Challenge: LCBA – NGIF on Hydrogen Production and Storage Solutions

Challenge Statement:

NGIF Industry Grants (NGIF IG) is seeking for emerging technologies that can help achieve environmental and economic goals for the natural gas value chain, including production, transmission, and distribution. Hydrogen production, storage and end-use solutions are of particular interest.

Context:

NGIF IG is looking for hydrogen production, storage and end-use technologies. The following categories are of interest:

- Emerging technologies to produce low-carbon hydrogen production at a lower cost than incumbent solutions.
- Innovative low-cost and high performance physical and material storage and distribution technologies including gaseous, liquid and cryogenic hydrogen storage solutions, metal hydrides, Liquid Organic Hydrogen Carriers (LOHC), ammonia as a hydrogen carrier and new materials.
- New end-use technologies including new furnaces, heat-pumps, and boilers that can run on hydrogen and natural gas mixtures.

Assumptions and Considerations:

- Green hydrogen is of lower interest than blue or other colours (e.g., turquoise, grey, etc.) of hydrogen.
- Blue hydrogen with carbon capture and storage (CCS) is of interest, however the impact of CCS on hydrogen production cost will be a key consideration of NGIF members and those feasibility considerations should be included in your application.
- Turquoise hydrogen technologies, where natural gas is decomposed to carbon black and hydrogen, are also of interest. Carbon management strategy and business model considerations, such as the ability to convert carbon black to higher-value graphite or carbon nanotubes, would also be considered.
- Deployment provinces could include Alberta, British Columbia, Ontario and Saskatchewan.
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- NGIF considers any technology that can produce hydrogen at a cost comparable to SMR without CCS to be “low cost”.

Response Criteria:

In your response, please provide the following information or describe how your solution can meet the requirements of the challenge.

- Your solution falls within TRL 6-8. If the technology is at TRL 5, and TRL 6 will be reached imminently then we would be able to consider it.

- Technology/innovation information (describe your solution and how it works (i.e., scientific principles), intellectual property limitations – if any, competing technologies and any advantages your solution offers, value proposition for your end-users)
- Comparative landscape in terms of technology performance, cost of production, CAPEX, OPEX and other parameters compared to the competition out there.
- Potential environmental considerations such as the carbon intensity of your solution with comparison to the competition out there.
- Financial, and operational readiness of your company, and technical capability of your team

The Opportunity:

- The LCBA Canada offers the opportunity to **fast-track** your application and secure frontline access to NGIF IG's Natural Gas Industry members and through them, access to millions of natural gas users across Canada (Global Cleantech Challenge). This competition is offering up to $1M CAD to support high potential demonstration projects at NGIF energy company industrial operations.
- Opportunity to secure frontline access to NGIF IG's Natural Gas industry members and through them, access to millions of natural gas users across Canada.
- Showcase and demonstrate your product or technology to NGIF IG's Natural Gas industry members.

About NGIF:

NGIF Capital Corporation:

NGIF Capital is a Canadian venture capital organization which offers grants and equity financing for startups that provide solutions to the environment and other challenges facing the natural gas sector. NGIF Capital is unique in how it brings Canada's energy industry leadership to each and every investment. It takes new companies and their ideas from concept stage to commercialization. NGIF Capital is linked to the entire gas value chain - from production to end-use, and offers the means to test, develop, and accelerate the commercial implementation of innovative gas technologies wherever they fit within the gas industry. This model benefits consumers, investors, and the Canadian society as a whole. NGIF Capital operates NGIF Industry Grants (the original Natural Gas Innovation Fund), the NGIF Emissions Testing Centre (NGIF ETC), and the NGIF Cleantech Ventures (NGIF CV).

NGIF Industry Grants (NGIF IG):

NGIF Industry Grants is a corporate division of NGIF Capital Corp. ("NGIF Capital") and was established to accelerate cleantech innovation in the gaseous energy value chain. The mandate of NGIF IG is to fill and accelerate technology development gaps in the sector and to invest in enabling solutions for current and emerging challenges facing the industry. Our focus is to advance clean technologies that improve environmental outcomes, increase economic competitiveness, and eliminate or reduce sustainability barriers. NGIF IG is wholly funded by the Canadian natural gas industry. Our natural gas production and transmission participants include Birchcliff Energy Ltd., Canadian Natural Resources Ltd., Cutbank Dawson Gas Resources Ltd. (a wholly owned subsidiary of Mitsubishi Corporation), Perpetual Energy Inc., PETRONAS Energy Canada Ltd., Shell Canada Energy (by its managing partner, Shell Canada Ltd.,), Tidewater Midstream and Infrastructure Ltd., and Tourmaline Oil Corp. The natural gas distribution participants include ATCO Gas (a division of ATCO Gas and Pipelines Ltd.), Apex Utilities, Enbridge Gas Inc., FortisBC Energy Inc., Pacific Northern Gas Ltd., and SaskEnergy Inc.

For more information on NGIF Capital and NGIF Industry Grants, please visit ngif.ca or contact us at info@ngif.ca.

***Only non-confidential information should be included in your response ***