

Transforming our network

Wales & West Utilities Innovation Report 2018/19



Innovating to deliver for customers now and in the future

In an era of unprecedented disruption and change, we're reaping the benefits of our strong innovation culture. As digitalisation, decentralisation and decarbonisation become ever more central, we're focused on delivering for customers today while preparing for the future, targeting projects, collaborations and project outcomes that benefit the communities we serve.

Entering the last few years of the RIIO-GD1 price control, it's clear that innovation is delivering very real benefits for our customers. It has not only reduced or avoided £9.7m of cost, but also reduced the impact of our essential work. The Network Innovation Allowance has helped deliver this, not only through funding, but also by connecting us to the innovative thinking of academia and small and medium enterprises.



This year, we're leading projects like Above and Beyond – where a record number of energy networks are working together to revolutionise and reduce the cost of monitoring essential infrastructure by using drones. The benefits of this project will be felt beyond utilities, paving the way for drones to be flown Beyond Visual Line of Sight in the UK.

The national commitment to Net Zero means that we need to redouble our ambition and efforts if we are to meet our challenging targets. So we're building on the success of previous years by leading OptiNet, a project looking into the future of energy. Working alongside another gas network, industry and academia, it will help us unlock and maximise the benefits of green gas – acknowledged as the most cost-effective and least disruptive pathway to decarbonise heat.

Looking to the future, informed by the ENA Gas Network Innovation Strategy and the views of more than 21,000 of our customers and stakeholders, we'll continue to use innovation to improve the experience of customers and colleagues alike, delivering an energy system that is affordable, reliable and green.

Graham Edwards
Chief Executive

Contents

Strategy in 60 seconds	04
Our activities today	08
Our activities tomorrow	12
On track for the future	16
Annual project summary	18

Year at a glance 'Getting to the roots of change'

We're transforming our business into a results-based organisation that delivers for our customers. This requires a strong process, bold and sustained leadership, and involves changing the hearts and minds of both managers and operational colleagues.

We spread our roots deep; pushing decision making into the organisation, by empowering and supporting employees to act to innovate, and wide; working with our supply chain and other networks to resource a strong and effective programme of innovation.

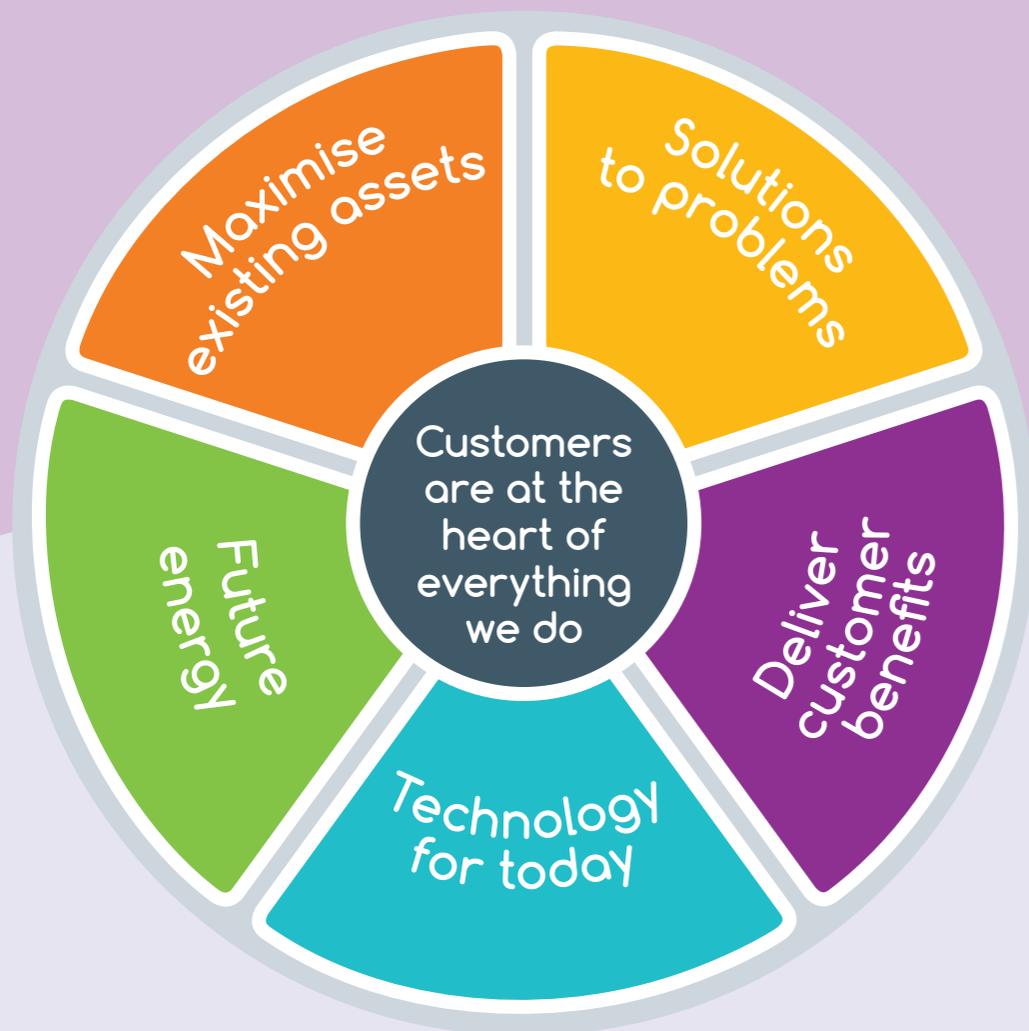


Strategy in 60 seconds

The energy market is going through a period of unprecedented transformation. Our customers' expectations are increasing alongside rapid decarbonisation, decentralisation and digitalisation.

Our approach in the face of this level of uncertainty is to make sure that we have the right innovation culture in place. We're building on strong foundations and continue to innovate to make sure we can deliver the highest possible levels of safety, reliability and service for today and tomorrow's customers.

We have an excellent track record in leading on and supporting innovation projects, as well as the processes and systems we need to make sure that we take advantage of best practice from both within and outside the gas sector to produce solutions to real problems that can have a direct impact on customers, at the lowest possible cost.



Partnerships

We collaborate as a priority, not just at a project level, but at a strategy level. Our strategy is to make connections with leading innovators within and beyond the gas industry to share expertise, access funding and unlock potential for delivering new and better services – as well as preparing for future risks such as climate change.

- We participate in and support **external networks**. This year has seen us continue our range of successful innovation partnerships. Not only are we working with other energy networks including electricity distribution network operators, businesses large and small, academia and the Energy Innovation Centre (EIC), we also continue to work closely with the Welsh Government as an innovation anchor company. Supporting the delivery of our innovation strategy is the EIC, connecting us with more than **7,000** small-to-medium enterprises (SMEs).

- We have benefited from **learning from others**. We actively participate in collaborative forums such as the Gas Innovation Governance Group (GIGG), and have to-date assessed, trialled or adopted **94%** of all projects implemented by other gas networks.

- We are proud to be sector-leading in our levels of **collaboration**, working with others **68%** of the time compared to the sector average of just **23%**. Furthermore, our collaborative drive has resulted in **57%** of the cross-sector portfolio (gas and electricity networks) we've been involved in being led by us.



“ I find it heartening when we can collaborate on projects like this with real benefits to the gas and wider pipeline industry.

ADRIAN WATHEN
Cadent Gas



- We have adopted the principles of **open innovation** and realise that strong partnerships will allow us to effectively achieve our common goals. We have nurtured relationships with more than **350 partners**, from micro-enterprises to multinationals and academia. Bringing ideas and experience to us from **18 countries** around the world, these third parties are an integral part of our strategy, allowing us access to a breadth of knowledge that can be targeted at our key business challenges. This approach has seen **58%** of our ideas coming from outside organisations.



People

We've been committed to innovation from day one. Since 2013, we've been embedding a culture of innovation throughout our business. We have committed leaders at the top who believe that innovation is fundamental to improve performance year-on-year, and an empowered workforce that is engaged, equipped and encouraged to innovate and challenge the status quo.

“ I have had the pleasure of working with Wales & West Utilities for the last six years, supporting them to develop their leaders and create a strong culture of innovation, led from the top. In collaboration with the innovation team, we created a toolkit that enables them to fully engage with their colleagues across the organisation in the design and implementation of their innovation projects. As a result, people at all levels of the organisation are keen to work with the team, the projects are of a high quality, lead to sustainable changes for Wales & West Utilities and Wales & West Utilities is recognised as a market leader in the industry.

FIONA CAMERON
StickyChange

- We have a core innovation team of just four, but our reach extends far beyond. This is made possible via a **business-led approach**, where our workforce is empowered to be the experts, the leads and the source of innovation – both in terms of identifying new ideas and solutions, and in presenting well-formed challenges that can be targeted through innovation. **42%** of our ideas came from within our own business.

- We support and leverage **internal networks** to identify challenges and engage the business. Within all areas of the business we use our 'innovation action groups' to identify challenges and problems and empower colleagues through initiatives such as our open innovation ideas inbox, our Young Persons Network Beermat challenge and our Customer Service Championship Cup, that play a part in developing a great culture to deliver results.

- We are building an innovation **culture** today, that will support the business long into the future. Our business-led approach breaks down silos and makes sure that the whole business is equipped with the skills and desire to innovate. Since 2013, we have helped transform **97 employees** from all areas of the business into successful innovation project managers.

- We **celebrate success**, rewarding those that have made significant contributions to the business through innovation. We use our pin badge recognition scheme to expose the talented individuals that sit at the heart of a culture of innovation within the business. This year we were recognised for our achievements, winning **five awards**, including the Gamechanger award at the inaugural Network Awards, for project Freedom.

Process

We're well equipped to continue our ambitious innovation programme, delivering the services our customers have told us they want – using the best ideas, techniques and technologies to deliver improved services for them and to support the energy system transition. Our processes are designed to make innovation easy, encourage colleagues to bring forward innovative ideas and to optimise a successful implementation and rollout.

- We exercise **robust governance** in selecting and delivering innovation projects so that every project has the potential to provide real benefits to customers that are aligned to our business priorities, and make sure we understand the project's impact before it's embedded within the business.

- We manage project risks in the most appropriate way. The core innovation team use the **innovation toolkit** to move each project through the process effectively with pace. The toolkit was developed in response to lessons learned since 2013 and is accredited by the Welsh Government's SMART Innovation Programme.

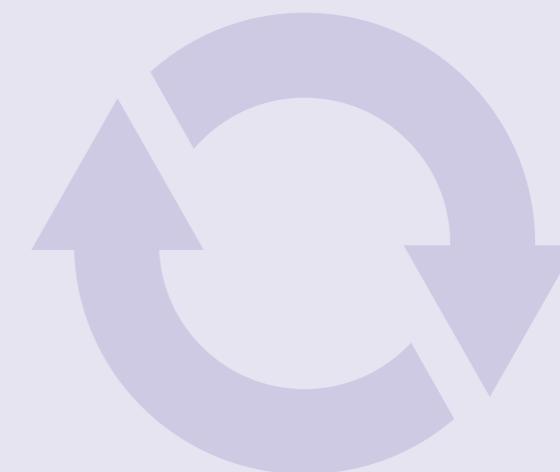
“ We've always found Wales & West Utilities to be a great partner for innovation development. At the outset, they strive to clearly communicate the requirements and work with the team to ensure quick but appropriate decisions can be made.

IAIN CHIRNSIDE
Steer Energy

- We have **room for growth** and realise the value of learning from our failures, which will enable us to deliver more in the future. We actively review bottlenecks in our process, both internally with key stakeholders and externally at collaboration forums such as GiGG, to make sure we can continue to deliver for our customers, at pace.

- We have developed a business **benefits tracker** to measure the outcomes from innovation. This enables us to demonstrate the benefit that innovation is delivering to the business and promote usage where adoption isn't maximised, giving a true understanding of what is business-as-usual. This has been shared with the gas networks.

- We **fail fast** to innovate faster. We know that not all projects can deliver a successful outcome, but also that lessons learnt from failure are as important as those learnt from our successes. To date, **36 projects** have not been taken forward to business-as-usual, for a number of reasons – such as if it's a groundbreaking idea that simply cannot be made to work in practice. Our processes are designed to be agile and delivered at pace, to make sure we're not just prepared for, but are able to react to the challenges faced in delivering innovation.



Our activities today

Delivering real value

Our strategy remains simple and unchanged: we innovate to make sure we can deliver the highest possible levels of safety, reliability and service for customers both today and tomorrow.

However, we don't do this alone. We've worked actively with customers and stakeholders, and this feedback has supported us to develop an ambitious plan that in turn supports their needs.

With our customers' needs at the heart of everything we do, our portfolio is designed to support the business in delivering outstanding levels of customer service – reducing the disruption from our essential work while making us more efficient, cost-effective and our network more resilient for the future.



CASE STUDY 1 ABOVE AND BEYOND

The sky's the limit

Drone technology could transform the industry – and we're at the forefront of an exciting collaborative project to unlock its potential.

688km
flown
BVLOS

7
gas and electric
networks
collaborating

- Drones could revolutionise the way we monitor and maintain our assets – potentially improving safety and reducing costs – and to that end we're spearheading a cross-country, pioneering project to establish a standard, network-wide framework for their use.
- This pathfinder project, launched in April 2018, sees us working alongside gas and electricity networks and key industry partners such as the Civil Aviation Authority (CAA) and the Department for Transport (DfT) and sets out to shape the future for drone applications.

What are we doing?

- The main aim of the project is to develop the standards and define the regulatory environment so drone technology can be deployed by our industry. By adopting these principles, the industry would be allowed to fly drones beyond visible line of sight (BVLOS) – which only the military can do at present.

“ Collaboration is key to solving the challenges of moving to a safe, reliable and cost-efficient low-carbon energy supply. This industry-leading project between gas and electricity networks is demonstrating how drone technology can be used to its full potential by assessing network infrastructure.

IAN CAMERON
UK Power Networks

- This spring saw the first trials conducted on both the electricity and gas networks, carried out by aviation specialists Callen-Lenz in segregated airspace – essentially designated 'no-go' zones for independent flights – over Lincolnshire and south Wales. These trials will help to establish a standard operating framework for the use of drones beyond visible line of sight.
- A significant milestone for the project, these initial trials will focus on evaluating existing technologies, aircraft suitability and risk management approaches, and the outcomes will aid planning for the next phase of trials in non-segregated airspace – areas where there is likely to be interaction with light aircraft and other operators.

Key benefits

- Using drones – a flexible, futuristic airborne technology – to monitor network assets has significant advantages. Currently, we use helicopters to carry out video inspections of our infrastructure, 2,362km of pipeline, every four years and manual inspections every fortnight.
- While invaluable, these checks are expensive and involve health and safety risks – which is why drone inspections are an ideal solution, provided we can use them for out of sight operations. In addition to reducing costs and improving safety, using drones will enable more regular video inspections, improving the quality of data we collect.
- As well as enabling the use of drones for operations currently prohibited by the CAA, the project has the potential to pave the way for further applications for this technology by the energy industry in the future.
- By setting out the acceptable regulatory parameters for BVLOS drone flights, the project has the potential to unlock even more applications for the technology in the energy industry in future. With the project progressing well, we could see the first drones enter service by the end of 2021.



CASE STUDY 2 CRYOGENIC PIPELINE CRACKING TECHNOLOGY

Let's get cracking

This groundbreaking project aims to revolutionise how we replace our pipelines, through the use of cryogenic technology.

- Replacing or servicing conventional gas mains involves breaking and fragmenting the outer pipe, or cutting windows to access the polyethylene pipeline inside. But while current technologies work well with naturally brittle materials such as cast iron and spun iron, they're far more problematic when it comes to tougher ductile iron (DI) or steel pipes.
- Because of the extra difficulty, time and cost involved, the strategy until now has been to avoid replacing DI and steel pipelines wherever possible. But the time is fast approaching where it will be necessary, and with more than 1,500km of DI and more than 2,500km of steel pipelines in our network, we need to find a more efficient way to replace these materials. Cryogenic technology presents a promising potential solution to this problem.

-140°C
the target
temperature

>4,000
km of DI and
steel remain on
our networks

“ This is an exciting and groundbreaking project that has brought together key stakeholders with different areas of expertise, who are working collaboratively to address a gas industry-wide challenge. Cryogenic technology has the potential to deliver clear and tangible benefits to Wales & West Utilities, its customers, and the other gas networks. This project highlights the kind of progressive thinking and innovative ways of working that we are now introducing in order to break new operational boundaries.

SEAN KELLY
Morrison Utility Service

What are we doing?

- In collaboration with Cadent Gas, Morrison Utility Services, Steve Vick International and DNV GL, we have launched the Cryogenic Pipeline Cracking Project. This initiative aims to explore how cryogenics such as liquid nitrogen can be utilised to make DI and steel pipelines more brittle, and therefore as easy to replace as cast and spun iron.
- Together with our partners we have begun testing different cryogens, methods of application and different pipe cracking technologies. The first phase of the project has confirmed that liquid nitrogen cryogenic cooling of DI and steel pipelines is a potential solution for achieving the necessary embrittlement levels in these materials – and this technology is set to be further developed and refined in Phase 2.

Key benefits

- Should cryogenic cracking technology be proven viable, it offers a number of clear benefits both to the business and our customers. Being able to replace DI and steel pipes as easily as other materials will reduce disruption to customers in their homes and to communities on the roads, and allow us to work more efficiently – reducing cost to customers in the long term.
- The use of liquid nitrogen as a cooling source also has several advantages – it poses no threat to the environment and can be safely handled through the implementation of appropriate equipment and training. It's already used in many industry sectors, and supply, storage and handling of liquid nitrogen is fully regulated.



Our activities tomorrow

Leading the way

How our world produces, stores and uses energy is rapidly changing – the world is driven by the urgent need to reduce carbon emissions.

As a key part of the energy system today, we're not watching from the sidelines; we're leading the way. Through groundbreaking projects, our experts are researching the future of the energy system in the UK – and we've got a clear vision for the way forward.

With our customers' needs at the heart of everything we do, our work goes beyond Wales and the south west of England. We're informing and reassuring customers, stakeholders and the wider energy industry across the whole of the UK and the rest of the world about the best way forward.

£3.6m
(of £7.8m) –
47% of spend
since 2013 has
been to support
Future of Energy
projects

35
power stations
connected to
our network,
supplying
3m homes,
supporting
renewable
energy

19
green gas
connections
already
decarbonising
the gas
supplied to
almost
130,000 homes

9
potential
green gas
connections

51
potential
power
generation
sites

CASE STUDY 3 OptiNet

Decarbonisation, decentralisation, digitalisation

A first for the UK, OptiNet is a collaborative project to help us bring more green gas on to the network and support the transition to a cleaner energy system.

- Injection of green gas into the network is the cheapest way of meeting the decarbonisation targets set out in the Climate Change Act 2008.

- Adding more green gas at the same time that more electricity peaking plants are connecting to the distribution networks to service high-demand periods places unprecedented pressure on the network. To meet that dual challenge, we need to optimise the capacity of our network – this project will help us work out how and where we need to invest to support green gas and electricity generation.

“The OptiNet project will increase the capacity in the grid network, which will protect households and businesses from any potential supply issues as the grid will be able to react better to changes in supply. For a green gas producer such as Wyke, it will enable us to maximise the amount of green gas that we can supply and effectively de-carbonise more of the local area.

The project increases reliability of service for customers and suppliers such as Wyke and at the same time improves the environment for everyone.”

JASON FEWELL
Wyke Farms

What are we doing?

- OptiNet is a UK-first project investigating a range of solutions to optimise networks, including introducing smarter pressure control to maximise existing demand in distribution networks and also compression into the high-pressure system, which creates additional capacity/demand on the distribution network.
- Working in partnership with contractor PassivSystems, gas distribution network Cadent Gas and other stakeholders, we will be reviewing the solutions on networks that are approaching a critical mass of biomethane enquiries in the area, a number of which may be declined if we don't find a solution.

- Following an initial technical evaluation, we will be designing and testing the smart pressure control and compression systems and reporting on their suitability. We will assess the feasibility of compression into storage at scale, the commercial and regulatory barriers and the options to reinforce the network.
- The result will be a report that details tested, proven solutions to bring additional green gas into the network.

Key benefits

- Ultimately, this project will deliver a set of detailed recommendations on how best to meet the optimisation challenges we face in bringing more green gas on to the network.
- This project will give us a detailed understanding of other capacity solutions such as storage and network reinforcement and a hierarchy of investment and decision support that can be applied to other networks across the UK.
- Crucially, it will give us the evidence and data we need to justify the investments that will enable us to provide a cost-efficient, reliable and low-carbon supply that meets the changing requirements of new and future demands on the network.

Investing in the future of green gas.



CASE STUDY 4 GREEN CITY VISION

Looking for a greener future

A collaborative project to find out the best way of delivering low-carbon cities and towns while minimising cost and disruption to the consumer.

- Green City Vision is a collaborative, cross-vector study to assess low-cost, technically feasible solutions to produce a low-carbon city or large town.

- This pioneering project is the first time whole systems – electricity and gas distribution networks – have been simulated together and is the first time our 2050 Energy Pathfinder model has been used in tandem with the National Grid Future Energy Scenarios.

80Mw
of biomethane capacity required to decarbonise the Swindon area

90%
adoption rate for electric vehicles by 2050

- It's crucial we understand decarbonisation in the context of an integrated energy system that takes into account the heat, electricity and transport demands of a given region. By gaining this perspective, we'll be able to develop holistic decarbonisation strategies that achieve regional compliance at overall minimal cost and disruption to consumers.

“As the historic lines of distinction between heat, power and transport are becoming ever more blurred, whole-system and collaborative analysis will be fundamental to ensuring safe and reliable energy delivery to meet consumers' collective needs while achieving national carbon targets. The Green City Vision project demonstrates the importance of gas and electricity network collaboration in development of balanced regionally-specific decarbonisation strategies that leverage the best elements of each network, and minimise the necessity of change for all stakeholder groups.

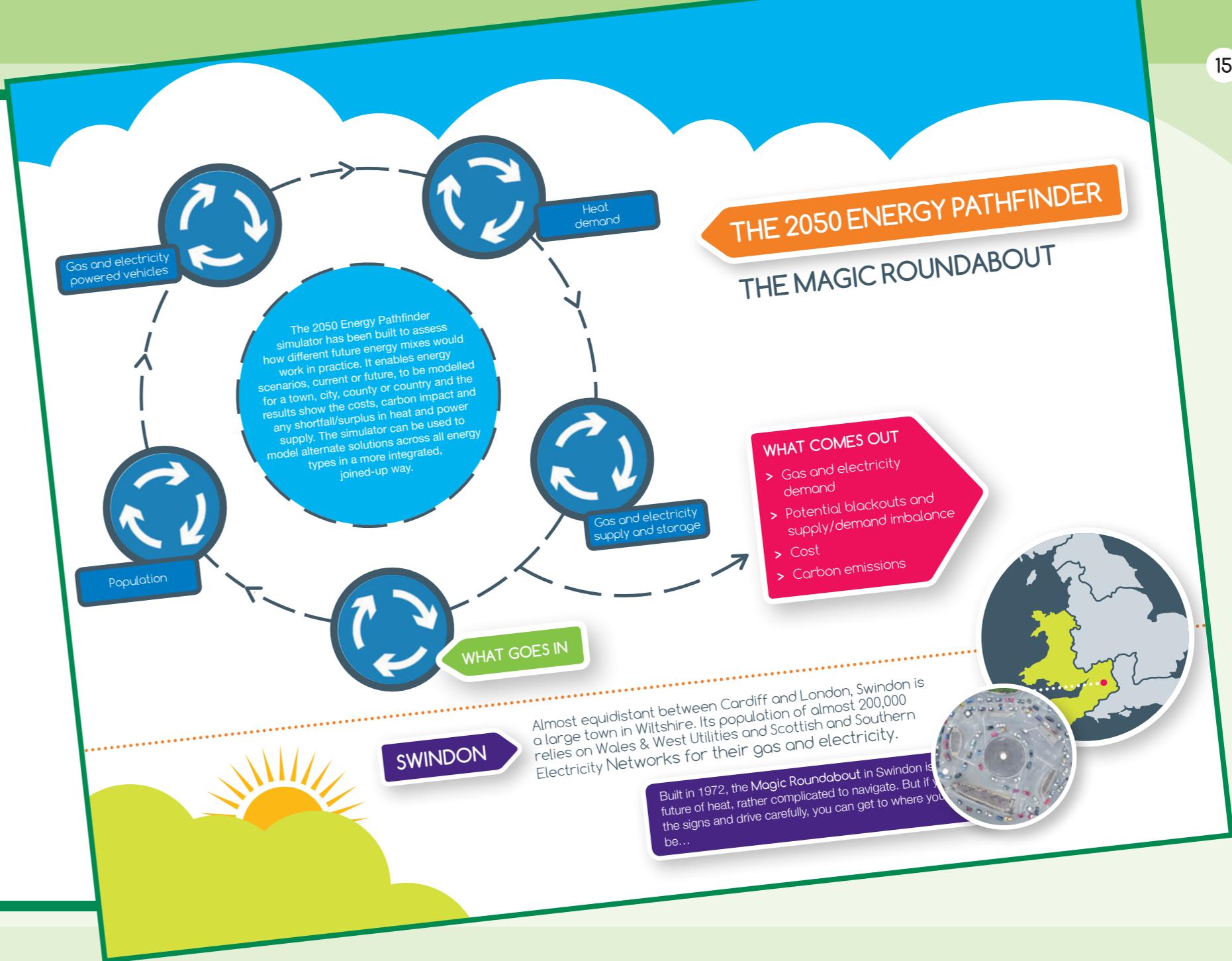
TOMMY ISAAC
Progressive Energy

What are we doing?

- Working closely with low-carbon consultancy Progressive Energy Ltd, UK Power Networks and Scottish & Southern Electricity Networks, we're modelling a range of decarbonisation options on our reference city: Swindon.
- Our assessments covered scenarios that include a range of domestic, commercial and industrial consumers and storage, generation and production technologies. This was to see what the implications are of decarbonisation on energy networks.
- The multi-vector approach we took allowed us to factor in the advantages of the gas and electricity distribution networks and avoid placing the burden of decarbonisation on either one. It meant we could identify solutions that would cause the least disruption to consumers, networks and suppliers, but also to understand which routes would be the most challenging to adopt.

Key benefits

- Our preliminary report details some interesting results, including:
 - The impact on electric vehicle charging on distribution network operator (DNO) networks is substantial
 - Switching Heavy Goods Vehicles and Public Service Vehicles to biogas would mitigate the above
 - We need investment in grid security
 - It's easier to 'green the grid' than rely on consumers' energy efficiency efforts
 - A multi-vector approach is the easiest pathway to decarbonisation
 - Strategies need to be 'top down' to make sure they are delivered.
- The potential impact for both networks and consumers is huge. Our final report will detail a clear vision of how energy network integration can deliver carbon reduction targets and will give policymakers the evidence and data they need to decide how best to invest in a low-carbon future at minimal cost and disruption to the consumer.



On track for the future

The communities we serve in Wales and the south west of England are as diverse and changing as the energy landscape itself. We realise that our business must remain innovative to keep pace and lead this change.

We recognise the importance of listening to colleagues to identify what innovation can do to improve our business for our customers. Our ambition in 2019/20 will be to continue a programme of active engagement with our workforce, and work with subject matter experts from across the business to scope, develop and test new ideas – a vital success factor in embedding innovation to business-as-usual.

However, we won't do this alone. We want to share the feedback, ideas and challenges from our people – and leverage the good relationships we have with our supply chain to develop innovative solutions to help us achieve more for less. Doing this will bring benefits not only in terms of lower costs and groundbreaking research, but delivering measurable improvements in customer service and in the reliability and safety of our services.

With an engaged workforce internally and supply chain externally, we look forward to building an open innovation roadmap that seeks to deliver real and tangible benefits for our customers today – and a cleaner, greener future for those of tomorrow.

Our carbon-free vision for 2050

Hydrogen cities

- 17 of the UK's largest cities will be converted to run on hydrogen.
- Durable plastic pipes installed in the pipe upgrade programme allow gas networks to run on hydrogen in place of natural gas through the existing system, with minimal disruption to cities and customers.

Other cities, towns and suburbs

- 70% of homes across the UK will have hybrid heating systems like Freedom, helping them to make the best use of the green gas and renewable energy.
- By 2050, we expect that gas boilers will use only green gases – like biomethane and synthetic natural gas – making carbon-heavy natural gas obsolete for home heating.

Transport

- Many heavy goods vehicles, buses and trains will be fuelled by hydrogen or green gas, significantly improving air quality.
- The vast majority of private cars are electric vehicles, with more than 36m on the road.
- Gas and electric vehicles are cleaner than diesel and will significantly improve air quality.

Power

- The primary sources of electricity will be renewable.
- Wind, solar, tidal, marine and a small fleet of nuclear power stations supported by back-up gas generation plants will keep the lights on.
- A small amount of electricity storage across the UK will help balance the grid, while smart hybrid systems installed in homes and businesses will enable flexibility.

The way forward is clear. Smart hybrids can deliver an affordable, reliable and sustainable future for energy.



Annual project summary

NIA reference	NIA_WWU_040	NIA_WWU_046	NIA_WWU_035	NIA_WWU_033	NIA_WWU_034	NIA_WWU_039	NIA_WWU_045	NIA_WWU_038	NIA_WWU_047	NIA_WWU_050	NIA_WWU_049	NIA_WWU_051	NIA_WWU_053	NIA_WWU_052	NIA_WWU_054	NIA_WWU_056	NIA_WWU_055	NIA_WWU_057
Title	>7 bar Permanent Leak Repair Clamps	Cryogenic Pipeline Cracking Technology	Climate change impact mapping	Development of a Risk Based Approach for Safe Control of Operations	Leakage Sealant Standards	Higher chain alkane gases from Anaerobic Digestion	Eye in the Sky	Flexible biomethane production using carboxylic acids	Gas demand forecasting – Phase 2	Project REACH (Reaching Everyone and Connecting Homes)	FreeNonDom	Green City Vision	Review of Pipeline Girth Weld Inspection	OptiNet	Regional Future Energy Scenarios	Bridgend Future Modelling Phase 4 – Economic Case For Hybrid Heating	Pathfinder Plus	Future of Gas Transportation Charging
Outline	Understanding current and new methods of repairing the above 7 bar pipeline network to deliver a lower cost and risk solution	A development and demonstration project to test the use of cryogenic materials to embrittle metallic pipes (ductile iron and steel) for use in our mains replacement programmes	A full-scale demonstration project to develop climate change impact mapping for the Wales & West Utilities distribution geography	Developing an industry first process for managing operational tasks based on risk	Designing and developing new standards for innovative pipe repair solutions	Researching ways to improve the biomethane production processes to reduce the associated costs	Developing, through field testing, an industry standard for Beyond Visual Line Of Site (BVLOS) drone flights to inspect our assets	Researching a novel concept of energy storage to allow for flexible biomethane production in various networks throughout the year	Building on Phase 1. This project developed long-term projections for gas supply and demand changes by individual load types to feed our planning processes	The design and development of a proof of concept tool to identify clusters of properties that may benefit from a gas network connection	A desktop study to understand the viability, risks and costs of delivering a smart hybrid heating system for the non-domestic market	A case study to demonstrate whole system thinking using Pathfinder to determine feasible solutions in a real location, Swindon	Studying current and new methods of assessing the risk of pipeline girth weld failures to deliver a lower cost solution	A demonstration project using proven solutions to increase network capacity facilitating increased amounts of green gas connections	Production of regional forecasts based on the National Grid 2018 future energy scenarios framework. Developing a methodology to assess how regions are likely to respond to new heat, transport and low carbon technologies which impact gas supply and demand requirements	A research study to investigate and assess the economic case for smart hybrid heating in different types of dwellings in urban and rural environments	A development project to enhance economic datasets for scenario modelling in Pathfinder	A research study to outline how charges for gas transportation may need to evolve to accommodate increasing levels of distributed generation
Status	Completed	Live	Live	Completed	Completed	Live	Live	Live	Completed	Completed	Completed	Live	Live	Live	Live	Live	Live	Live
Collaboration between	Wales & West Utilities, Cadent	Wales & West, Cadent	Wales & West Utilities	Wales & West Utilities, SGN, Cadent, NGN	Wales & West Utilities, SGN, Cadent, NGN	Wales & West Utilities	Wales & West Utilities, Cadent, NGN, NGGT, UKPN, SSE & NPG	Wales & West Utilities	Wales & West Utilities, Cadent, NGN, SGN	Wales & West Utilities	Wales & West Utilities	Wales & West Utilities, UKPN, SSEN	Wales & West Utilities, Cadent, NGN, SGN	Wales & West Utilities, Cadent	Wales & West Utilities	Wales & West Utilities	Wales & West Utilities	Wales & West Utilities
Completion date	November 2018	August 2020	July 2020	July 2018	July 2018	April 2020	January 2021	January 2020	October 2018	December 2018	September 2018	April 2019	May 2019	March 2021	October 2019	September 2019	November 2019	April 2019

NIA reference	NIC	NIA_NGN_225
Title	H21	H21 – Field Trials Design
Outline	Studying the possibility of converting a major UK city to hydrogen using the existing pipes and equipment	The design and site selection of field trials to support the NIC project
Status	Live	Live
Collaboration between	Wales & West Utilities, NGN, SGN, Cadent	Wales & West Utilities, NGN, SGN, Cadent
Completion date	December 2020	January 2020

NIA reference	NIA_NGGD0094
Title	Composite Repairs to Complex Shapes
Outline	Investigating the feasibility of novel composite repairs technology for the repair of complex pipeline geometries
Status	Live
Collaboration between	Wales & West Utilities, Cadent, NGGT, NGN, SGN
Completion date	September 2019

NIA reference	NIA_WPD_023
Title	FREEDOM – Flexible Residential Energy Efficiency Demand Optimisation and Management
Outline	A demonstration project, building on our Bridgend Future series, investigating a whole energy system approach to achieve carbon reduction targets
Status	Completed
Collaboration between	Wales & West Utilities, WPD
Completion date	January 2019

NIA reference	NIA_SGN0107	NIA_SGN_0113	NIA_SGN_0144	NIA_SGN_0140
Title	IGEM Gas Quality Standard Working Group	Gas Quality Impacts on Industrial and Commercial applications	Assessing the Gas Network Decarbonisation Pathway	Derivation of a Risk Based Approach to High Pressure Filter & Pig Trap Closure Inspection Frequencies
Outline	A desktop study to understand how flexible the network can be in relation to gas quality	Studying the impact of gas quality and engaging with industrial and commercial users to assess any impact to them	Developing a common high level vision for a whole system pathway to decarbonise the gas networks	Data analysis and development of an assessment tool to introduce new innovative assessment methods for these asset types
Status	Live	Live	Live	Live
Collaboration between	Wales & West Utilities, Cadent, NGN, SGN, NGGT	Wales & West Utilities, Cadent, NGN, SGN, NGGT	Cadent, National Grid Gas Transmission, Northern Gas Networks and Wales & West Utilities	Cadent, National Grid Gas Transmission, Northern Gas Networks, SGN and Wales & West Utilities
Completion date	January 2020	September 2018	July 2019	October 2020



Wales & West House, Spooner Close, Celtic Springs, Coedkernew, Newport, NP10 8FZ
Visit our website: www.wwutilities.co.uk Like us on Facebook at facebook.com/wwutilities
Follow us on Twitter [@wwutilities](https://twitter.com/wwutilities) Instagram [wwutilities](https://www.instagram.com/wwutilities) LinkedIn [wales-&-west-utilities](https://www.linkedin.com/company/wales-&-west-utilities)
Contact us at innovation@wwutilities.co.uk

