under its own name was Progress Energy Resources Corp., which spent $19.32 million for 3,092 hectares at an average of $6,247.04. All of that land was acquired in British Columbia. The company’s acquisition of

ending March 31. The broker paid $7.52 million, an average of $2,423.47, for a parcel around 94-8-16.

WestFire Energy Ltd. produced the top bonus in Saskatchewan during the period, paying $1.76 million for a parcel around 26-19W3, which produced an average price of $6,781.99.

### RECORD NATURAL GAS STORAGE VOLUMES FORECAST

Natural gas production levels are expected to continue to surpass peak North American storage levels heading into the summer injection season, putting further pressure on gas prices, said AJM Deloitte in a report in which it reduces its gas price forecast.

By the start of the next withdrawal cycle in November there will be an unprecedented 900 billion cubic feet of Canadian gas in storage, exceeding the three-year maximum average of about 625 billion cubic feet, said the company. A mild winter, continuing growth in supply and a weak economic recovery did little to draw down the record high levels of storage heading into this past winter, it noted.

“Even the estimation of a colder winter over 2012-13 will not significantly reduce storage levels to impact any noticeable price recovery into next year,” it said. “Until there is a clear indication of a sustained return to growth in the U.S. economy, there will be limited increase in demand on the industrial usage side of the equation, thus maintaining a low natural gas price.”

As a result, AJM Deloitte is forecasting an AECO gas price of C$2.30 per thousand cubic feet and a NYMEX price of US$2.80 per thousand cubic feet for the remainder of this year. Moving into 2013, it has an AECO price of C$3.20 per thousand cubic feet and a NYMEX price of US$3.50 per thousand cubic feet.

With continued moderate growth over the next decade for natural gas prices, the long-term forecast is reached by 2021 in real terms, with AECO at C$6.20 per thousand cubic feet and NYMEX at US$6.50 per thousand cubic feet.

The first quarter of 2012 offered little comfort for natural gas producers who saw a sub-$2-per-gigajoule AECO price in March as an early spring reduced the demand for natural gas for heating.

Spot prices at AECO for the first three months of 2012 averaged $2.05 per gigajoule, the lowest since the third quarter of 1998 when gas fetched $1.93 per gigajoule. In March, the price fell to $1.72 per gigajoule from $2.04 per gigajoule in February and $3.52 in March 2011, drops of 15.68 per cent and 42.67 per cent, respectively. April’s price was the lowest since February 1998 when gas averaged $1.64 per gigajoule.

NYMEX near-month prices showed a similar decline, averaging US$2.52 per million British thermal units (mmBtu) in the first quarter, down 48.57 per cent from $4.20 in the 2011 quarter. March’s average price of $2.30 per mmBtu was off nine per cent from $2.53 per mmBtu in February.

The growing volumes of natural gas in North America are also raising concerns about storage capacity with Canadian Enerdata reporting recently that Canadian storage facilities were 69.2 per cent full compared to a year earlier when they were at 27.7 per cent of capacity.
The Alberta Geological Survey estimates there may be up to 500 trillion cubic feet of natural gas in Alberta’s coals. It is not known how much of this gas may be economic to produce. As more information becomes available, the production potential will become clearer.

Approximately 95 per cent of the coalbed methane wells drilled in Alberta have targeted the thinner coal seams in the Horseshoe Canyon (gas in place 71 trillion cubic feet) and Belly River coal zones along the Calgary–Red Deer corridor. Wells targeting these seams tend to produce gas with little or no water. The depth range of these coals is 200–800 metres.

Most of the remaining CBM wells drilled have targeted the deeper Mannville coals (gas in place 239 trillion cubic feet). These coals tend to be thicker, deeper and more continuous with substantial saline (salt) water production. The depth range of these coals is 900–1,500 metres.

Despite depressed natural gas prices over the past few years, Encana Corporation, Quicksilver Resources Inc. and other companies are still drilling CBM wells. Encana’s second-quarter 2011 CBM production was 476 million cubic feet equivalent per day, which was 12 per cent higher than the second quarter of 2010 as a result of successful drilling, acquisitions and third-party production. The company drilled 320 net wells and brought 538 new wells on stream. For 2011, it plans to drill 450 net wells.

Encana also reports it is doing more pad drilling this year to allay land disturbance concerns in more populated rural operating areas, but also to reduce its supply cost on this resource play to around $3 per thousand cubic feet.

The top producers from the Horseshoe Canyon coals are Encana, Quicksilver, Nexen Inc., and Apache Canada Ltd. Nexen and Trident Exploration are the leaders in the Mannville coals.

According to an Energy Resources Conservation Board’s (ERCB) 2010 summary of reserves and production, CBM contributed 261 million cubic feet and “activity in CBM has increased from a few test wells in 2001 to more than 16,000 producing connections [wells] in 2010.”

Currently, 86 per cent of producing CBM wells are in the Horseshoe Canyon. In 2010, CBM contributed eight per cent of Alberta’s total marketable gas production, which the ERCB projects will increase to 13 per cent by 2020.

**Shale Gas:**

Shale gas exploration and development in the Western Canadian Sedimentary Basin has undoubtedly been accelerated by the continued success of several prolific U.S. shale basins.

The potential for Canadian shale gas production is still being evaluated. In northeastern British Columbia, the most advanced shale gas plays are found in the Horn River Basin, and to a lesser extent in the Cordova Embayment. A number of companies exploring in these regions have advanced their exploration efforts to a point where pilot projects with multiple wells have been completed and natural gas is being produced.
and sold via the Spectra pipeline system. Large-scale commercial development will be dependent on market conditions.

According to the ERCB, shale gas exploration and production is in its infancy in Alberta, so currently there is limited data to estimate the shale gas resource potential in the province. Knowledge obtained from American projects indicates that shale gas has the potential to add substantially to Alberta’s resource and reserve base. The ERCB is currently evaluating the shale gas resource potential of all prospective shale gas formations in Alberta.

Current exploration and production is constrained by poor market conditions, but two new emerging plays in Alberta are the deep Duvernay Formation and Colorado Group shales located in the western part of the province. Limited testing has taken place with encouraging results, but no commercial projects have been developed to date.

**TIGHT GAS:**

The Western Canadian Sedimentary Basin is host to most of Canada’s conventional natural gas resources and within this basin, the northern and western regions contain much of the tight gas potential.

Total original gas in place (OGIP) is estimated at 1,311 trillion cubic feet. Other regions within Canada, specifically the Mackenzie Delta in the Arctic and the Albert Formation in the Maritimes, are believed to have tight gas resource potential, but no estimates have been made due to lack of geological data.

While the OGIP value is very large, only a portion of these resources are deemed technologically recoverable. Marketable resources are estimated at between 230 and 509 trillion cubic feet, with half attributed to the Deep Basin and the Montney in Alberta, and the rest to various accumulations in northeastern British Columbia.

**NATURAL GAS LIQUIDS (NGLs):**

Natural gas liquids (NGLs) are recovered mainly from the processing of natural gas in Alberta. Field gas-processing facilities ensure that natural gas meets the quality specifications of the rate-regulated natural gas pipeline systems, which require removal of NGLs to meet pipeline hydrocarbon dew point specifications. Field plants may send recovered NGL mix to centralized, large-scale fractionation plants where the mix is fractionated in specification products. Gas reprocessing plants, often referred to as straddle plants, recover NGL components or NGL mix from marketable gas and are usually located on the main gas transmission pipelines at border delivery points.

In Alberta, there are about 550 active gas processing plants that recover NGL mix or specification products, 10 processing plants that fractionate NGL mix streams into specification products and nine straddle plants.

Remaining established reserves of extractable ethane is estimated to be 113 million cubic metres (716 million barrels). The remaining established reserves of other NGLs—propane, butane and pentanes plus—is 148 million cubic metres (932 million barrels).

All of the specification ethane extracted from natural gas was used in Alberta as feedstock. The petrochemical industry in Alberta is the major consumer of ethane recovered from natural gas, with four plants using ethane as feedstock for the production of ethylene. The petrochemical industry in Alberta is benefiting from the low gas price environment since the price of ethane is linked to natural gas prices. The Alberta ethylene industry continues to maintain its historical cost-advantage for ethylene production compared to other regions in North America.
DRILLING ACTIVITY IN ALBERTA, 1950–2010

Source: Energy Resources Conservation Board

ALBERTA CROWN LAND SALES
P&NG rights, excluding oil sands

Source: Alberta Energy

DRILLING RIG COUNT BY PROVINCE/TERRITORY
Western Canada June 12, 2012

<table>
<thead>
<tr>
<th>Province/Territory</th>
<th>Active</th>
<th>Down</th>
<th>Total</th>
<th>Active (Per cent of total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
<td>153</td>
<td>430</td>
<td>583</td>
<td>26%</td>
</tr>
<tr>
<td>British Columbia</td>
<td>18</td>
<td>35</td>
<td>53</td>
<td>34%</td>
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<tr>
<td>Manitoba</td>
<td>10</td>
<td>13</td>
<td>23</td>
<td>43%</td>
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<td>Saskatchewan</td>
<td>75</td>
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<td>137</td>
<td>55%</td>
</tr>
<tr>
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<td>540</td>
<td>796</td>
<td>32%</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0%</td>
</tr>
</tbody>
</table>

Source: JuneWarren-Nickle’s Energy Group

OIL & GAS WELL COMPLETIONS BY PROVINCE/TERRITORY
Western Canada May 2012

<table>
<thead>
<tr>
<th>Province/Territory</th>
<th>Oil Wells</th>
<th>Gas Wells</th>
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</thead>
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<td></td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
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<td>616</td>
</tr>
<tr>
<td>British Columbia</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Manitoba</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>83</td>
<td>136</td>
</tr>
<tr>
<td>Total</td>
<td>403</td>
<td>762</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: JuneWarren-Nickle’s Energy Group
Top 25 Gas Producers in Alberta (as of June 14, 2012)
- Only gas from gas and conventional oil wells was considered; gas from bitumen wells was not included.
- Gas from commercial gas storage schemes was excluded.

Source: Energy Resources Conservation Board
Abandoned well: A well that is permanently shut down because it was a dry hole or because it has ceased to produce crude oil or natural gas.

Acid gas: Hydrogen sulphide (H₂S) or carbon dioxide (CO₂) or a combination of H₂S and CO₂, which are referred to as acid gases because they form acids or acidic solutions in the presence of water.

Audits: Actions taken by staff or a third party to help measure a company’s compliance with legislation and internal requirements, and to identify opportunities for improvement. Audits can involve field inspections, interviews with management and document review.

Blowout preventer (BOP): Equipment that is installed at the wellhead to control pressures and fluids and to prevent uncontrolled fluid flow from the reservoir during drilling, completion and certain remedial operations to restore production.

Broker: An individual or independent corporation engaged in bringing together sellers and buyers of natural gas, assisting in negotiations, and arranging transportation and delivery terms. Brokers usually do not buy or sell for their own account, but act as an agent for the buyer and/or seller.

Burner-tip: The point of end-use consumption of a particular fuel, such as natural gas or residual fuel oil.

Burner-tip price: The price of natural gas (or other fuels) paid by the final consumer. For natural gas, this includes the price of the gas plus the cost of processing, gathering, transmitting and distributing it.

Butane (C₄H₁₀): A natural gas liquid (NGL) used as a household fuel, refrigerant and aerosol propellant and in the manufacture of synthetic rubber.

Caprock: Impermeable rocks such as shale that overlie the reservoir rock and trap natural gas and crude oil in the reservoir. Also, impermeable rock overlying a geothermal reservoir. Also called sealing rock.

Carbon dioxide (CO₂): A non-toxic gas produced from decayed materials, respiration of plant and animal life, and combustion of organic matter, including fossil fuels; carbon dioxide is the most common greenhouse gas produced by human activities.


Coalbed methane: Natural gas generated during the coalification process and trapped within coal seams, commonly referred to as natural gas from coal.

Commingled gas: A homogeneous mix of natural gas from various (physical or contractual) sources.

Completion: Preparing a newly drilled well for production; usually involves setting casing—pipe that lines the interior of a well to prevent caving and protect against groundwater contamination—and perforating the casing to establish communication with the producing formation.

Compressed natural gas (CNG): Natural gas in its gaseous state that has been compressed to about one per cent of its volume and stored at 20,000-27,500 kilopascals.

Condensate: A mixture of hydrocarbons consisting primarily of pentanes and heavier liquids extracted from natural gas. While it can be used to make gasoline, jet fuel and other products, it is primarily used in Alberta as diluent.

Conventional gas: Natural gas that can be produced using recovery techniques normally employed by the oil and gas industry. The distinction between conventional and unconventional gas is becoming less clear. See also unconventional gas.

Deep cut: The processes that recover NGLs from natural gas in excess of amounts required for sales gas to meet pipeline specifications.

Deliverability: The amount of natural gas a well, field, gathering, transmission or distribution system can supply in a given period of time.

Directional drilling: Drilling a wellbore at any angle other than vertical; used where the rig cannot be set up directly over the target, or to drill more than one hole from a single location.

Downstream: The refining and marketing sector of the petroleum industry.

Dry gas: Natural gas from the well that is free of liquid hydrocarbons, or gas that has been treated to remove all liquids; pipeline gas.

Energy Resources Conservation Board (ERCB): An independent, quasi-judicial agency of the Government of Alberta. Its mission is to ensure that the discovery, development and delivery of Alberta’s energy resources take place in a manner that is fair, responsible and in the public interest.

Established reserves: Generally defined as proved reserves, plus one half probable reserves.

Ethane (C₂H₆): An NGL, the uses of which include enhanced oil recovery, as a fuel and as a feedstock for the petrochemical industry.

Flaring: Controlled burning of natural gas that cannot be processed for sale because of technical or economic reasons. The biggest portion is solution gas flaring, which involves the burning of natural gas produced along with crude oil and bitumen.

Fracturing (or fracking): A reservoir stimulation technique in which fluids are pumped into a potentially productive formation under high pressure to create or enlarge fractures allowing the oil or gas to flow from the zone at higher rates. In some operations, proppants such as frac sand are injected with the frac fluid to help hold the rock fractures open.

Gas: One of the three states of matter, gas is characterized by having neither shape nor specific volume; it expands to fill the entire container in which it is held.

Gas processing plant: Any facility that performs one or more of the following: removing liquefiable hydrocarbons from wet gas or casinghead gas; removing undesirable gaseous and particulate elements from natural gas; removing water or moisture from the gas stream.

Gas reservoir: A porous and permeable rock formation in which natural gas accumulates.

Gas transmission systems: Pipelines that carry natural gas at high pressure from producing areas to consuming areas.

Gathering system: A system of small-diameter plastic or steel pipes (gathering lines) transporting natural gas from producing wells to field facilities.

Horizontal drilling: Drilling horizontally through a reservoir to increase the exposure of the formation to the well.

Hydrocarbons: A large class of liquid, solid or gaseous organic compounds, containing only carbon and hydrogen, which are the basis of almost all petroleum products.

Hydrogen sulphide (H₂S): A naturally occurring, highly toxic gas with the odour of rotten eggs.

Inert gases: Gases that are unable to or unlikely to react with any other substance.

Injection (oil and gas): Injection enhancement technique wherein water or other substances are injected into an oilfield to improve production. Also, the re-injection of natural gas into an oilfield to maintain reservoir pressure.

Inlet separation: The initial stage of processing at a natural gas processing plant where the incoming raw gas stream enters a vessel and any free liquids, such as water and NGLs, are removed from the gas stream before it is further processed.
Land:  In the petroleum industry, “land” often refers to the oil and gas rights on a particular area of land. For example, in a “land sale,” the oil and/or gas rights are “sold” (although in reality the rights are leased).

Landman:  A male or female member of the exploration team whose primary duties are managing a petroleum company’s relations with its landowners and partners, including securing and administering oil and gas leases and other agreements. Other duties include helping to formulate exploration and development strategies. Also known as a land agent or land person.

Lease agreement:  The negotiated legal document giving an oil and gas company the right to utilize the surface lease site to drill for and produce oil or gas.

Liquefied natural gas (LNG):  Supercooled natural gas that is maintained as a liquid at or below -160°C. LNG occupies 1/640th of its original volume and is therefore easier to transport if pipelines cannot be used.

Manufactured gas:  A gas obtained by destructive distillation of coal, by the thermal decomposition of oil or by the reaction of steam passing through a bed of heated coal or coke. Examples are coal gases, coke or oven gases, producer gas, blast furnace gas, blue (water) gas or carbureted water gas (also known as syngas).

Methane (CH₄):  Methane consists of one carbon atom and four hydrogen atoms and is the largest component of natural gas. Methane remains in a gaseous state at relatively low temperatures and pressures. Methane is also produced when organic matter decomposes.

Midstream sector:  Primarily the processing, storage and transportation sector of the energy industry.

Mineral rights:  The rights to explore for and produce the resources below the surface. In the petroleum industry, mineral rights can also be referred to as “land.”

National Energy Board (NEB):  The federal regulatory agency in Canada that authorizes oil, natural gas and electricity exports; certifies interprovincial and international pipelines, and designated interprovincial and international power lines; and sets tolls and tariffs for oil and gas pipelines under federal jurisdiction.

Natural gas:  Gaseous petroleum consisting primarily of methane with lesser amounts of (in order of abundance) ethane, propane, butane and condensates. Raw natural gas with a relatively low concentration of sulphur compounds, such as hydrogen sulphide.

Natural gas liquids (NGLs):  Liquids obtained during production of natural gas, comprising ethane, propane, butane and condensate.

Non-associated gas:  Natural gas that is produced from reservoirs that contain only natural gas, and is therefore not associated with crude oil production.

Operator:  The company responsible for managing an exploration, development or production operation.

Orphan wells:  Wellsites for which the licence operators have ceased to exist or cannot be traced.

Pentane (C₅H₁₂):  A hydrocarbon compound consisting of five carbon atoms and 12 hydrogen atoms.

Petroleum:  A naturally occurring mixture composed predominantly of hydrocarbons in the gaseous or liquid phase.

Probable reserves:  Reserves believed to exist with reasonable certainty based on geological information.

Propane (C₃H₆):  An NGL used as a fuel (i.e.: in barbeques, transportation and heating of households in areas where natural gas supply is not available).

Proppant:  Sand, or ceramic or resin beads pumped into a wellbore at the end of the fracturing process to prop open newly induced fractures and enhance permeability.

Proved reserves:  Reserves that can be economically produced with a large degree of certainty from known reservoirs using existing technology.

Raw natural gas:  A mixture containing methane plus all or some of the following: ethane, propane, butane, condensates, nitrogen, carbon dioxide, hydrogen sulphide, helium, hydrogen, water vapour and minor impurities. Raw natural gas is the gas found naturally in the reservoir prior to processing.

Recoverable resources:  Hydrocarbon reserves that can be produced with current technology, including those not economical to produce at present.

Recoverable portion of resources available for use based on current knowledge, technology and economics.

Reservoir (oil and gas):  A porous and permeable underground rock formation containing a natural accumulation of crude oil or natural gas that is confined by impermeable rock or water barriers, and is separate from other reservoirs.

Sales gas:  Natural gas that has been treated in a natural gas processing facility and is suitable for sale. Some of the processes that natural gas may undergo are inlet separation, gas treating, dehydration and NGL recovery, before it enters a transmission pipeline for eventual transportation to market.

Shale gas:  Natural gas that is trapped within shale formations. Shales are fine-grained sedimentary rocks that can be rich sources of petroleum and natural gas.

Solution gas:  Natural gas that is dissolved in crude oil in underground reservoirs. When the oil comes to the surface, the gas expands and comes out of the oil.

Sour gas:  Raw natural gas with a relatively high concentration of sulphur compounds, such as hydrogen sulphide. All natural gas containing more than one per cent hydrogen sulphide is considered sour. About 30 per cent of Canada’s natural gas production is sour; most of it found in Alberta and northeastern British Columbia.

Source rock:  The rocks in which hydrocarbons are created or sourced from carbohydrates through heat and pressure. Source rocks are often black shales.

Straddle extraction plant:  A gas processing plant located on or near a gas transmission line that removes natural gas liquids from the gas and returns it to the line.

Sulphur recovery:  Sour gas is processed at recovery plants to extract sulphur for sale to fertilizer manufacturers and other industries in Canada and overseas. The average rate of sulphur recovery at Alberta’s sulphur recovery plants has improved from 97.5 per cent in 1980 to 98.8 per cent in 2000.

Sweet gas:  Raw natural gas with a relatively low concentration of sulphur compounds, such as hydrogen sulphide.

Syngas:  A fuel produced from solid hydrocarbons such as coal and petroleum coke. The process uses steam, air and controlled amounts of oxygen to break the solid down, and the resulting gas consists of varying amounts of carbon monoxide and hydrogen.

Tight gas sands:  Natural gas that is found in sandstone with low permeability.

Trunk lines:  Large-diameter pipelines that transport crude oil, natural gas liquids and refined petroleum products to refineries and petrochemical plants; some trunk lines also transport refined products to consuming areas.

Unconventional natural gas:  In the case of natural gas from coal, natural gas from tight sands and shale gas, conventional gas found in unconventional reservoirs or reservoirs requiring special production methods or technologies; in the case of gas hydrates, conventional methane in an unconventional form occurring in a conventional reservoir.

Upstream:  Refers to companies that explore for, develop and produce petroleum resources (in contrast, downstream refers to the refining and marketing components of the industry).

Western Canadian Sedimentary Basin (WCSB):  Canada’s largest region of sedimentary rocks; the largest source of current oil and gas production, covering all of Alberta and parts of Manitoba, Saskatchewan, British Columbia and the Yukon.

Wet gas:  Raw natural gas with a relatively high concentration of natural gas liquids (ethane, propane, butane and condensates).
## CONTACTS

### Industry Associations
- Alberta Land Surveyor's Association  
  [www.alsa.ab.ca](http://www.alsa.ab.ca)
- Canadian Association Geophysical Contractors  
  [www.cagc.ca](http://www.cagc.ca)
- Canadian Association of Oilwell Drilling Contractors  
  [www.caodc.ca](http://www.caodc.ca)
- Canadian Association of Petroleum Producers  
  [www.capp.ca](http://www.capp.ca)
- Canadian Energy Pipeline Association  
  [www.cepa.com](http://www.cepa.com)
- Canadian Gas Association  
  [www.cga.ca](http://www.cga.ca)
- Canadian Natural Gas  
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- Canadian Natural Gas Vehicle Alliance  
  [www.cngva.org](http://www.cngva.org)
- Canadian Society of Exploration Geophysicists  
  [www.cseg.ca](http://www.cseg.ca)
- Canadian Society of Petroleum Engineers  
  [www.speca.ca](http://www.speca.ca)
- Canadian Society for Unconventional Resources  
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- Gas Processing Association Canada  
  [www.gpacanada.com](http://www.gpacanada.com)
- Petroleum Services Association of Canada  
  [www.psac.ca](http://www.psac.ca)
- Petroleum Technology Alliance Canada  
  [www.ptac.org](http://www.ptac.org)
- Small Explorers and Producers Association of Canada  
  [www.sepac.ca](http://www.sepac.ca)

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  [www.ags.gov.ab.ca](http://www.ags.gov.ab.ca)
- Alberta Surface Rights Board  
  [www.surfacerrights.gov.ab.ca](http://www.surfacerrights.gov.ab.ca)

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