Canadian NGLs Outlook: “Awash in Liquids”

Dinara Millington
Canadian Energy Research Institute

24th Williston Basin Petroleum Conference
May 24-26, 2016
Relevant • Independent • Objective
www.ceri.ca
Founded in 1975, the Canadian Energy Research Institute (CERI) is an independent, non-profit research institute specializing in the analysis of energy economics and related environmental policy issues in the energy production, transportation, and consumption sectors.

Our mission is to provide relevant, independent, and objective economic research of energy and environmental issues to benefit business, government, academia and the public.

Our core supporters include the Canadian Government (Natural Resources Canada), the Government of Alberta (Alberta Energy), and the Canadian Association of Petroleum Producers (CAPP), Chemistry Industry Association of Canada (CIAC), Alberta’s Industrial Heartland Association (AIHA), and the University of Calgary. In-kind support is also provided by the Alberta Energy Regulator (AER) and Petroleum Services Association of Canada (PSAC).

All of CERI’s research is placed in the public domain and can be accessed via our website at www.ceri.ca.
Agenda

- Introduction

- Supply and Demand Outlooks:
  - Ethane
  - Propane
  - Butane

- Key Uncertainties

- Market Dynamics
NGLs

- Raw natural gas recovered at a wellhead is comprised primarily of methane, but often contains other hydrocarbons and some contaminants. These other hydrocarbons, NGLs, consist of ethane, propane, butanes and pentanes plus.

- NGLs are an important component of the Canadian energy mix:
  - **Ethane** is an essential feedstock for the Canadian petrochemical industry.
  - **Propane** is used for space heating in the residential and commercial sectors, and is exported in significant quantities to the U.S.
  - **Butanes** have various petrochemical applications and are used to produce refined petroleum products.
  - The majority of **pentanes plus** is also used as a blending component for heavy oil and bitumen.
Ethane Supply & Demand Outlook: Western Canada

The chart illustrates the ethane supply and demand outlook for Western Canada over the years 2002 to 2030. Key data points include:

- **WCSB Ethane Recovered (Western Canada + Alliance/Aux-Sable)**
- **Bakken Ethane on Vantage**
- **Potential Ethane Left in Gas/Extracted in Other Markets**
- **Total Ethane Available to Western Canada**
- **% of Ethane Recovered**

The chart tracks the recovery, available, and demand points for ethane, highlighting the trend over the specified period.
Add’l Ethane could be extracted in Western Canada

- It is estimated that only **52% of all C2 available to Western Canada (WCSB + Bakken) is extracted.** That means about half of the available ethane is being left in the gas stream.

- Outlook indicates that **percentage will fall** below 50% by 2030.

- Most **ethane availability growth to come from BC gas** (LNG projects).

- **US ethane rejection economics** hurts Bakken producers the most. AB is a viable alternative C2 market → *Future Vantage pipeline expansion opportunity*

- More C2 could be extracted in the WCSB via **gas streaming/new straddle plants/LNG C2 extraction.** Ethane availability is not the issue, extraction and end-use infrastructure is.
Ethane Supply & Demand Outlook: Eastern Canada

- Mariner West: Marcellus/Utica Imports
- Cochin: Conway E/P Imports
- C2/C2=(C2eq.) Cochin Transfers
- Total Eastern Canada Supply
- Ontario Derivative Capacity (Ethane Req.)

Years: 2002 to 2030

Units: kb/d
Butane Supply & Demand Outlook

- Total Gas Plants
- Refineries
- Off-gas Plants
- Statistical Adjustment
- Available for Exports
- TOTAL SUPPLY
- US Imports
- Domestic Demand
- Stock Changes

Years: 2002 to 2030

Units: kb/d
Key Uncertainties

1. NGLs are a by-product of natural gas production, and NGL supply is sensitive to Canadian natural gas supply uncertainties.
2. NGL content varies between geological formations, the mix of natural gas sources also has an impact on future NGL supply.
3. North American NGL markets have changed considerably in recent years, with rapidly increasing natural gas production in the U.S. leading to increased NGL supply.
4. Future prices of propane and other NGLs will impact the economics of targeting liquids rich natural gas plays and represents an uncertainty for NGL production.
5. Uncertainty regarding the timing and magnitude of West Coast LNG projects will affect western Canadian natural gas production, and thus NGL production.
6. Prolonged low crude oil prices could result in the delay of new projects and expansions in the oil sands, thus reducing demand for diluent.
Market Elements and Dynamics

- Canada has **vast and diverse natural gas and NGLs resources**, and the country is consistently ranked as **one of the best jurisdictions for doing business** across the world.

- Canada is **one of the largest producers of natural gas and NGLs** on a global scale.

- **Western Canada accounts for the majority of natural gas/NGLs production**, with **Alberta** being the largest producer in the country.

- The **shale gas revolution** in North America has resulted in a series of events that has led to a situation of **increasing availability and production of NGLs in Canada**.

- Canada maintains an **extensive, robust, and integrated set of midstream infrastructure assets** that connects producers in Western Canada to end-users and markets across the continent.
Canada’s petrochemical industry is primarily based on the production of olefins and its derivatives, and uses NGLs as its primary feedstock.

Canada’s largest petrochemical cluster is located in Alberta.

Recent and ongoing investments in midstream and downstream assets indicate market players’ confidence in increased long-term availability of NGLs in Canada.

LNG represents a significant opportunity to diversify markets for Canadian natural gas, holds the potential for large investments in infrastructure, but also large-scale increases in NGLs extraction.

Given the outlook for natural gas and ongoing dynamics in NGLs markets in Canada, NGLs are expected to increasingly be available in surplus to local demand volumes over the long-term.
Industry players are looking for ways to monetize these NGLs via the expansion of existing industries (such as petrochemicals) or exports to markets in the Asia-Pacific region.

Global energy pricing dynamics have resulted in sustained low feedstock prices for petrochemical producers in North America, even more so in Canada.

Open access to a large resource base, a business and investor-friendly environment, increasing NGLs availability, ongoing infrastructure investments, and low feedstock prices, present an opportunity for investment in Canada and Alberta across the value chain.
Thank you!

www.ceri.ca