

‘To play a profitable role in the future, LNG will have to be clean’: G2 Net-Zero LNG

G2 Net-Zero LNG, formerly known as G2 LNG, is an energy products company based in Louisiana. In partnership with Siemens Energy, infrastructure developer 8 Rivers/NET Power and energy advisory firm EJM Associates, it plans to build the world’s first net-zero LNG export and industrial gas production complex.

G2 Net-Zero LNG says the 13 mtpa plant, located on the Calcasieu Ship Channel, three miles north of the Gulf of Mexico, will be the first to deliver “a profitable portfolio of uniquely differentiated energy products,” while achieving net-zero greenhouse gas (GHG) emissions “from the producing reservoir through to the loading dock.” It aims to capture 85% of upstream and midstream emissions, with the remaining 15% offset using carbon credits.

Against the backdrop of decarbonisation, the development of G2 Net-Zero LNG’s project is reflective of US LNG players seeking to draw attention to their emission reduction efforts. The offer of carbon-neutral LNG could potentially give producers a competitive edge, especially in jurisdictions where GHG emissions reduction is an important part of government policy.

In this interview, G2 Net-Zero LNG chairman Chas Roemer explains to LNG Business Review how, with buyers expected to increasingly scrutinise a supplier’s emissions profile in coming years, technological innovation will set his company’s carbon-neutral offering apart from its competitors.



During a conversation you had [on June 19 with the Atlantic Council](#), you said G2 Net-Zero LNG will capture 85% emissions from the wellhead and transport and offset the remaining 15%. How will you offset and be capturing emissions from upstream and midstream? Are you able to elaborate on the type of technology your project will provide end-users to lower their emissions?

The G2 Net-Zero LNG complex will be the first multiple unit NET Power system in the world and will deploy the novel NET Power Allam-Fetvedt Cycle process to generate clean electricity for the new facility. The four Allam-Fetvedt Cycle systems in the power island at G2 will generate 13 mtpa of LNG, over 1,000 MW of electricity and capture nearly 4 million tons of CO2 every year for transport to dedicated storage, EOR and other uses, making it eligible for 45Q Tax Credit.

We have utilised a proprietary weighted attribute model that is optimised for economics, operations, and emissions to develop a targeted upstream and midstream partner list. Our goal is to secure capable, motivated, and committed supply partners, or supply partnership of ~1.65 BCFD of net-zero natural gas.

Our expectation is to show others both in and out of the petrochemical business that it is possible to be both clean and be profitable. We hope to help the industry in our state, Louisiana, to make the transformation required in a world facing more challenges. There are some that argue there is no longer a place for traditional fossil fuel-based industry. We do not believe that and will use G2 Net-Zero LNG to help others not only remain relevant, but become stronger.

You mentioned that G2 Net-Zero LNG will add up to an additional USD 400 million in revenue from carbon products. What products will these be? Is G2 Net-Zero LNG looking at producing and exporting hydrogen?

Net-zero emissions excess by-products to be produced for sale by the full-scale LNG include: electricity (2,217,500 MWh), AR (189,000 tonne), N2 (1,764,000 tonne), O2 (157,300,000 tonne), and CO2 (3,908,000 tonne).

Would you say that producing 'green LNG'/selling carbon-neutral LNG is going to give producers a competitive edge?

G2's major differentiators and value proposition – net-zero LNG from reservoir production to the dock, one of the best remaining sites in the Gulf of Mexico, state of the art technologies, global boardroom clean energy advantage, commitment to social equity and community, the ability to produce a range of high-value products at its export complex, and its world-class development team – position us without peer in the LNG global export market.

Is it possible that buyers will begin to consider a supplier's emissions profile before committing to long-term offtake or buying spot cargoes? Could it become a deterrent for LNG coming into Europe?

Absolutely, and we think this gives G2 a natural advantage. As you are aware, under the Paris agreement signed by 195 countries, the EU has committed to carbon neutrality by 2050 and we're expecting to be net-zero by 2027. We think LNG can continue to play a relevant and profitable role into the future, but it will have to be clean. We hope to provide a roadmap for others to follow.

If LNG emissions are not dealt with to a satisfactory level, who'll benefit?

We will provide the solution to the growing global demand for net-zero emissions, while providing a transition strategy that is also an opportunity for our industry and others, jobs and growth.

Our USD 10.5 billion capital-efficient project will provide our customers with something they can get nowhere else in the world: LNG, electricity and industrial chemicals that are produced for delivery or export with net-zero greenhouse gas emissions. The complex, which will be located in southwest Louisiana, will capture 4 million tons of CO₂ and produce – without emissions – argon, nitrogen, oxygen and electricity for sale to create lower per unit costs than traditional LNG facilities. The complex is a profitable, low-cost, environmentally responsible new solution for meeting rapidly increasing global demand for clean energy.

Will GHG permits/carbon credit trading be the preferred option for both buyers and sellers of LNG as a means to decarbonise the LNG sector? Is this enough?

LNG carbon offsetting is likely to become more widespread and demanded by customers when emissions cannot be directly avoided or reduced. Of course, the best solution is to avoid/reduce existing GHG emissions in the LNG supply chain. Existing LNGs are finding the transition to net zero complex and cost-prohibitive and, therefore, they are looking at a number of initiatives from upstream to downstream to improve the performance and increase transparency on emissions. When emissions cannot be avoided or directly reduced, they are turning to purchasing carbon credits to mitigate the carbon footprint of LNG activities.

The Louisiana Net-Zero Energy Complex will be the first to deliver a profitable portfolio of uniquely differentiated energy products while achieving net-zero GHG emissions from the producing reservoir through to the loading dock – a far superior product even compared to those claiming carbon-neutral LNG. We will deploy best-in-class technologies and innovative protocols to produce net-zero by-products by 2023, produce, transport, process, liquefy and export natural gas, and produce industrial gases with net-zero greenhouse gas emissions by as early as 2027.

Why has the majority of trade of carbon-neutral LNG happened in Asia to date. For example, Shell's deals and JERA's sale to a buyer in India?

As you are aware, Asia struggles with the world's worst air pollution. It continues to be a widespread problem across the Asia Pacific region, creating a major health risk and adverse impacts on the environment and economy. This is having an impact on energy policy and promoting coal-to-gas switching.

While the switch to natural gas is a significant step in the fight against air pollution, a decision to source net-zero LNG would prove to be an attractive solution towards decarbonisation, but also to address increased investor pressure. It is our understanding that Shell's deal is based on buying carbon credits, which is basically compensation for carbon emissions. This will not address Asia's challenges. G2 Net-Zero LNG is investing in the technology that captures and permanently sequesters CO₂ – a true solution to addressing such challenges.

Does carbon-neutral LNG trading require a universally accepted framework for monitoring, reporting and verifying (MRV) emissions before becoming more mainstream?

It is often discussed in climate change mitigation policies. However, the need to quantify and certify emissions from the LNG supply chain is challenging but not impossible. For both emission reduction and

offsetting, a universally accepted robust emission MRV should be a prerequisite to guarantee the effectiveness of each solution. Our strategic climate change mitigation partner has developed such verification system.

Does the current price for LNG and oversupplied market make for the perfect opportunity to expand the trade of carbon neutral LNG/net-zero LNG?

A prolonged supply glut and lower and longer price environment will certainly have significant implications, including near-term financial impact on upstream gas producers and LNG suppliers. We are already seeing development of future traditional liquefaction projects being put on hold or cancelled. Those LNG projects that have already been approved through the regulatory processes recognise that the cost to pivot to net-zero is prohibitive, which provides G2 Net-Zero LNG a strategic advantage as the world is moving towards decarbonisation – even accelerating during the pandemic and its recovery.

Additional new opportunities are emerging as a result of sustained lower LNG prices, including strengthening the case for switching from coal to gas. And even as natural gas prices rise in the future, the global demand for clean energy will attract investment in new solutions for the industry to produce a profitable, low cost, environmentally responsible source of net-zero LNG. - ET

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