

WESTERN CANADA NATURAL GAS FORECASTS AND IMPACTS (2015-2035)



Executive Summary

In 2008, the oil and gas industry in Western Canada brought 10,153 new gas wells on stream. This included conventional gas wells in Alberta (7,513), British Columbia (737) and Saskatchewan (1,152). In addition, 751 coalbed methane wells were brought on stream in Alberta. With respect to these wells, less than 10 percent of the Alberta wells drilled were considered a horizontal well, in Saskatchewan it was less than 2 percent, while in British Columbia the number was closer to 35 percent. The annual average market price for natural gas at Alberta's market hub (AECO-C) was CDN\$7.50/mmbtu.

Since that time, the natural gas industry has been challenged, first by the global recession in 2009, then by the weak recovery in the gas market following the recession and finally by the extraordinary ramp-up in production from the Marcellus shale in the US. Shale plays, with the Marcellus being the largest, have been made economic as a result of the innovations in horizontal drilling and multi-stage hydraulic fracking. Growing from a volume of less than 1,000 mmcf/day in 2008, the Marcellus surpassed the 14,000 mmcf/day level in 2014 and the current trend suggests it will surpass 30,000 mmcf/day within the next 10 years.

The road forward for the Canadian gas industry is partially linked to the success or failure of LNG liquefaction developments in North America and this linkage has two views. First, from a Canadian perspective looking at the US, the hope that building the LNG liquefaction projects in the Gulf of Mexico or the eastern seaboard or even the east coast of Canada will pull some of the Marcellus gas supply away from the mid-continent and west coast markets, thus allowing Canadian natural gas to continue delivering to those markets. Second, from a Western Canadian perspective looking inward, the wish to build the British Columbia LNG liquefaction projects as a means of sending Canadian gas (as LNG) to the global markets.

In addition, the reality that the Marcellus gas supply will continue to enter the Ontario and Quebec markets thus backing out western Canada gas from those markets. The reality is that the long history of the TransCanada mainline and the Great Lakes Gas Transmission pipelines delivering gas to the Eastern Canadian and US eastern seaboard markets (New York) has been declining in recent years and it appears that that will continue to do so in the future.

The purpose of this report is to update the work done for the 2013 CERI report ("North American Natural Gas Pathways")¹ including an update to the North American natural gas supply/demand base case and update to the LNG assumptions for the United States and Canada. This will be the basis for forecasting the future for the Western Canadian gas industry and in determining the

¹ CERI Study 138, North American Natural Gas Pathways, http://ceri.ca/index.php?option=com_content&view=article&id=55&Itemid=59, August 2013

economic impacts that this industry conveys to the provinces and to the Canadian national economy.

The US supply/demand forecast as presented in Figure 1.1, as part of the North American gas market, includes the following LNG assumptions:

- 13 bcf/day of LNG exports from the Gulf of Mexico
- 4.8 bcf/day of LNG exports from British Columbia, Canada
- 1 bcf/day of LNG exports from Cove Point, Maryland
- 2 bcf/day of LNG exports from Atlantic Canada

This analysis forecasts annual volumes over 2015-2035 and the requirement for the export pipelines emanating from western Canada (Gas Transmission Northwest, Northern Border, Alliance, Spectra BC, and TransCanada mainline) as part of the North American supply/demand balance. These export volumes were then added to the western Canada domestic demand (including field processing recoveries, transmission fuel, straddle plant recoveries and LNG exports from British Columbia) to determine the western Canada total demand.

The analysis is based on determining the number of annual new gas wells that would be required to balance western Canada supply and demand. A cost estimate for these new gas wells along with the expected future revenues from total production, including natural gas liquids was injected into CERI's economic input/output model to determine the economic impacts of these natural gas developments. If the BC LNG projects are not constructed then the export volumes from British Columbia to Alberta will increase after 2017 resulting in a decline in Alberta new well connections for several years.

Table E.1 illustrates some of the economic impacts as a result of new natural gas developments in Western Canada. These economic impacts are upstream gas developments and do not include the economic impacts of constructing and operating the proposed LNG facilities on the west coast of British Columbia. Although the capital investment for Alberta and British Columbia is very similar, the disparity in GDP impacts is a direct result of the existing infrastructure (wells) that exist in the two provinces for the base year. In 2014, Alberta had 102,670 operating gas wells producing 10 bcf/day while British Columbia had 8,701 operating gas wells producing 4 bcf/day. Saskatchewan at the same time had 18,260 operating gas wells producing 0.15 bcf/day. The revenues from these operating gas wells pays for the fixed and variable operating costs, royalties, taxes, head office expenses and other expenses, all of which contributes to the GDP per province, and for gas developments more so in Alberta.

**Table E.1: Summary of Economic Impacts from Natural Gas Developments
in Western Canada, 2015-2035 (Billion CDN\$)**

	AB	BC	SK	Total
Capital investment in the drilling, completing and connection of new gas wells	225.8	228.1	0.5	454.4
Revenues from natural gas domestic sales, export sales and natural gas liquids sales	1,032.00	391.1	5.9	1,429.0
Total Canadian GDP impacts	1,630.0	643.0	4.0	2,277.0
Federal Government tax revenues	186.2	63.8	0.37	250.4
Provincial Government tax revenues	114.1	40.1	0.21	154.4

Source: CERI