

Enhancing Alberta's Natural Gas System (2023)

Issue

Serious challenges persist within Alberta's natural gas system which negatively impacts natural gas supply chain reliability, industry operations, and investor confidence. These challenges can and should be addressed to better manage the current system demand and industry operations and to further position Alberta as an industrial investment location of choice. With an abundance of natural resources, developing world-class infrastructure would provide investor confidence in the competitive advantage Alberta has for attracting new investment.

Given the essential role hydrogen has in achieving net-zero goals it will be essential to improve the natural gas system reliability to ensure enhanced reliability of the production of this vital clean fuel of the future and enable the hydrogen economy to develop in a safe, reliable, and sustainable manner.

Background

Natural gas is an important economic driver in Alberta, with over 60% of Canadian marketable natural gas being produced within Alberta.¹¹⁷ According to the Government of Alberta, "83% of natural gas consumed in Alberta is used by the industrial, electrical generation, transportation and other sectors. Natural gas is also an important raw material for the province's oil sands and electric power-generation industries."¹¹⁸ Natural gas is also the main raw input for hydrogen production, a key material used for producing transportation fuels, hydrogen peroxide, nickel, cobalt, ethane, and propane for Alberta, Canada, and the world.

Natural gas is supplied by federally regulated monopolies, similar to rail transportation. Currently, there are no quality specifications for natural gas at the delivery point for consumers in Alberta and this can adversely impact downstream users. Quality excursions have been experienced in Alberta and such events can have significant downstream impacts on industrial facilities and subsequently on consumer markets. Low-quality natural gas can cause production delays, damage to facilities, and quality impacts on derivative products of natural gas.

Another significant cause of concern is firm supply reliability. Natural gas customers pay a premium for "firm supply", which by definition means this supply will not be interrupted, however; Alberta companies have experienced interruptions in firm supply and continue to see risk to firm capacity supply reliability. Firm supply interruptions are the fault of the natural gas provider, typically due to a system failure. For example, a provider will experience a compressor failure, and it will be discovered a single component failure in the system results in supply interruptions. Why aren't there built-in system redundancies? Additionally, extreme cold ambient temperatures should not be a factor in firm capacity supply reliability as these temperatures are custom for Alberta to experience annually.

Maintenance coordination is also a challenge as it is not happening appropriately between natural gas providers and receivers to minimize the effects of supply interruptions. There are regular occurrences when natural gas supplier maintenance activities are scheduled during periods of high

¹¹⁷ Canada Energy Regulator <https://www.cer-rec.gc.ca/nrg/sttstc/ntrlgs/stt/mrktblntrlgsprdctn-eng.html>

¹¹⁸ Alberta Government <https://www.alberta.ca/natural-gas-overview.aspx>

system demand. Implications of both issues include operational concerns, downtime-related costs, and decreased confidence in the supplier, supply chain and potential investors.

There are also serious concerns for timelines to secure natural gas volumes in Alberta (for existing or new facilities). Currently, firm supply is available with a 4+ year lead time, while new facilities can be built within a two- to three-year window. This misalignment of natural gas infrastructure expansion (or new build) and project development timelines will discourage new investment in Alberta.

Lastly, the advancement of hydrogen blending into the existing natural gas system, if not done carefully, risks exacerbating these chronic system reliability issues. Introduction of hydrogen into legacy natural gas systems of varying age and specification can result in leaks or equipment performance issues due to its different properties and its interaction with piping and component materials. If sections of piping require replacement to ensure safe operation, this could worsen the maintenance coordination issues discussed above. Gas consumers may also need to retrofit equipment to use blends of hydrogen and natural gas due to the lower heating value of hydrogen and the propensity for higher NOx emissions when combusted.

The Alberta Chambers of Commerce recommends the Government of Alberta work with natural gas suppliers and infrastructure suppliers and, where applicable, the federal government to:

1. Set quality standards for natural gas specifically at the delivery point and create provisions for losses related to the delivery of off-spec natural gas;
2. Ensure timely development of new, and expansion of existing, natural gas supply infrastructure to support growing natural gas demand, attract new projects, and secure further investment in Alberta;
3. Streamline regulation and approval process for critical infrastructure builds, such as pipelines, and;
4. Advance recommendations for hydrogen blending in existing natural gas systems only after multi-year pilot studies have been completed to ensure that the blending levels proposed can be managed safely, without adverse reliability impacts, and at a reasonable cost to consumers.