

JUNE 2013

nationalgrid

Our Discretionary Reward Scheme Submission

National Grid
Gas Distribution



Discretionary Reward Submission Contents



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About National Grid Gas Distribution

Who we are

National Grid Gas Distribution sits within the National Grid Group of companies. It is a standalone regulated entity responsible for the delivery of projects and investment across four gas distribution networks - East of England, North London, North West and West Midlands.

We operate independently from the Group and other Group companies. In common with all Gas Distribution Networks (GDNs) each of our four Networks has its own individual Price Control arrangements.

We have engaged extensively to understand our customers' and stakeholders' priorities so that we can provide the services they want, both now and in the future.

What we do

We transport gas through our network of pipes on behalf of our Business-to-Business (B2B) customers, known as gas Shippers.

Our role is to ensure that the infrastructure we all rely upon every day is safe and reliable, delivering gas to homes and businesses whenever it is needed.



nationalgrid Gas Distribution



Our networks

Our networks distribute gas to around 11 million businesses, schools and homes, and supply the largest cities in England.

Where we work

Our gas distribution network is the most diverse in the UK - covering both densely populated residential neighbourhoods and widely dispersed rural communities.

We operate four networks in the heart of the country, with other companies operating the remaining four networks.

These networks are natural monopolies regulated by Ofgem (Office of gas and electricity markets).



Promoting gas safety

Our strategy - a holistic approach

Raising awareness

Our strategy over the last 5 years has evolved, based on our stakeholders' feedback, from raising safety awareness to also encouraging action and changing behaviours.

We have continued to focus our awareness campaigns to appeal to elderly people, students and families with children; groups that have been identified by external research as having low awareness of gas safety and carbon monoxide (CO). We have now expanded this to include middle aged working people following additional research that has been undertaken.

We have refreshed our successful CO and safety campaigns such as our winter safety campaigns and cub scouts initiative and have refocused others, such as our CO student campaign. As media channels expand, we have updated our social media campaign with a mobile technology application again targeted at students, but with the added benefit of having a wider audience. Following on from this, we have also embarked on a study with Manchester University to identify other ways in which social media can be used to raise awareness of CO.

We have shared our CO awareness surveys used in our Staffordshire trial to work with the industry to develop a common awareness monitoring mechanism. Following the successful industry collaboration workshop held by IGEM (Institute of Gas Engineers & Managers) we have launched a best practice working group to continue this initiative.

Best practice sharing

Detection & action in the home

Again, taking on board our stakeholders' views, and building on others' and our own industry trials our gas engineers are now being trained on the use of dual gas and CO detection equipment and to provide in-home CO and safety advice. Building on the Staffordshire trial we will provide CO alarms to 'at risk' individuals and will be consulting with our stakeholders to determine those at most risk.

As we further embed CO and safety into our business, we discuss CO incidents at Executive level on a weekly basis and we are also carrying out research in our customer centre to better understand CO alarm activation in the home.

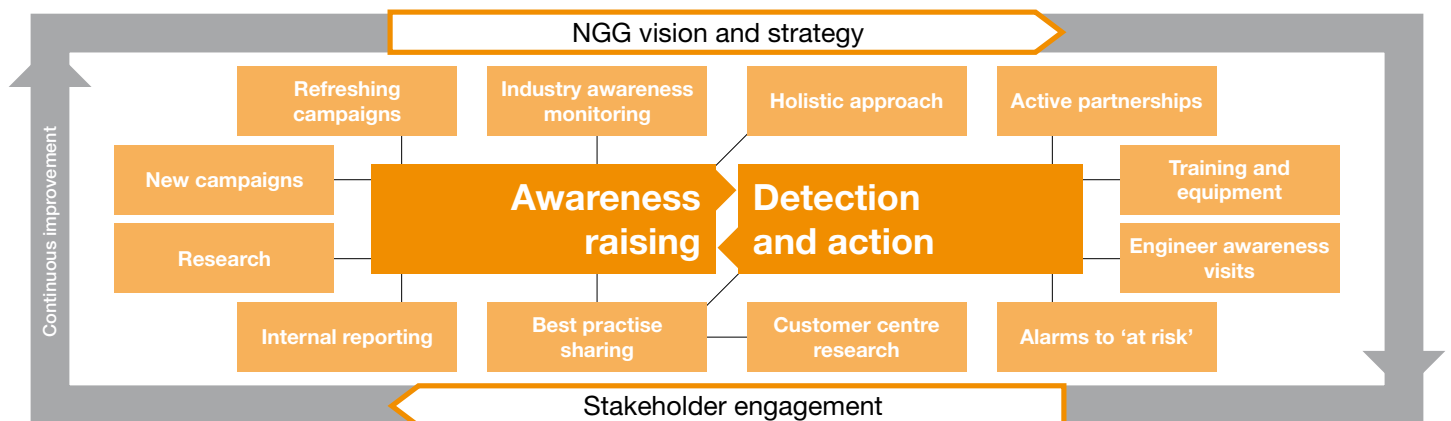
We continue to monitor how we are doing so that we can continue to enhance the effectiveness of our activities. Following an all GDN meeting with Gas Safe, we have gone on to develop an active relationship with them and we are exploring their research into consumer segmentation to support behaviour change.

Embedding internally & externally

Gas Safe are now members of our Stakeholder Advisory Panel to provide additional expertise in this area and represent wider stakeholders' views. In addition we continue to extend our collaborative relationships and partner other organisations such as the Chief Fire Officers Association.

Our strategy continues to evolve based on our stakeholders' feedback. We have committed to report annually on our progress in this area and continue to engage.

The results of our actions are detailed on page 6.



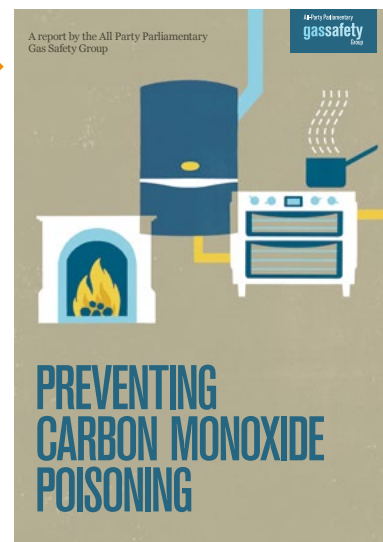
Promoting gas safety

Our actions

Reviewing our business practices to help prevent Carbon Monoxide poisoning

Safety is, and always has been, our and our stakeholders' number one priority. It is embedded within our business operations and employee culture and has full leadership sign-on and support. As we further embed CO into our business, all CO incidents within our gas distribution networks are now identified and discussed as an agenda item at our Executive team's weekly meetings so that we can better understand customer behaviour and act accordingly.

During 2011 we contributed to the parliamentary inquiry into low level exposure to CO. Following completion of the inquiry, a report was published in April 2012 which outlined 17 key recommendations. We continue to actively support the All Party Parliamentary Gas Safety Group and we have reviewed our practices to ensure that our internal procedures are amended or updated to support delivery of the report's key recommendations where it is within our remit to do so.



Recommendation 3

The Government should ensure that all work under the Green Deal includes the installation of a CO alarm and is carried out by a Gas Safe registered engineer.

Action

Our Affordable Warmth Solutions (AWS) work specifications now dictate that contractors must install CO alarms wherever we are directly involved in heating works.

Recommendation 8

Gas Distribution Networks should ensure that all Gas Emergency Service personnel are equipped with either personal CO alarms, CO detection equipment, or both.

Action

All our First Call Operatives (FCOs) are being issued with, and trained in the use of, dual gas and CO detection equipment.

Recommendation 10

Retailers selling camping and barbecue equipment, registered campsites and caravan sites, should promote the dangers of CO and the use of CO alarms.

Action

We have worked with Scotia Gas Networks to explore opportunities to work with the Camping and Caravan Club. We have delivered internal campaigns promoting the use of CO alarms on holiday and urging all staff to spread the word amongst friends and family.



Embedding CO awareness and detection into our practices

During 2012/13 our pilot to trial dual gas and CO detection equipment was successfully concluded. As a result we will equip and train all our First Call Operatives with dual gas and CO detection equipment.

Training for all 2,700 operational employees has commenced which incorporates CO awareness, procedures for using the CO capability and actions to be taken by engineers in response to CO presence being detected.

All of our emergency, maintenance and repair operatives and all supervisors are being provided with equipment which is fitted with GPS and can log data, time, location and gas reading information. The inclusion of in-van calibration units delivers a key compliance benefit in that the instrument will always be fully tested and calibrated.

Promoting gas safety

Our actions



Annual competition winners

Forming effective partnerships

2012 saw a clear refresh of our partnership with the Scout Association. Along with the production of a brand new 'Engineering our energy future' resource, a significant update was made to the Home Safety Badge pack. This involved a complete redesign and the inclusion of additional activities.

Both survey results and the volume of young people using the resources indicate that the Home Safety Badge remains a key part of many Leaders' programmes. Our refreshed resource was the second most downloaded pack for the whole year despite only being uploaded to the Scouting Association's website in July and was commended by the Chief Scout. As a long term supporter of Scouting and its annual competition, we are trusted and volunteers return to our resource time and time again to deliver home safety training to young people. See page 6 for statistics and data.

To expand upon the success of our partnership with the Scout Association, we have sought to establish further partnerships in order to share expertise and target a wider audience range, including school visits.

Under the banner 'Targeting vulnerable customers through effective partnership' we led a collaboration with Wales and West Utilities (WWU), Northern Gas Networks (NGN) and Scotia Gas Networks (SGN) to share information and present a united front at National Energy Action's (NEA) annual conference in October 2012. Displays and conference sessions to promote schemes to tackle fuel poverty were also used to raise awareness of CO and services such as the Priority Services Register. During March 2013, we also worked with NEA to raise Awareness of CO during community workshops to provide tariff advice for residents of 100 properties where heating systems had been installed as part of our Affordable Warmth Solutions programme to tackle fuel poverty.



CFOA
Chief Fire Officers
Association



Age Action Alliance

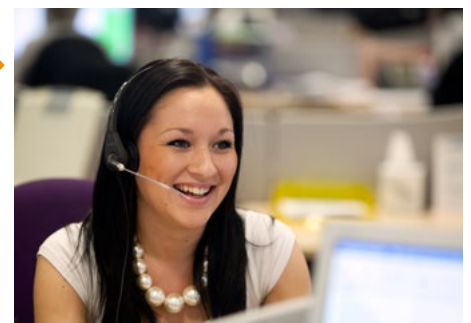


Campaigning
for Warm
Homes

Building on the success of these partnerships we are now members of Age Action Alliance and are currently working with the Chief Fire Officers' Association and Gas Safe to establish ways in which we can work together to share expertise in promoting the use of CO alarms in the home. Gas Safe is also on our new Stakeholder Advisory Panel which has been established to review and challenge the business and support our stakeholder activities.

Co-ordinating and collaborating in the collation of industry data on Carbon Monoxide

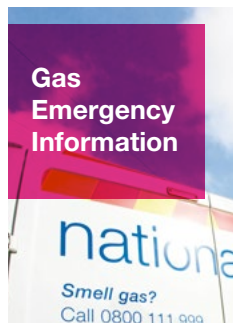
In order to gain a greater understanding of customer needs and the present use and spread of CO alarms, in early 2013 we commenced an exercise to gather data from calls to our Customer Centre relating to reports of CO alarms activating in the home. We are sharing this information with the other gas networks and alarm manufacturers so that we can all learn and improve our response in this area. See page 6 for statistics and data.



Working with Ofgem, we have also taken the lead in liaising with all the Gas Distribution Networks to develop an industry standard survey to track and monitor awareness of the dangers of CO. Using the survey we developed and used during our Staffordshire trial as a starting point we have an industry standardised approach. The format was formally approved by Ofgem in March 2013.

Promoting gas safety

Our actions



Improving access to gas emergency information on the internet

During 2012/13, we have reviewed and refreshed our dedicated Gas Emergency webpage and produced a new webpage dedicated to CO. We have introduced a suite of videos making the page more relevant and this has resulted in an increased visibility by making use of search engine optimisation tools.

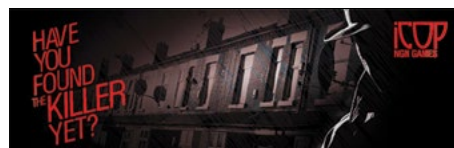
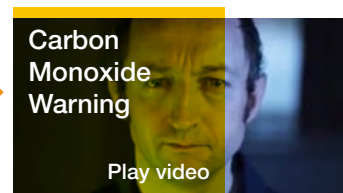
Our dedicated webpage now provides information on what to expect when making a call to the gas emergency service, as well as links to videos on topics ranging from 'I think I have no gas' to 'My boiler is stuck on' which are available both on the website and via our YouTube page.

To promote the availability of the information, we are making increasing use of our social media presence to direct people to these pages. For example, in January 2013 a cloud of gas odorant from France resulted in an influx of calls to our gas emergency contact centre. In response, we used our Facebook and Twitter presence to raise awareness of the emergency information available on our website which contributed to an uplift in traffic of nearly 100% compared to the same day the previous week. The vast majority of visitors were new, and approximately one third of visitors returned for updates on the website.

Using social media to raise awareness of 'The Silent Killer'

Following discussions with customers involved in our Staffordshire trial, and evaluation of data and responses to questionnaires, we identified that there was a lower level of awareness of CO poisoning amongst people with young children and the young to middle aged working person. This is also reflected in analysis contained within the Downstream Incident Data Report (DIDR) 2012 (www.gas-safety-trust.org.uk) which identified that those in the 25-44 age group are potentially at higher risk of CO poisoning (see page 6, figure 1 of this document).

With this in mind (and in the knowledge that this particular social group had not previously been specifically targeted in CO awareness campaigns) we produced a video with the aim of persuading people in this category to buy and install a CO alarm. Since being launched on our website and social media pages in December 2012 the film has been viewed an average of c.350 times each month. Employees are encouraged to include a link to the video as part of their email signatures and also to act as advocates in alerting family and friends to the dangers of CO and the importance of installing CO alarms.



Combining safety and innovation

Building on our hugely successful annual student campaigns, in October 2012 we collaborated with NGN to launch the iCop app. We promoted the app, which takes the form of a 'who-dunnit' game and helps the target audience understand the symptoms of CO poisoning, in Staffordshire, Birmingham and Manchester (all CO hotspots with large student populations) via commercial radio station adverts and bus shelter adverts. We also promoted it using radio adverts on all University radio stations within our networks. We have also been working with Manchester University on a project to identify opportunities to further promote awareness of CO poisoning amongst students via social media.

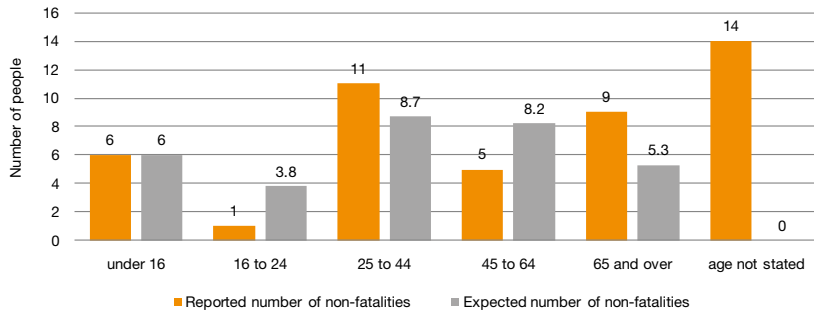
We have been recognised for our innovative approach in championing and developing a new web based referencing scheme for use by gas asset owners. The Capability Referencing Scheme, which ensures that only competent, capable people work on the UK gas distribution system, represents a major innovation to improved safety performance and maintenance of skilled resources and has been welcomed by the HSE and GMB trade union. The project won both the Outstanding Contribution to the Gas Industry and The Energy & Utility Skills Business Skills Awards in 2012/13.

Promoting gas safety

Measuring our performance

Figure 1: Casualty age profile

(source: DIDR 2012 (Gas Safety Trust Carbon Monoxide Incident Report published March 2013))



83,780

Total overall use of Scout Home Safety resource packs (Jan - Dec 2012)
Source: The Scouting Association



“The resources you produce are now used by almost 100% of Scout Leaders in the UK to help plan Scout sessions. Your expertise and ideas help us to keep Scouting relevant and youth focussed. I would like to thank you on behalf of all our young people, leaders and Scout families. Together we can change lives.”

Bear Grylls,
Chief Scout, The Scout Association

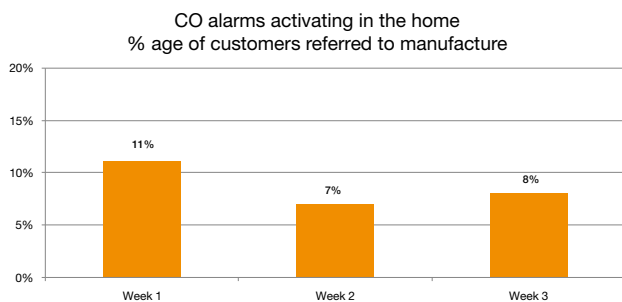
1,353

Downloads of student CO mobile phone safety app 'iCop' in the first two weeks leading to

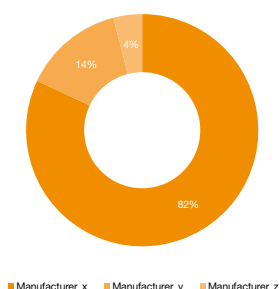
140

requests for CO alarms
(source: NGN)

Analysis of CO alarm calls to customer centre



Alarm makes referred to manufacturers (49 referrals)



2,180

Total number of times our 'Silent Killer' film has been viewed (Dec 2012 - May 2013)

Source: YouTube

39,053

Number of page views of our refreshed Gas Emergency web page (Jan - April 2013)

Facilitating network extensions

Our strategy - a holistic approach

Continuing our investment

Our strategy over the last 5 years has been to assist as many homes as possible through a 'whole house' package of affordable warmth measures and advice. Through our unique partnership with AWS Community Interest Company (cic) we have been able to draw on the wide ranging expertise of its Board members to help develop our strategy and continue to build on our 5 basic principles: Research, Identify, Deliver, Learn and Support (RIDLS). Having met our initial commitment of 5,000 homes in 2010/11 (half of the overall 10,000 commitment made by GDNs) we continued to invest over the period to assist additional households.

Having undertaken research and identified where our fuel poor homes are, we have focussed on connecting communities (as opposed to individual homes) as these communities are often the hardest to reach and most disadvantaged, and are unlikely to ever be connected without the intervention of a third party. This is due to the complexities involved of bringing together complex infrastructure design, build, connection, household assessment, funding, heating, insulation and other measures and advice.

Targeting vulnerable communities

Through our network of stakeholders, and using our detailed knowledge of our fuel poor 'hotspot' areas, we have had a comprehensive and active engagement programme visiting Local Authorities, Housing Associations, community groups and private Landlords in deprived areas. This engagement strategy has resulted in the efficient delivery of affordable warmth to 6,573 community homes, accounting for 33% of our overall connections (19,921), and has leveraged in some £20million for new gas heating systems.

Embedding a holistic approach

We have also listened to our customers and following stakeholder feedback we have widened the scope of our activities to include independent energy efficiency advice, tariff signposting, and are now also working alongside electricity and water companies to see how we can work more holistically, as well as incorporating carbon monoxide awareness into our procurement and contracting strategies.

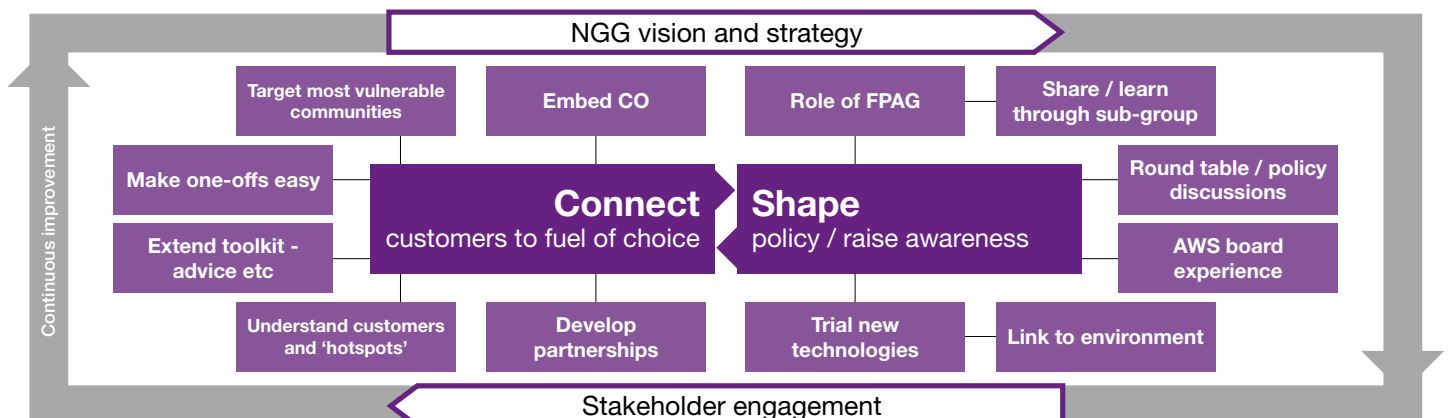
Alongside this, again with a view to actually assisting as many customers as possible, we led the industry in changing processes and practices, offering an 'on-line' solution to make the connections process easier for individual customers to request a gas connection. We continue to refine this based on our customers' feedback.

Recognising that different solutions are required we have developed replicable heat solutions for multiple occupancy buildings, including 'fuel cell' technology as well as trialled new technologies, such as Air Source Heat Pumps for off-gas grid vulnerable households. Through our unique position as members of FPAG (Fuel Poverty Advisory Group) we have helped shape and input into UK policy, and are leading a sub-group looking into off-gas grid issues. We have also been actively involved in DECC's review of fuel poverty and assisted the Competition Commission into its investigation into fuel pricing to off-gas grid homes.

Innovation & shaping UK policy

We continue to learn and share best practice across the industry as well as developing partnerships with leading fuel poverty charity, National Energy Action (NEA), who have used some of our innovative approaches to problem solving as a basis for 'knowledge' sharing with other utility organisations.

The results of our actions are detailed on page 11.



Facilitating network extensions

Our actions



Effective partnerships and community engagement

The successful completion of our Whaley Thorns project to make gas available to over 900 homes in 2012, led to a further project targeting over 1,000 homes in Oak Tree Estate, Mansfield.

Through our partnership with Affordable Warmth Solutions we played a key role in improving the energy efficiency of homes on the Oak Tree estate working with Mansfield District Council (MDC) and other partners (British Gas and npower) to develop a Community Energy Saving Programme (CESP) to replace the existing carbon intensive and inefficient coal fired district heating system. The strict qualifying criteria to meet CESP requirements ensured that the project was designed to promote a 'whole house' approach and treat as many properties as possible in a defined area of low income.

We believe the partnership we brought together is unique as we managed to facilitate a commercial arrangement between ourselves, MDC and two energy suppliers, who worked alongside our own construction programme to deliver new individual gas heating systems to these vulnerable homes.

Central to this £5million scheme was the construction of a new £1.8million gas network to the estate. This resulted in 8.8km of new gas mains and 1,087 individual service connections.

Community engagement was a key factor in delivering the project and workshops were held before the project commenced. These community workshops with key project partners, British Gas and MDC ensured customers were aware of the proposed changes to their heating systems and gave householders the opportunity to learn more about energy efficiency and the importance of choosing the correct tariff. As a result of these workshops each home (irrespective of tenure) was provided with 'free of charge' new gas connections and individual energy efficient gas heating systems.



Mansfield District Council

“ In partnership with National Grid Affordable Warmth Solutions, the Council identified the need to replace its coal fired district heating systems which had become unreliable and costly to maintain. The project to install individual boilers into over 1,000 homes on the Oaktree Lane Estate was partially funded by National Grid Affordable Warmth Solutions who provided the finance for all of the gas connections on the estate. Throughout the duration of the nine month project, the NG-AWS team provided a professional service and the project was delivered to the agreed timescale. We have received excellent feedback from our residents about the teams installing the gas supplies and the benefits they have now seen as result of having control of their own heating supply. ”

Helen Bartle,
Climate Change Officer, Mansfield District Council



Facilitating network extensions

Our actions



Embedding energy at Folly Park

Folly Park is a site comprising of approximately 100 residential caravans. Historically it is extremely difficult to secure funding for in-house measures for Park Homes as they don't qualify for support from traditional Government or Energy Supplier schemes such as Warm Front, CESP or the Warm Homes Discount.

Residents of this privately owned 'off gas grid' site were reliant on more expensive fuels such as individual bottled LPG. This increasingly was proving difficult to maintain for the ageing residents. We approached the Park owner and in an effort to gain community engagement we held several 'open evenings' to help homeowners understand how to better afford warmer homes.

A particular challenge was the negotiation of easements to construct a new gas network across third party owned land. An innovative approach to overcome this challenge resulted in changes to the layout of the park enabling new gas infrastructure and connection to the upstream gas network.

In addition to the new gas network the installation or conversion of heating systems, cookers and combined CO and smoke detector alarms were fully funded to the value of £150,000. Work was completed prior to the recent winter.



Following the winter period, a further customer initiative saw us partner with leading Fuel Poverty charity, NEA to lead surgeries to help residents better understand how to use their new boilers and controls, how to switch tariff and how to save energy. To help support this initiative AWS also provided 'dehumidifiers' to overcome the historical issue of condensation in these types of homes.

Helping to shape UK policy



Fuel Poverty Advisory Group

We have been a member of the Fuel Poverty Advisory Group (FPAG) for a number of years now; as such our unique position has enabled us to help shape and provide input into UK policy.

Learning from programmes we and others have delivered, we are sharing our findings with FPAG's subgroup looking into off gas grid issues to shape the provision of advice to residents. This includes elements such as supporting customers following installation of new heating systems to make sure they are using them correctly, understanding what help customers need to switch energy tariff, how CO advice can be tailored as well as how to raise the profile of the Priority Services Register.

Building on the success of our advice surgeries at Folly Park, we are now working with Severn Trent Water and Western Power Distribution to trial a holistic approach to providing wider energy and utility advice. We will be revisiting Whaley Thorns, a 900 home community recently receiving affordable warmth, to test this more holistic approach.

We are also working with the Energy Savings Trust (EST), on behalf of DECC and the Energy Savings Advice Service, to develop a referrals mechanism for off-grid homes.

Facilitating network extensions

Our actions



Sustainable and innovative generation at the Madeley Centre

The Madeley Centre is a unique and innovative development which provides a whole range of community facilities to support the health, welfare and well-being of local people. It includes a community café, a computer learning centre, a services hub, a health room, charity shop, community rooms, a children's centre and a community hall. Through these facilities the Centre delivers a whole range of opportunities for young and old, which are run by the community for the benefit of their community in a sustainable way.

Working in partnership with the Madeley Charity and Housing 21, National Grid Affordable Warmth Solutions part funded and installed a BlueGen unit in February 2013. BlueGen is the world's most efficient small-scale electricity generator, using fuel cells to convert natural gas into power and heat.

As well as its efficiency benefits, it offers the following key innovations:

- Remotely monitored and controlled over the internet
- Generates power 24/7, all year round
- Generates approximately 13,000 kWh of electricity per year
- All power generated used on-site
- Heat utilised for hot water
- World's highest electrical efficiency
- Peak electrical efficiency of up to 60%
- Only UK Fuel Cell Micro CHP unit with Microgeneration Certification Scheme (MCS) approval.

The logo for BlueGEN, featuring the word "BlueGEN" in a bold, blue, sans-serif font. The "e" in "Blue" is stylized with a horizontal line through it.

The electricity generated is being used to 'off-set' the centre's previous 'grid' requirement with the savings made passed on to the residents of the sheltered accommodation. This installation at the Madeley centre is part of a £150,000 investment by our AWS programme into a number of BlueGen units to similar community developments. We have also engaged NEA to carry out an independent study to better understand the benefits to vulnerable customers and to transfer this knowledge into the wider social sector.

Sharing lessons from pilot schemes: Air source heat pumps

We are committed to investigating new technologies and the benefits they can bring to sustainable energy and affordable warmth. Through AWS we have invested £150,000 to pilot an air source heat pump (ASHP) non-gas energy solution to 16 low income homes. The pilot was supported by an independent NEA study, to determine the suitability of ASHPs for off-gas grid / low income homes. NEA has now published its final report into the study which has highlighted that ASHPs installed correctly and with the right support to low income households, can provide an effective solution to households without access to the gas network to provide benefits such as increased thermal comfort, lower heating costs, improved controllability and increased automation compared to alternative heating fuels such as oil or LPG.



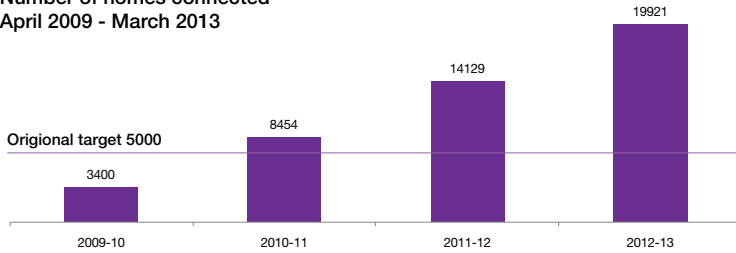
Key learning points have also been identified for future ASHP initiatives and are being shared to ensure successful implementation and use of this technology. These include the need for:

- Appropriate support and training for residents to ensure that the systems are used correctly
- Support for tenants in choosing and switching energy tariff
- Appropriate specification of systems with sub controls for whole house heating
- Consideration of the provision of energy displays / smart meters in conjunction with the rollout of ASHPs.

Facilitating network extensions

Measuring our performance

Number of homes connected
April 2009 - March 2013



PEAKS & PLAINS
Housing Trust



“ One particularly pleasing element of this is that the works have been so successful that the Trust has been approached by a number of residents who initially refused these works asking if they could now also have a gas supply installed. We will be looking to accommodate these customers in the near future. ”

Tim Pinder,
Chief Executive, Peaks & Plains
Housing Trust

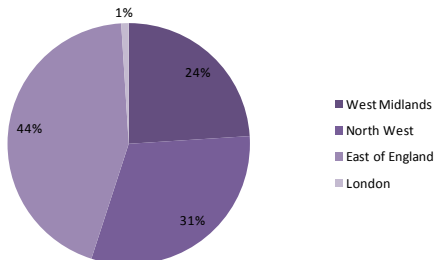
81%

of tenants were delighted with their new ASHP systems and would recommend to others.

19,921

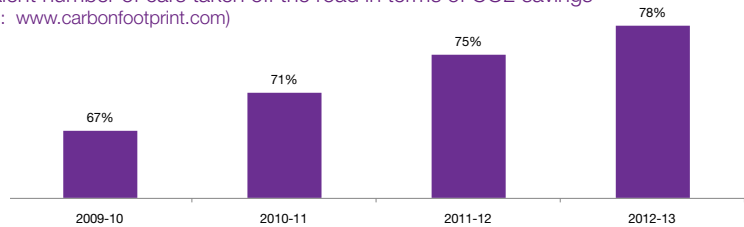
Total connections (community and one-offs) 2009-2013.
(Source: AWS).

Completed Community Connections
by Distribution Network



12,370

Equivalent number of cars taken off the road in terms of CO2 savings
(Source: www.carbonfootprint.com)



We are tackling the challenge faced in our urban and densely populated London network by trialling new technology such as heat networks for flatted properties.

£63,551,000

Lifetime value of fuel savings

13,348

One-off connections
2009-2013
(Source: AWS)

Community Improvements	Change	Before	After
Avg Sap 2009	+22.09%	56.55	70.59
Avg CO ² emissions kg/yr	-61.32%	7995	4243
Avg running costs £	-35.14%	1422	997
Avg Sap 2005	+35.03%	51.87	73.9
Fuel poverty avg	-35.19%	12.7	8.9
Max fuel poverty	-70.72%	50.13	23.94

6,573

Community connections
2009-2013
(source: AWS)

Reducing our environmental impact

Our actions



Embedding sustainability - Sustainability Summit

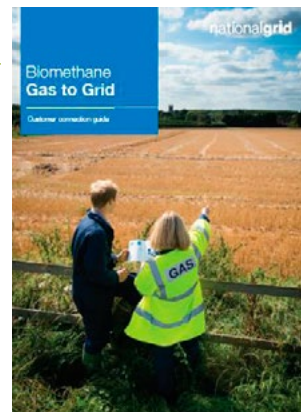
Working with National Grid Group we held a Sustainability Summit in September 2012 bringing together around 100 external stakeholders and 200 employees across the business as well as our senior leadership team to share best practice, learn from others and identify a number of focus areas to take forwards.

Our sustainability strategy centres around 3 key themes: climate positive, enhancing ecosystems and positive about resources. Initiatives are under way to support these 3 key themes, for example, we have launched a supplier design competition to challenge our supply chain partners to innovate and incorporate circular design in their product lifecycles.

Streamlining the Biomethane Gas to Grid Connection Process

We aim to facilitate new connections to our network that will enable biomethane producers to inject renewable gas into the grid. The use of biomethane allows the existing gas infrastructure to help meet carbon targets and for customers to benefit from renewable energy, without the cost and disruptions of replacing existing appliances.

We have engaged and worked with the Utility Infrastructure Provider (UIP) market to enable the development of two Gas to Grid Connection Models - one which enables customer choice and facilitates market competition, and the second in which we manage the end to end delivery of the connection on behalf of the customer. To support the many groups involved in the biomethane process (ranging from producers and Gas shippers to customers) we have developed a simple 8 point connections process and produced a 'Customer Connection Guide' which outlines the application process and provides indications of the timescales involved.



We have worked collaboratively with all GDNs through the establishment of the Energy Market Issues for Biomethane (EMIB) Working Group (facilitated by the Energy Networks Association) and have shared our process and connections guides with the group to assist the industry in setting out the working arrangements and standards of service for new connections, as well as the information strategy and guides to provide to new customers.

SEVERN
TRENT
WATER

Establishing effective partnerships to develop Biogas from sewage

Working with Severn Trent at their sewage plant in Minworth, we are undertaking the design and construction of our first Anaerobic Digestion connection from sewage and our first connection to the Local Transmission System (LTS). This will enable the injection of circa 900scm/hr of biomethane into our West Midlands Network providing sustainable gas to around 900 homes per year.

Severn Trent will have ownership of, and will operate and maintain, the injection facility including compression activities. This 'first' means that we are now working together to find solutions to the technical issues associated with the entry connection process as well as with assurance and compliance of the gas specification entering the network. Our learning from the new exit agreements will be used as a basis for developing the entry connection agreement.

We continue to work on a wide range of biomethane projects, including BioCore at Sotterly (East of England network) and Vulcan Renewables in Doncaster (North West network). We now have 34 live projects and 176 active enquiries.

Reducing our environmental impact

Our actions



NJUG Sustainability Award 2012 Winner

Skanska / National Grid - North London
Gas Alliance

**“Maximising the Use of
Sustainable Methods and
Materials”**

Award winning use of sustainable methods and solutions

Working in partnership in our North London network and with local stakeholders, Skanska and National Grid have recently been awarded for the use of innovative techniques and technology in the reinstatement process when carrying out mains replacement activities.

Delivering a two pronged solution more sustainable reinstatement has been achieved firstly in reducing the amount of material generated as a result of works, and secondly ensuring that as much as possible of that excavated material is returned to the ground through an effective recycling process.

We have continually improved our recycling rate, achieving a rate of over 90% on utilities projects, as well as reducing the amount of finite materials, such as virgin aggregate, used in reinstatement. Our projects use less than 10% virgin aggregate in reinstatement; this reduction has been delivered through extensive dialogue and a rigorous monitoring programme. The use of new technologies, as part of the overall process, has also led to an increase in quality of reinstatement.

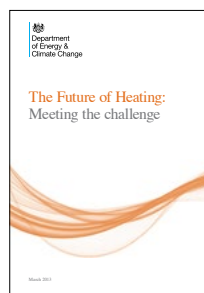
In addition, over 80% of our major replacement projects are now completed using minimum dig techniques including insertion of new pipes into the mains being replaced and use of vacuum excavation (Core and Vac). In London alone we have eight £350k high tech vacuum excavators working on gas main replacement which have significantly reduced disruption to road users.

Core and Vac excavation was used extensively to upgrade key strategic valves in preparation for the 2012 Olympic Games. This process is now being more widely deployed to excavate on escapes and is to be extended throughout our networks. More advanced vehicles are being purchased and we are working with Highway Authorities to ensure all our works with Core and Vac are compliant with the existing legislation.

The future of heating: helping meet the challenge

We have again led the research, analysis and modelling required to understand the role of gas in a low carbon economy and have worked alongside the Heat Strategy & Policy Team at DECC, to collaborate and share this analysis. Our report ‘Pathways for decarbonising heat’ highlighted the key role gas has to play and has led the way in developing the thinking of policy makers. Our role as ‘critical friend’ as the modelling was translated into policy conclusions and recommendations has led to a more sustainable outcome for the UK.

Our involvement has been acknowledged as contributing greatly to Chapter 4 of ‘The Future of Heating’ (‘Grids and Infrastructure’) which considers long-term options for the gas grid, including the injection of bio-methane, the potential of hydrogen and the role that heat storage could play in helping to balance supply with demand.



Department
of Energy &
Climate Change

“ National Grid have engaged in Government’s heat agenda in a number of important ways. They gave an in-depth response to DECC’s consultation on *The Future of Heating: A Strategic Framework* (March 2012); they refined their modelling and shared it with DECC to help us tackle fundamental questions about the future role of gas for heating; they sent senior level representation to discussions with DECC’s Chief Scientist and at the Board level; and they played a key role as “critical friend” as the modelling was translated into policy conclusions and recommendations. This has led to some significant refinements in our views about the future role of heat in a low carbon energy system for 2050 which can be seen in chapter 4 of DECC’s recently published “*Future of Heating: Meeting the Challenge*” document. ”

David Wagstaff,
Head of Heat Strategy & Policy, DECC

Reducing our environmental impact

Our actions



Hydrogen Gas Injection Project: “Power to gas”



We are working as part of a collaboration led by ITM Power in partnership with Kiwa Gastec, the Scottish Hydrogen and Fuel Cell Association and Scottish and Southern Energy examining the economic feasibility of utilising the gas system to assist with electricity balancing at periods of high/excess renewable energy (wind) production. The project aims to investigate the technical, financial and operational feasibility of injecting hydrogen gas, generated from electrolysis fed from excess renewables, into the UK gas networks. Our role is to provide expertise in developing location options for gas injection.

With an outlook of increasingly intermittent and inflexible generation there has been a growing interest in technology / options to assist with system operation and the minimisation of curtailment / lost energy production. The concept of integrating electricity and gas networks to assist with generation utilisation and system balancing, known as “power to gas” aligns to DECC’s current interest in decarbonising the gas system and longer term options for hydrogen enriched natural gas.

Turning rubbish into gas substitute

Recognising that the bio-SNG (Substitute Natural Gas) market needs to be stimulated in the same way as the bio-methane market and building on our work at Adnams Brewery, we are developing a demonstration project to turn household and commercial rubbish into a low carbon natural gas substitute using plasma technology.



Working with Progressive Energy and Advanced Plasma Power (APP) in Swindon at their Gasplasma plant, technology to produce Bio-SNG will be added to an existing waste-to-energy plasma facility to prove the techno-economic feasibility in producing bio-SNG from residual waste.

Combining a traditional gasifier with plasma equipment can produce a higher-quality syngas that can be converted into methane for the grid. Utilising waste – which is abundant in the UK will provide greater energy security than having to import from abroad. A full-scale plant processing 150,000 tonnes of waste per year could provide gas for over 14,000 homes. Waste to Bio-SNG has not been demonstrated anywhere in the world before and this project could establish the UK as a leader in this technology.



Biomaster

Biomaster is a project of the Intelligent Energy Europe Programme. It has 17 partners, 5 Country members and 4 application sites, and aims to encourage the use of biomethane for use in vehicles. It aims to overcome regulatory and fiscal barriers to prove biomethane for transport, as well as overcoming the impasse by bringing key components of the biomethane chain together into a joint initiative stimulating investments, removing non technological barriers and mobilising the take-up of biomethane.

The gas distribution network being a key component of the chain, we are the UK gas network partner of this EU sponsored project. We are working with Norfolk County Council developing grid injection projects, and providing specialist input in relation to the commercial and regulatory arrangements, working to overcome barriers to market and sharing our experience with our European partners.

Reducing our environmental impact

Measuring our performance

80

Biomethane connection projects committed to during RIIO delivering

4.1 Twh

of capacity, following stakeholder engagement

176

Total no. of Biomethane Connection enquiries received April 12 - April 13



“ National Grid’s scenario analysis has been a useful contribution to our evaluation of the roles of low carbon heating solutions and the subsequent development of our policy proposals. ”

Rachel Cary,
Senior Policy Adviser, Green Alliance

Biomethane to grid enquiries April 2012 to April 2013

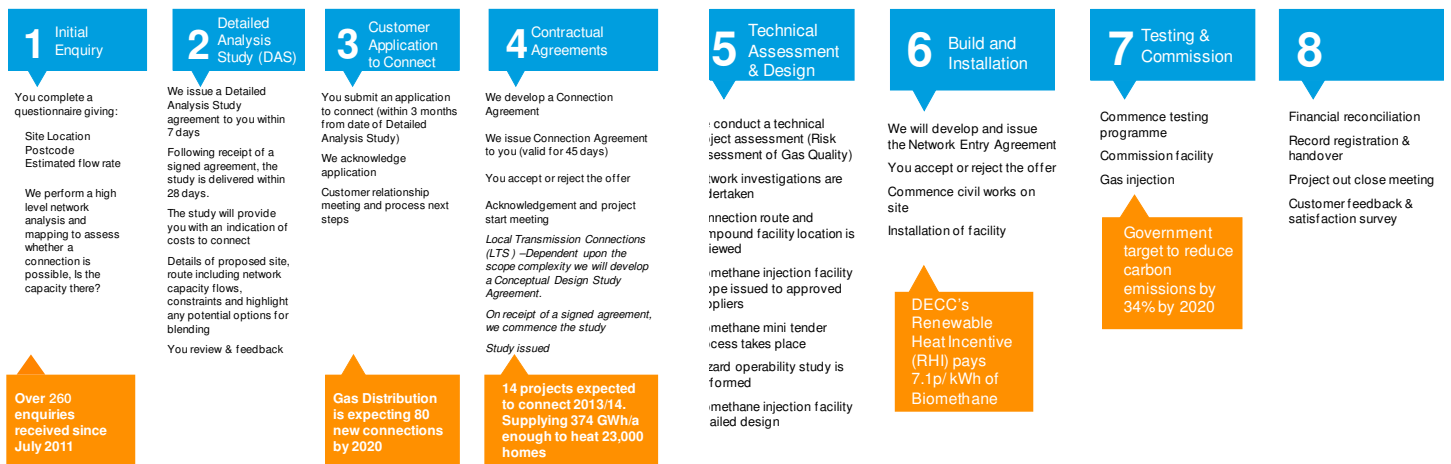


1,700+
Audience at conferences and events where we have promoted our environmental schemes

34
Total no. of live Biomethane connection projects

6
Biomethane connection agreements signed to date equating to the provision of
46.77mw(h)
heat to homes

Our 8 stage Biomethane to grid connection process





“ Through our partnership over 100,000 young people have earned their Home Safety Badge, and in doing so demonstrated that they have acquired knowledge that may save lives in the future. And with the addition of the engineering resources, we look forward to educating thousands more in critical life skills along with National Grid.”

Partnership Report
The Scout Association

“ We look forward to continuing the current good working relationship with your company.”

Stakeholder feedback
– Have your say, February 2013

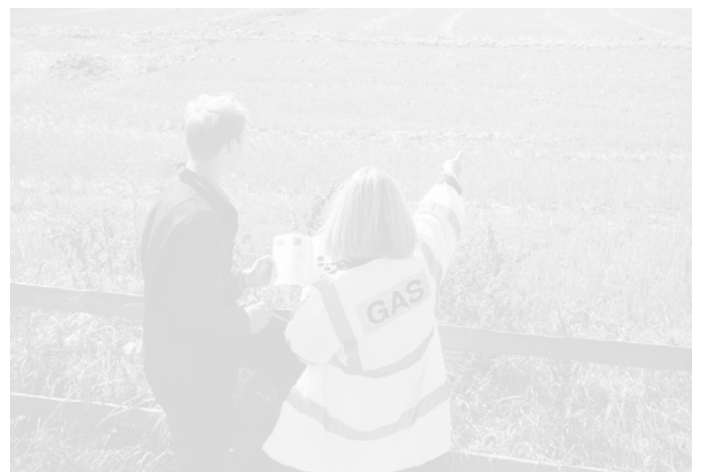


“ Help educate the public and others around a low carbon economy.”

Stakeholder feedback
– Have your say, February 2013

“ Good work done to resolve gas transporter issues.”

Severn Trent Water
Minworth Sewage Treatment Works



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