

Grenian Hydrogen: Cheshire Green Hydrogen Frequently Asked Questions

Grenian has prepared the following FAQs to respond to issues raised during the consultation and added these to the Grenian website.

Who is Grenian Hydrogen?

Grenian Hydrogen Limited is a joint venture company, registered in the UK, which is equally owned by Progressive Energy, Statkraft and Foresight. The company was set up with the specific purpose of developing green hydrogen production plants in the North West of England and North Wales. We currently have a portfolio of seven projects, of which Cheshire Green Hydrogen (CGH) is the most advanced. CGH will be a wholly owned subsidiary of Grenian Hydrogen.

What is 'green' hydrogen?

'Green' hydrogen is produced when we use renewable energy – like wind, solar, and hydropower – to separate water molecules into hydrogen and oxygen using an electrolyser. The hydrogen can then be used as a fuel with no resulting carbon dioxide emissions.

Is green hydrogen supported by Government?

UK Government published a National Hydrogen Strategy in 2021, which set a target of producing 5GW of low carbon hydrogen each year by 2030. In 2022, this target was increased to 10GW per year by 2030 in the National Energy Security Strategy. Government is also actively supporting the production (and use) of hydrogen via the Low Carbon Hydrogen Agreement, which funds the additional costs of producing low carbon hydrogen compared to the market price of fossil gas. This acts as an incentive for manufacturers and power generators to switch to low carbon hydrogen, as they avoid all carbon-related taxes.

What will the green hydrogen be used for?

The green hydrogen produced at the CGH plant will primarily be supplied to Encirc to decarbonise glass production at Elton. Grenian is also talking with other potential customers on the Protos site.

What are the environmental benefits of green hydrogen?

The green hydrogen supplied by CGH to Encirc will be used, in place of fossil gas, as a fuel to manufacture container glass. Running at maximum capacity, hydrogen from CGH could displace 175GWh of fossil gas each year. This will result in a reduction of 35,000 tonnes of carbon dioxide emissions every year, equivalent to taking 21,000 petrol and diesel cars off the road.

Is hydrogen safe to use?

Hydrogen has been used for decades in numerous industrial applications. Unlike other substances like petrol or fossil gas, hydrogen is very light, even

lighter than air, so in the event of leaks or accidental releases, it rises quickly and is dispersed into the atmosphere. However, just like fossil gas it can be dangerous in high concentrations if it's ignited. Just like other substances used in industry, there are established standards to manage its production, storage and use, so that hydrogen can be used safely.

Will CGH create air pollution?

There is no combustion of gases in the production of green hydrogen and so the only emissions to air will be small amounts of hydrogen and oxygen vented during normal operation or in an emergency.

Will the plant create a lot of noise?

The plant will create a low 'humming' noise as part of every day operation, but the level of this humming will meet strict noise standards and only be discernible when standing very near to the plant.

Will the plant result in lots of new lorries driving through the local area?

Everything the plant needs and makes is transported by underground pipeline so, following the initial 18-24 month construction period, there will be an average of only one lorry coming to site every month, or perhaps even fewer, as this will only be needed for maintenance activities.

What jobs will be created as part of the project?

Currently, around 20 full-time employees (FTEs) are working on the development of the CGH project, including those employed at local companies, such as RSK. At peak, the development could employ up to 60 construction operatives on site., along with a further 2-3 FTEs during operation.

Decarbonisation of Encirc will result in safeguarding of existing jobs for the long-term as the low carbon container glass produced at Elton will have

competitive advantage over alternatives. Furthermore, the CGH plant may attract other manufacturers to the Protos site, which will create new employment in the local area.

Will the electricity cables and substation form part of the same application for planning consent as the CGH Plant?

Yes, the electricity cables between the production plant and the substation, and the substation itself form part of the same planning application. The application also includes a new water supply.

Will the hydrogen pipeline be part of the same application for planning consent as the CGH Plant?

No, the hydrogen pipeline will be part of a separate consenting process, which is likely to be led by Cadent Gas Limited. Cadent is a regulated entity, which owns and operates the existing local gas network.

Will the electricity used to generate hydrogen from electrolysis be genuinely renewable?

Yes, to qualify for funding under a Low Carbon Hydrogen Agreement with Government (which is essential to development and operation of the CGH plant), all electricity supplied for hydrogen production must meet the associated Low Carbon Hydrogen Standard. This has strict conditions, which stipulate that auditable evidence must be provided to show that every unit of green hydrogen production must be linked with a corresponding unit of electricity production with a carbon footprint of less than 20gCO₂/MJ. This goes for local supplies of renewable electricity to CGH, from Frodsham Windfarm and potential future local solar photovoltaic developments, along with more remote sources of renewable power, which will be supplied via the wider electricity transmission and distribution networks.

Will the Cheshire Green Hydrogen plant mean less curtailment of the

Frodsham Wind Farm?

Curtailment is when a wind farm has to reduce output or stop producing power altogether because there is either insufficient demand for it or 'congestion' on the local electricity network. CGH will take electricity from Frodsham Wind Farm directly and so has the potential to reduce ongoing curtailment from the wind farm. There was around 4TWh of curtailed renewable generation in the UK in 2022, around 3% of all renewable generation.

Why hydrogen? Wouldn't it be better for Encirc to decarbonise by using renewable electricity directly?

Our chosen hydrogen production technology is 71% efficient at converting electricity to hydrogen. In principle, therefore, it would be more energy efficient for Encirc to use that electricity directly in an electric furnace rather than convert it to hydrogen for use in a gas-fuelled furnace. However, the furnaces at Encirc are currently fired by fossil gas and so hydrogen can be used as a 'drop-in' substitute fuel, without major modifications; whereas considerable investment in a completely new furnace would be needed to enable a switch to electricity. Furthermore, the operational cost of electricity would currently be far greater than the equivalent cost of fossil gas or hydrogen (as supported by a Low Carbon Hydrogen Agreement with Government). Consequently, we consider that the benefits of switching to hydrogen outweigh those of switching to electricity.

Will the plant result in lower energy costs for local people?

Any potential Grenian Community Benefit Funds do not allow for direct payments to residents for money off electricity bills. We fully support funding to be used for activities that reduce energy bills over the long term, such as energy efficiency, education and small-scale renewable schemes. We are keen for funds to meet local needs and are aware these needs change, so our funds may look different by the time the project becomes operational.

Is the plant part of the HyNet project?

CGH is not part of the HyNet project. However, the two projects are complementary in that CGH may, in the future, supply hydrogen into the wider HyNet hydrogen pipeline distribution network. More widely, Grenian hydrogen is developing a further six projects, which again may connect into the HyNet pipeline network.

If you have any further questions, please email: info@grenianhydrogen.com.

