

<https://www.jwnenergy.com/article/2019/11/extensive-electrification-methane-reductions-hold-keys-canadas-lng-success-report/>

## Extensive electrification, methane reductions hold keys to Canada's LNG success: Report

By Maurice Smith

Nov. 21, 2019, 5:24 p.m.



By leveraging its abundant renewable energy resources and incentivizing production of the world's lowest greenhouse gas-emitting liquefied natural gas (LNG), Canada can develop its LNG industry while meeting its climate goals, concludes a report examining the unique "green" advantages the country possesses.

Producing the "cleanest" LNG could also offer a marketing advantage to the nascent industry as overseas buyers become increasingly concerned about the climate change implications of their purchases, finds [the newly released report](#), *Canada's Green LNG Advantage: Extensive electrification offers critical low-emissions advantage in the global pursuit of clean growth*.

This is the second of four special reports on the theme of Canada and the Natural Gas Economy that JWN Energy's *Daily Oil Bulletin* and *Evaluate Energy* is producing in collaboration with the Canadian Society for Unconventional Resources. (Click here for the first report, [LNG: Canada's Global Market Opportunity](#), which examines how Canadian gas supplies can help meet burgeoning market demand and offer a transformative opportunity for struggling producers.)

Natural gas's relatively clean credentials have helped make it the fastest growing source of energy. Worldwide consumption is rising rapidly, with gas accounting for almost half of the growth in total energy demand in 2018, according to the International Energy Agency.

China's growing appetite for LNG is echoed across much of Asia, from India to traditional importers such as South Korea and Japan, which is still dealing with the energy security concerns brought about by the near shutdown of its nuclear industry after the Fukushima reactor disaster.

Indeed, the transition to cleaner power production across East and South Asia, increasingly supplied by natural gas, is expected to create demand for LNG for decades to come — opening the door for Canada to sate that demand with the trump card as supplier of the world's "cleanest" LNG.

One of natural gas's greatest selling points is its ability to reduce emissions by substituting for higher emissions fuels like coal — an advantage that could grow in prominence as countries respond to the climate change threat. In any scenario where buyers are forced to consider the carbon content of their purchases, the lowest emissions production would be most valued.

Such scenarios could play into Canada's hands as it leverages its unique advantages — including ongoing efforts by producers, industry associations and clean tech networks in Western Canada to reduce emissions related to natural gas production, as well as B.C.'s existing green grid — to brand its gas as the world's cleanest.

"With robust forecasts for growth in natural gas consumption in the decades ahead, leading in the stakes to be the 'greenest' of the cleanest fossil fuel holds tremendous potential for Canada to future-proof the sector in an increasingly climate conscious world and allow it to be among the last producers standing," states the report.

Canada's highly regulated environment already puts large onus on natural gas producers to keep emissions to a minimum. Alberta has long led in the effort to reduce venting and flaring, becoming a model for other jurisdictions. More recently, Canada, the U.S. and Mexico signed a deal to reduce methane emissions from the oil and gas industry 40-45 per cent by 2025, a commitment for which producing provinces can design their own equivalency regulations in order to meet that goal. And all provinces have their own GHG reduction commitments as part of the Canadian Paris target of a 30 per cent reduction in emissions by 2030, which necessarily encompasses oil and gas emissions in producing provinces.

Industry has also independently taken on the emissions challenge. Several initiatives are underway by industry associations, clean tech networks and agencies to both tackle methane releases in the most cost effective ways and to reduce emissions more generally along the natural gas supply chain.

For example, Emissions Reduction Alberta (ERA) launched in October a \$50-million Natural Gas Challenge to unlock innovation across Alberta's natural gas value chain, from production to market and all points in between.

The government agency, which receives funding from the province's large final emitters' carbon levies, said the challenge would support clean technology projects that reduce GHG emissions and improve the competitiveness of the natural gas industry. ERA, whose previous initiatives have already reduced Alberta's GHG emissions an estimated 42 million tonnes to 2030, will fund up to \$10 million per project and up to 50 per cent of total project costs, creating potentially over \$100 million in project value.

## **Electrification**

Canada's green status would also be accomplished by the extensive electrification of both the upstream production process and at the LNG production plants on B.C.'s coast — the the likely home to the largest concentration of Canadian LNG projects. Thanks mainly to abundant hydropower, B.C.'s grid is already about 98 per cent carbon neutral.

However, a largely electrified LNG industry would require a large buildup in renewable power generation. While the province recently approved construction of the Site C hydroelectric dam, more renewable power generation would be required to power future LNG growth. In addition to hydro, the province possesses wind, geothermal and other renewables potential, say industry groups that point to the economic benefits a further build-out could provide.

Furthermore, B.C. is particularly well suited for "clean electrification," according to Clean Energy BC, noting, "electrification offers the province a critical competitive advantage in the global pursuit of clean growth." The province's low-carbon power generation sector "can responsibly and cost-effectively provide the additional renewable electricity that extensive electrification will require," it states.

While the LNG Canada project — now under construction in Kitimat, B.C. — will not fully electrify its processes for the first two trains of what is anticipated to eventually be a four-train facility, it is expected to meet the B.C.'s benchmark 0.15 tonnes of GHGs per tonne of LNG produced.

The facility, backed by Royal Dutch Shell plc and four Asia-based partners, will burn natural gas for compression but electrify non-compression processes.

Backers of the next major project most likely to proceed, Kitimat LNG, say they will fully electrify the process, ensuring they remain below benchmark levels. Proponents Chevron Canada Limited and Woodside Energy International (Canada) Limited said Kitimat LNG's emissions profile, below 0.10 tonnes of CO<sub>2</sub> equivalent per tonne of LNG, would represent one of the lowest GHG-emissions profiles of any large project in the world.

According to their project application, the global average is more than 0.30 tonnes of CO<sub>2</sub> equivalent per tonne of LNG. In their recent application to increase output from 10 to 18 million tonnes per annum, the proponents said full electrification would allow them to expand capacity without a corresponding increase in emissions.

## **Wellhead to waterline electrification**

The focus on electrification extends to the upstream, where the report notes producers have already made strides to electrify many aspects of production, from drilling and completions to the operation of gas plants, resulting in significant emissions reductions. The work continues to extend the electric grid to enable electrification of more remote operations, as well as to identify and mitigate fugitive methane emissions throughout the supply chain.

Efforts to decarbonize production generally save companies money over time. In fact, according to the report, they could generate billions of additional dollars over the decades ahead by, for example, reducing natural gas consumption and freeing up more volumes for export.

The measures also serve to solidify the climate benefits offered by natural gas exports, notes the report. Higher levels of emissions — particularly of methane, a far more potent greenhouse gas than CO<sub>2</sub> — threaten to negate the advantage of natural gas combustion over coal, weakening one of the strongest arguments for LNG to play a role in clearing the air and reducing overall emissions.

There is little doubt LNG can play a role in reducing global GHG emissions. By some estimates, the LNG Canada project alone could displace between 60 and 90 million tonnes per year in the best-case scenario where it replaces coal. But retaining its green credentials — over coal for example — is critical in allowing LNG exports to be seen as policy solution to climate change.

Like it or not, the focus on emissions reductions is likely to intensify, even for use of the cleanest burning fossil fuel, pointing to the need to lead on the environmental file as the industry grows in the years ahead. As the energy sector in general enters “a whole new phase of ESG [environmental, social and governance] conversations,” noted Bryan Cox, president and chief executive officer of the B.C. LNG Alliance, that dialogue could offer further advantage to Canada’s LNG sector. “It’s a competitive advantage; [Asian companies] want the cleanest products they can get,” he said. “Their shareholders are demanding it.”

[Click here to access the full report.](#)