This abstract will be presented during LNG2023 conference on 10-13 July in Vancouver, Canada among many other innovative projects, ideas and outlooks. LNG2023 will provide a unique platform for the global LNG industry and key stakeholders to discuss, debate, and showcase the latest industry developments and opportunities.

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CLOSING THE LOOP ON CO2 – CAPTURING VALUE FROM SYNTHETIC FUELS PRODUCTION

Low-carbon drop-in fuels are used to decarbonize hard to abate energy systems. Whilst significant effort and investment is focused on biogenic liquid drop-in fuels, they have growth limitations due to the quantum of source biomass ultimately available. Equally, solutions involving new fuel types, such as green hydrogen, suffer from a lack of demand side infrastructure to utilize the product.
We have developed a novel synthetic natural gas flow scheme which provides an ideal energy vector to allow monetization of carbon dioxide and low-carbon hydrogen whilst maximizing the use of existing infrastructure. The nature of this flow scheme has several key advantages: it uses existing carbon capture, low-carbon hydrogen and methanation technologies; the ability to access multiple existing government subsidies including hydrogen and carbon tax credits, but also the incentives associated with low-carbon natural gas; the ability to access the existing, large natural gas market; and speed of implementation.
Our initial study has demonstrated the viability of this flow scheme, as well as the underlying economics, for industries that emit highly concentrated CO2 waste streams and have access to low-carbon power grids. This synthetic natural gas flow scheme does not suffer from the twin problems of lack of feedstock and lack of demand side infrastructure, and it is expected to become a significant contributor to decarbonization of hard to abate industries.