

Written evidence from SGN (MET0037)

SGN owns and operates the gas distribution network in Scotland and the south of England and performs an essential 24/7 service for our communities by keeping everyone safe and warm. Yet as the world around us is changing, people and businesses will need to act differently to make sure everyone has secure, affordable, and clean energy.

SGN is a trusted partner to our customers through the energy transition and offer heating solutions that best suit their needs. Our stewardship of critical national infrastructure and a highly skilled workforce, puts the company in a strong position to support the development of the UK's hydrogen economy. As a leader in whole systems thinking, SGN will champion an integrated energy mix that works for customer and country.

Introduction

SGN welcome this inquiry by the House of Lords Environment and Climate Change Committee into methane and its impact on climate change. SGN own and operate gas distribution networks in Scotland and the south of England. These networks supply natural and green gas (both methane and biomethane) to around 6 million homes and businesses. We also provide an essential service to maintain, repair and replace our network, and provide crucial support to vulnerable and fuel poor customers. SGN recognises the need to decarbonise our network, including reducing our methane leakage, and preparing our network for a green gas alternatives, such as hydrogen.

Annually, the UK gas network transports over 700 TWh of energy. As the owner and operator of two gas distribution networks, we felt it was important the committee is made aware of the work we're doing to reduce our methane emissions, and what we will continue to do as we decarbonise our network. Therefore, we will be addressing the questions under the fossil fuels sub-heading of the call for evidence.

The gas network

Methane (the dominant component of natural gas) remains the primary energy vector for more than 22 million of homes and businesses across the country, using gas to heat their homes and cook. Additionally, many businesses and industrial sites use gas in their everyday operations to power our economy. Natural gas also acts as a crucial supply of energy for electricity generation, both for baseload power and intermittent peaking generation.

Currently there are 308 power stations connected to the gas system, flexibly accessing gas network storage. Currently, 33.4GW of generation capacity is connected, with 28.2GW on transmission and 5.3 GW on distribution, generating 7% - 70% of electricity on any given day. On top of this, a further 75 sites are currently in the connections process, which will increase capacity on the gas

distribution network to 6.7GW and 34.9GW in total. These connections are on the same network as homes and businesses, they balance electricity supply and demand – supporting demand peaks and enabling renewables – and highlight the integration between electricity and gas¹.

The resilience provided by the natural gas network is particularly vital when the UK is under intense strain from extreme weather events. The 'Beast from the East' in 2018 is a good illustration, where the demand on the gas network was 214 Gigawatts, with electricity demand peaking around 50 Gigawatts. On a cold winter's day, the gas network distributes 5 to 6 times the energy capacity of the electricity network. This is why SGN believes that if we are to ensure a secure and decarbonised supply of energy across all areas of the UK, we must ensure that this comes from both gas and electricity.

Methane reduction from the gas network

Gas is lost from the network at different rates, depending on the material that the pipe is made from (for example, metallic pipes leak at a much higher rate than plastic pipes) and the pressure gas runs through the network (the higher the pressure the higher the leakage rate). Around 0.4% of the gas is lost from pipelines as it is distributed around the UK, most of which is leakage. This therefore represents the largest component of our carbon footprint.

As part of our role as a gas distribution network, and in line with our regulatory obligations, we are continuing to deliver our ongoing mains replacement programme, the Iron Mains Risk Reduction Programme (IMRRP)². This involves us replacing old iron gas mains with modern plastic pipes and is the key intervention we can make to reduce leakage. Since 2000, methane emissions from gas leakage in the network have fallen by 50%, predominantly as a result of the IMRRP programme. We have further committed to reduce leakage from our network by 15% between 2021 - 2026. This follows on from a 23% reduction we achieved in the eight years prior to 2021.

As it stands, around 75% of our network has been upgraded with the remainder to be replaced by 2032. The new pipes which have been installed as part of this programme will be hydrogen and biomethane-ready.

We are continually looking at how we can utilise technological advancements to improve our network operations and reduce our emissions. Through Ofgem's network innovation allowance, we collaborated with smart gas grid technology developer Utonomy to successfully trial a unique pressure control and management system.

The new system enables our gas governors (which regulate the pressure in the network) to be remotely and continuously adjusted so network pressure matches demand. This means lower average pressures in our gas network, and consequently, fewer emissions.

¹ <https://www.igem.org.uk/resource/igem-launches-groundbreaking-grid-connections-research-at-parliamentary-reception.html>

² <https://www.hse.gov.uk/gas/supply/mainsreplacement/index.htm>

We also have an ongoing innovation project aimed at shifting leakage measurement from an estimated to more accurately measured process. The Digital Platform for Leakage Analytics (DPLA) Project aims to develop and demonstrate a prototype for how data, analytics and models can be used to identify and locate gas leaks in the gas distribution network. The core functionality of the DPLA is data-driven leakage modelling, unlocking proactive leak detection capabilities, combined with testing the application of novel gas sensor technologies.

We believe that by continuing to invest in innovation, and the maintenance and upgrade of our gas network, we will not only reduce our emissions leakage today, but also be fully prepared for the transition to net zero.