



# Energy Brief

## HORSESHOE CANYON - THE POTENTIAL FOR COALBED METHANE DEVELOPMENT

With production of conventional natural gas levelling off over the past few years and an increase in demand, there is a growing need to look to other energy sources to fill this gap. One of those emerging resources is coalbed methane. Coalbed methane has the potential to become a significant new source of energy for Canadians.

Alberta has the largest deposits of coalbed methane in Canada and one area in particular shows the most promise - Horseshoe Canyon.

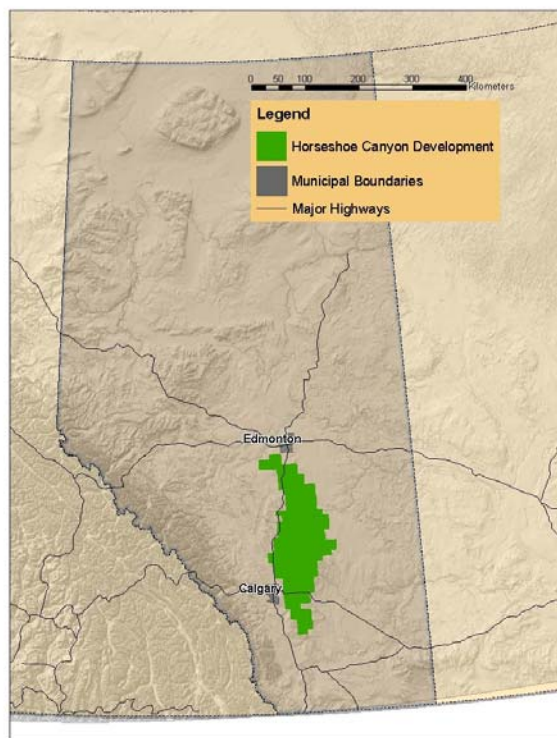
### SIZE OF HORSESHOE CANYON

The Horseshoe Canyon development is the largest coalbed methane development in Canada and accounts for about 90 per cent of all coalbed methane production in Alberta. The development is located primarily in central Alberta, roughly extending from Calgary to Edmonton and between Highway 2 and just east of Drumheller.

At the end of 2006 there were about 7,400 coalbed methane wells in the Horseshoe Canyon. Drilling activity is ongoing and the number of Horseshoe Canyon wells increases significantly every year with an estimated 2,000 more wells expected in 2007. Estimates for the amount of gas that can be recovered from the area are between six and 15 trillion cubic feet. Although the development is still relatively new, wells in Horseshoe Canyon are expected to be in production for up to 50 years.

For the most part, Horseshoe Canyon is also a dry formation, meaning there isn't any water trapped in the rock. All other commercial coalbed methane operations in the world contain water in the cleat system which must be pumped out of the ground and disposed of in some manner.

Encana is the largest company currently active in Horseshoe Canyon with one quarter of the wells. Quicksilver, Trident and Apache are also involved along with many other companies with smaller operations.



**The Horseshoe Canyon Development Area**

## **ECONOMICS FOR DEVELOPMENT**

Despite the high potential, there are caution flags concerning the economics of proceeding with development in Horseshoe Canyon. The main economic factors include:

- average well productivity;
- costs (drilling, completing, operating); and
- price of natural gas.

For 2007, wells in Horseshoe Canyon are expected to initially produce an average of 77 thousand cubic feet per day (mcf/d). This is quite a bit lower than the initial productivity of conventional natural gas wells, which currently average around 270 mcf/d. But the average decline rate for coalbed methane wells is much lower than a conventional well. In Horseshoe Canyon, the decline in production is about five per cent for the first year and 15 per cent for the second year. For a conventional gas well in the Western Canada Sedimentary Basin, that rate is about 53 per cent in the first 18 months followed by a 30 per cent annual decline. This means that Horseshoe Canyon wells generally produce at lower, but more stable rates.

The costs of drilling in Horseshoe Canyon are relatively high and have continued to rise with the competitive market of recent years. If a well is successful, it can cost roughly \$485,000 for the land, construction of the well, tie-in costs to a pipeline and eventual abandonment. Once the well is operational, costs vary depending on how productive the well is. For the average well in Horseshoe Canyon, processing and operating costs are approximately \$3,100 per month.

Another consideration is the price of natural gas. If the price of natural gas is high, these coalbed methane developments offer a high rate of return. But when gas prices are low, the rate of return is much lower. If gas prices average \$6 per million British thermal unit, companies could expect a 15 per cent rate of return at today's capital costs for the average Horseshoe Canyon well which is considered to be marginal.

## **FUTURE ACTIVITY IN HORSESHOE CANYON**

The level of future activity in Horseshoe Canyon is going to depend on the price of natural gas. Higher gas prices will increase the profit margin for companies operating in the area. If the price for natural gas increases, there may be an increase in activity. If it falls, activity is likely to drop as well.

Although development in Horseshoe Canyon had been doubling year over year between 2003 and 2005, that trend ended in 2006. The marginal economics at current prices, as well as the high population density in the area and land title issues, makes future development more challenging. Many areas easy to access and with the highest potential have been drilled. What is left is more difficult to develop leading to a more measured pace of development going forward.

The rate of development in Horseshoe Canyon is likely to be slower than it has been in previous years. If an average of 2,000 wells are put into production each year over the next eight to 10 years that will essentially be the maximum for the main development area.