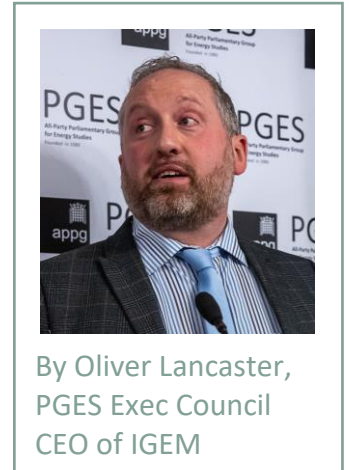




# PGES Energy Bulletin

31 January 2024

## Inaugural PGES Winter Warmer Reception Keynote Speech By Oliver Lancaster, CEO of IGEM



By Oliver Lancaster,  
PGES Exec Council  
CEO of IGEM

### Institution of Gas Engineers and Managers

It's a pleasure to be representing IGEM as sponsors of the first ever PGES Winter Warmer Reception. We're the global professional engineering institution for the gas, and emerging hydrogen, sector - with thousands of individual members, and 420 company members from offshore producers in the upstream, gas networks and supply chain in the mid-stream, and housing associations and installers in the downstream. All these members collectively ensure we operate a safe and reliable gas system today.

Of course, it's a useful time of year to sharpen our minds and help us all focus on the realities of the challenges we face in delivering net zero, and perhaps help us to work more collaboratively in taking action to mitigate emissions sooner, thereby reducing cumulative emissions and avoiding greater climate change impact, and reducing adaptation measures that would have to be invested in.

### A short history of gas

Hop into your DeLorean, and let me take you on a little journey. History usually has some excellent lessons for us. The gas industry, as we recognise it today, started in 1792, in Redruth, when William Murdoch first produced gas from distilling coal for an actual purpose – to light his home.

Then followed a period of 20 years when gasworks were built as energy islands – with co-located gas production, storage and consumption at individual industrial sites.

Along came Frederick Winsor who then put forward that it would be better to centrally produce the gas and distribute it to those who want it in a network of pipes. This proposal of the concept of gas distribution was actually presented in the Lyceum Theatre where the Lion King is showing, followed by his public demonstration of gas street lighting on Pall Mall in 1807 – spot the plaque on the wall next to the RAC building.

From this point, industry ditched their energy islands and opted for a networked supply – it was easier all round – but I suspect most importantly, the security of supply was up-streamed to be somebody else's problem. This is useful learning as we consider islanded and networked supply of hydrogen for industry over 200 years later.

### The energy system

So, gas networks were then born in 1812 in Westminster on the site of the Home Office today – the world's first public gas utility. This was quickly replicated at thousands of other locations up and down the country, with some offering what we might now call bundled services for gas, electricity, water...and coke.

Fast forward, and we see an industry that was initially developed for street lighting now transformed into a network delivering for home heating, industry, power generation and transport.

#### Officers

Alan Brown MP; David Duguid MP  
Lord Redesdale, Lord Teverson; The Rt Hon Lord Whitty

We often hear about these energy uses and ‘whole energy systems’ – but this term means different things to different people. A mistake in designing our energy future would be to focus on one energy vector or one energy demand sector at a time. We need everything to be looked at together, which makes energy systems modelling complicated, but I really hope we begin to see action...that needs firm policy to invest...and that we don’t just cycle around in circles in pursuit of perfection.

## **A few statistics ([see full report here](#))**

To help a little with understanding what connections are where on the gas grid, IGEM has worked with the gas networks to plot some of them.

You’ll see that there are [67,000 industrial connections to the gas grid](#) – which helps with the realisation that industry isn’t just in convenient clusters on the coast, and isn’t just located on the transmission network, but it is on all levels of the gas distribution network around where people, and employees of these industrial businesses, live. It’s certainly not the case that distribution networks only supply homes, and if a proportion of industry needs a molecule like hydrogen, then it’ll be passing the doors of homes and other businesses along the way that share the same pipe.

There are also [460,000 commercial connections](#) to the gas grid, which includes large end users like hospitals in the centre of towns and cities. Add industrial connections into this, and that’s a total of **527,000 businesses connected to gas**.

Then with minds in this house aligned well on a zero carbon electricity system within the next decade or so...we actually have [308 power stations connected to gas networks](#) with an electricity **generation capacity of 33.4 GW**, with 5.3 GW of that capacity connected to the lower levels of gas distribution. These flexibly respond to power system needs and generate anywhere from **7% to 70% of our electricity needs** at any one time. And 75 new additional power stations that are in the connections process will add another 1.5 GW of generation capacity to gas distribution.

**Biomethane** is moving along well, with [124 sites connected](#) and another 29 in the connections process. **10.1 TWh** of capacity is connected now, but that will soon be 14.5 TWh – that’s enough **renewable gas to heat 1.2m homes**, or around 6m homes using hybrid heating systems...6m is 25% of homes connected to the gas grid!

Lastly, from a security of supply perspective, the gas system in GB contributes significantly to energy security, but it may be surprising that the gas networks have a **daily [storage capacity](#) of 1,715 GWh – that’s equivalent to 127 million Tesla Powerwall batteries, or 188 pumped hydro schemes the size of Dinorwig in North Wales**.

Hopefully that’s all useful food for thought when it comes to planning and delivering an affordable, net zero energy system that’s fair for all people and deals with all demands.

I’m also pleased to say that IGEM is working with our stakeholders to support the UK Government and have recently published a first-of-a-kind series of hydrogen engineering standards covering new and repurposed transmission and distribution pipelines. We’ve also developed the standards to enable engineers and competent Gas Safe installers to be trained to work on domestic and non-domestic hydrogen installations.

## **To throw some light on it**

Now, I started with a history twist, and I’ll finish with another. With many gas lamps around London in Westminster and royal parks, including many on the Parliamentary estate right here, and elsewhere in the UK, we’ve investigated with partners to see if they work with hydrogen rather than us losing this wonderful heritage. I’m very happy to report that they can be converted to run on hydrogen, and with double the luminosity. Maybe we’ll gather around the romantic glow of a hydrogen lamp in New Palace Yard at a future PGES Winter Warmer Reception? **PGES**