

NATURAL GAS LIQUIDS (NGLs) IN NORTH AMERICA: AN UPDATE PART II – MIDSTREAM AND DOWNSTREAM INFRASTRUCTURE



Executive Summary

Following Part I of the NGL update (upstream), this report (Part II) presents an overview of the infrastructure required to move NGLs from production sources to markets and end-users, while identifying some of those end-users, primarily, petrochemical facilities, both in Canada and the United States (US). This report also presents some of the trends observed around midstream and downstream infrastructure investments in Canada targeting the monetization of NGLs.

The infrastructure required to extract and market natural gas and natural gas liquids in North America is complex and extensive. This infrastructure includes gas processing plants and pipelines (gathering, transmission, and distribution systems), refineries, NGL fractionators, NGL mix and delivery pipelines, rail cars, NGL storage facilities, as well as petrochemical facilities.

Canada and the United States combined account for over 1,200 field gas processing plants with close to 100 billion cubic feet per day (Bcf/d) of gas processing capacity, with the majority of these plants located in major gas producing regions including the US Gulf Coast (PADD III), the Western Canadian Sedimentary Basin (WCSB), and the US Rockies (PADD IV). Meanwhile, as gas production has accelerated in certain areas of North America, gas processing infrastructure is expanding not only in traditional areas but also in those areas where new infrastructure is needed including the US Midwest (PADD II), but more importantly, the US North East (PADD I).

Since a large portion of the new gas being produced in North America tends to have a significant level of NGLs, increases in gas production and growth in gas processing capacity has been closely followed by increases in fractionation capacity, which exceeded 4 million barrels per day (MMb/d) of capacity in 2012 (for Canada and the US combined), as well as expansions, re-purposing, and new construction of NGL gathering (NGLs mix) and delivery (spec product) systems. Following these developments is expansion in storage facilities and downstream infrastructure such as an already well-established and large-scale petrochemical industry but also liquefied petroleum gas (LPG) export terminals as a means to balance markets.

Clearly, the advent of shale gas development in North America has sparked a chain reaction across the whole NGL value chain from the upstream to the midstream, resulting in significant levels of infrastructure requirements and associated capital investment.

While the midstream infrastructure in North America is robust, changing dynamics in the natural gas market have in turn required the evolution of such infrastructure. As producers focus on their capital-intensive exploration and production (E&P) activities, third-party midstream players have come forth to finance and build the required processing and marketing infrastructure. By doing so, these companies are freeing up capital for re-investment and continued growth in the upstream sector, but also providing a suite of services that allow producers to maximize their NGL revenues while connecting seamlessly to end-use markets.

Midstream infrastructure is being commonly built under long-term (10+ years) fee-for-service agreements, thus creating long-term commitments from producers but leaving them with the commodity price volatility risk (but also the upside potential). Meanwhile these arrangements create steady cash flow streams for midstream players, guaranteeing them a level of throughput necessary to be able to recover investment on their facilities, while allowing them to grow organically and respond to market needs.

In Canada, NGL midstream investments of close to \$11 billion (B) have been made and are expected to take place between 2011 and 2016, at an approximate average annual rate of \$1.8B. These investments focus on linking increasingly available WCSB NGLs with end-use markets and are being carried by a handful of companies with expertise and an established asset footprint. But the midstream industry has also grown through a series of producer-owned asset divestiture and acquisition of other midstream players and their assets.

The current round of midstream investment in the WCSB includes the building of new gas plants, pipelines, and fractionators but also the re-furbishing, repurposing, and expansion of already existing assets. A large portion of this infrastructure is also tied to downstream off-take agreements from major NGL end-users such as petrochemical producers, but is also supported by government incentives such as the Government of Alberta's Incremental Ethane Extraction Policy (IEEP).

Meanwhile, midstream investments are resulting in downstream investments of close to \$4B in Canada for petrochemical plants and LPG export facilities.

With close to \$15B in midstream and downstream infrastructure targeting the monetization of NGLs in Canada, there is a general feeling that growth is the expected case going forward.

However, the upstream and infrastructure are only one part of the puzzle. Understanding changes, not only in production, but supply in general, as well as demand, pricing, and economics will help better identify the different issues at play around NGL markets in Canada, in North America, and around the globe.

Part III of the NGL update focuses on NGL markets in North America as well as the factors that are currently shaping those markets. Part IV focuses on global NGL markets.

As upstream activity ramps up and NGLs become increasingly available, infrastructure investments are being made to get NGLs to market. As local end-use industries face the possibility of expansion (or even the creation of new value chains) while some other players look to diversify markets for their output overseas, it becomes increasingly important to have a clear understanding of local and global NGL markets. These are discussed in Parts III and IV.