

August 3, 2018

Dear Members and Clerk of the Standing Committee on Finance,

On behalf of our investor companies, the Natural Gas Innovation Fund welcomes the opportunity to submit a 2019 pre-budget submission for your consideration.

By way of background, NGIF investors are companies in the natural gas value chain interested in driving innovation right across that value chain – from extraction through to end use.

NGIF members are focused on natural gas due to the growing strategic role the fuel and its infrastructure play domestically and globally. The National Energy Board forecasts natural gas will become the largest energy source in Canada by 2040. World demand for natural gas is expected to increase 45% by 2040, driven primarily by rapidly expanding developing economies. Canada has enormous natural gas resources and our industry is well-regulated, technically advanced, highly skilled, and strongly motivated to address global energy challenges. In Canada, we are demonstrating every day how natural gas drives competitiveness while delivering on our environmental targets.

But we need to do more. A focus on coordinated support for innovation offers more – domestically, and through our trading relationships – to make Canada a more competitive global leader in the delivery of cost-effective, technologically sound, environmentally preferable, solutions to energy challenges the world over.

Through the Natural Gas Innovation Fund, leading gas utilities are advancing cleantech innovation to commercialization for our sector – the list includes FortisBC Inc., Pacific Northern Gas Ltd., ATCO Gas Ltd., SaskEnergy, Union Gas Ltd., and Enbridge Gas Distribution Inc. But more than this we are currently engaged with a range of players across the value chain to bring them into the fund, including leading producers.

The Government of Canada has focused its 2019 budget priorities on initiatives to help Canada become more competitive. NGIF is committed to taking action by advancing the right cleantech innovation for the natural gas industry to help Canada achieve its environmental commitments while maintaining the competitive advantage that natural gas provides.

This pre-budget submission recommends the creation of a three year, \$300 million fund for the natural gas industry to fund clean technologies for the full value chain. It also recommends the creation of a joint government-industry collaborative dedicated to developing the most effective framework for the rapid development, commercialization and adoption of natural gas technologies.

Together, the fund and the collaborative will serve to position Canada – already a leader in the responsible and economic production and use of natural gas – to be a more competitive global leader in innovation across the natural gas value chain.

We would welcome the opportunity to appear before the Finance Committee to present our submission directly. We look forward to working with the Committee and subsequently with federal departments to deliver these natural gas solutions to Canadians.

Sincerely,

John Adams
Managing Director
Natural Gas Innovation Fund

**Driving Canadian Competitiveness with Natural Gas Cleantech Innovation
2019 Pre-Budget Submission**

Recommendation 1: Create a three-year fund for the advancement of clean technologies for the full natural gas value chain with the goal of advancing Canadian cleantech, reducing emissions and positioning Canadian industry and businesses for competitive success through lower energy bills. The Natural Gas Cleantech Innovation Fund (“the Fund”) would allocate \$300 million to support clean technology commercialization through SME and start-up organizations to create pathways and accelerate improved environmental performance in the natural gas industry. Supporting clean technologies in Canada’s natural gas industry will help Canada achieve its environmental commitments and drive Canadian competitiveness. The effort will also position Canada’s natural gas industry to be leader in the global gas industry right across the value chain. Project intake, screening, evaluation and selection would be conducted by the Natural Gas Innovation Fund.

Recommendation 2: Create a joint industry-government natural gas innovation collaborative to develop ideas for policy and regulatory innovation aimed at facilitating the rapid development, commercialization and adoption of clean technologies in the natural gas market – technologies that create new economic opportunity and deliver improved environmental performance.

Section 1: Natural Gas Cleantech Competitiveness Recommendations

Recommendation 1: Canadian Gas Industry Natural Gas Cleantech Fund (“the Fund”) would allocate \$300 million to support clean technology commercialization through small and medium (SME) and start-up organizations to create pathways and accelerate productivity, competitiveness and environmental performance in the natural gas industry. Supporting clean technologies in Canada’s natural gas industry will help Canada achieve global environmental commitments and drive Canadian competitiveness as the world advances the use of natural gas to meet global energy needs.

The Natural Gas Innovation Fund: NGIF is a Canadian funding organization with rigorous, fair and transparent due diligence processes comparable in principle to federal and provincial funding organizations (e.g. peer review, technical experts, etc.).

- It is a first of kind industry-led funding organization that grants funding to cleantech projects led by start-up and SME ventures that industry picks to drive environment and economic performance in the gas sector advancing.
- NGIF’s approach is funding calls and open competitions across Canada soliciting project opportunities for the de-risking clean technology providers that can demonstrate a strong value proposition for innovation, a highly skilled team, a sound business model, strong commercial uptake and good policy alignment.
- NGIF results to date include 41 cleantech projects for natural gas with \$7.6M approved for grant funding using pooled contributions from industry.

Technology Categories: The Fund would have five distinct technology categories of funding along the full natural gas value chain:

- **Category 1 - Methane Venting and Fugitive Emissions**
Advanced clean technologies can be deployed to reduce or eliminate methane venting and fugitive emissions from across the value chain, ensuring the delivery of product to users for beneficial use.
- **Category 2 - Heat and Power Generation**
Advanced clean technologies for heat and power generation along the entire natural gas value chain including higher efficiency equipment, combined heat and power (CHP), waste heat capture, natural gas engines and other applications can increase energy efficiency, and reduce the emissions profile of natural gas.
- **Category 3 - Renewable Gases**
Advanced clean technologies for renewable gases (renewable natural gas, hydrogen and synthetic methane) that can be directly injected into the natural gas transmission and distribution networks. If deployed at large scale, renewable gases have the potential to significantly lower the GHG emission intensity of natural gas. Technology focus areas include improving economics of small-scale systems, commercializing technologies for biomass and agricultural waste conversion to renewable natural gas, advanced technologies for co-processing of feedstock and system deployment and optimization.
- **Category 4 – CO₂ Capture, Utilization and Storage (CCUS)**
Advanced clean technologies in CCUS reduce or eliminate the release of anthropogenic CO₂ (CO₂ from the combustion of fossil fuels or release of industrial processes) to the atmosphere by capturing CO₂ and either geologically sequestering it or converting it into useful products.
- **Category 5 – Liquefied Natural Gas (LNG)**
Advanced clean technologies in LNG including LNG production and export (gas processing, liquefaction, natural gas liquids recovery), LNG refueling and fuel transfer, LNG from stranded natural gas reserves, and dual fuel engines operating on LNG offer significant promise.

Funding Streams: The Fund would have 3 funding streams:

- Stream 1—Demonstration (TRL 4-7) \$75M
Demonstration projects led by a start-up enterprise or SME with a cleantech solution to support lower lifecycle emissions of natural gas.
- Stream 2—Growth and Expansion (TRL 8-9) \$150M
Commercial demonstration or operational deployment of a cleantech solution to support lower lifecycle GHG emissions of natural gas and improve the viability of the recipient through company growth and output.
- Stream 3—Investment Attraction to Canada (TRL 4-9) \$75M
A focus on attracting international cleantech solutions and bringing them to Canada to be adapted and improved for the Canadian market and for re-export.

Full Value Chain: The Fund represents the full value chain of natural gas:

- Production of Natural Gas (Production)
All forms of cleantech applications with the production and processing of natural gas.
- Pipeline Transmission of Natural Gas (Transmission)
All forms of cleantech applications with the pipeline transmission and storage of natural gas.
- Distribution of Natural Gas/Renewable Gas (Distribution and End-Use)
All forms of cleantech applications with the distribution and end-use of natural gas and renewable gases.

Funding Mechanisms: The Fund would have 2 funding mechanism options:

- Grants - up to 30% of eligible project costs in the form of non-repayable grants for technology demonstrations with Technology Readiness Levels (TRL 4-7)
- Green Loans - up to 40% of eligible project costs in the form of repayable loans for a first of kind commercial demonstration (TRL 7-9).

Results and Performance: The Fund will assess projects based on each project's potential to generate quantitative and qualitative benefits. In addition, the program will track and report on actual, aggregated quantitative benefits from funded projects and qualitative case studies. Examples of measures and case studies are listed below:

- Economic
 - Incremental reserves and production (mmcf, mcf/d)
 - Natural gas industry maintenance/operational savings (\$/yr)
 - Applicant revenues (\$/yr)
 - Patents (# of applications, # of patents granted)
 - Jobs created (# of jobs)
 - Contribution to Federal and Provincial GDP (\$/yr)
 - Case studies on value creation, efficiency improvements, and applicant benefits
- Environmental
 - GHG mitigation (kt CO₂e/yr)
 - Clean air (t NO_x/yr, t SO_x/yr)
 - Clean water (m³ conserved/yr, m³ recycled/yr)
 - Clean soil (tonnes landfill avoidance, m² land disturbance avoided)
- Safety
 - Case studies of safety improvements (e.g., new technologies that reduced likelihood and severity of hazards, quantitative measures)
- Community
 - Case studies of local economic development, partnerships with First Nations and other societal benefits

Recommendation 2: Create an industry-government collaborative where the gas industry, cleantech ventures, and the Government of Canada work together to identify policy and regulatory challenges and opportunities aimed at improving the ability to rapidly advance natural gas cleantech.