LIQUEFIED E-METHANE FACT SHEET

SEA–LNG

What is liquefied e-methane?

Liquefied e-methane, also known as e-LNG, is chemically identical to LNG (liquefied natural gas). It is an electro-fuel, or e-fuel, so called because it is produced from renewable electricity. It is also known as liquefied synthetic methane, or natural gas.

How is liquefied e-methane produced?

Liquefied e-methane is produced by combining hydrogen and carbon dioxide. For liquefied e-methane to be considered a zero-emission fuel, the hydrogen has to stem from electrolysis, using water and renewable electricity as inputs; the carbon dioxide has to be obtained from biogenic sources, or captured from the atmosphere.

How does liquefied e-methane relate to other green fuels?

Liquefied e-methane is one of a family of electro-fuels including e-methanol and e-ammonia which are being discussed for use in maritime. These fuels are all derived from the same renewable hydrogen feedstock. Liquefied e-methane and e-methanol are produced by combining hydrogen with carbon dioxide; ammonia is produced by combining hydrogen with nitrogen.

What emissions reductions does liquefied e-methane deliver?

Emissions reductions will depend on how the liquefied e-methane is produced and the engines in which it is used. In practice zero greenhouse gas emissions are achievable if liquefied e-methane is produced using renewable electricity and carbon dioxide obtained from biogenic sources, or captured from the atmosphere, and used in engines with no methane slip.

How much liquefied e-methane is available now?

Production of liquefied e-methane is currently limited to a number of pilot plants in Europe, but sizable production facilities are being developed in Europe, North America and Australia.

What is the potential for bio-LNG in the future?

Supplies of liquefied e-methane are potentially unlimited, dependent on the build out of renewable electricity and hydrogen electrolysis capacity. Liquefied e-methane has the advantage over other green marine fuels in that it can be delivered using existing natural gas and bunkering infrastructure.

Is liquefied e-methane available to shipping?

Liquefied e-methane has been successfully piloted in shipping. As with other e-fuels, it is currently only available in small volumes, but bunker fuel suppliers have supply agreements with e-LNG producers for commercial delivery from 2026 onwards.

How expensive is liquefied e-methane?	All electro-fuels including liquefied e-methane are many times more expensive than traditional marine fuels and biofuels and biogases such as liquefied biomethane. However, negotiations are on-going in the International Maritime Organization (IMO) to introduce a global pricing carbon mechanism or economic measure that will effectively narrow the price gap.
How is liquefied e-methane typically sold?	Liquefied e-methane is in the early stages of commercialization. It is likely that it will initially be sold as a blend with fossil LNG.
Are there any blending issues with liquefied e-methane?	Liquefied e-methane is chemically identical to the highest quality fossil LNG, so there are no blending issues.
How is liquefied e-methane delivered to ship owners?	Liquefied e-methane can be delivered in the form of physical molecules from e-LNG plants to a ship, or through a system of mass balancing and certified guarantees of origin, whereby e-methane is injected into the gas network and delivered from LNG terminals or liquefaction plants using existing infrastructure.
Does using liquefied e-methane impact methane slip?	Methane slip is a function of engine technology and is not impacted by the use of liquefied e-methane.

For more information on the role of e-LNG in shipping industry decarbonization, please see the report published by the CE Delft on Availability and Costs of Liquefied Bio- and Synthetic Methane – the Maritime Shipping Perspective.