



Creating Sustainable Communities

Prepared for: CESW – Sustainability Forum

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Executive Background - Project 2050

The government's desire to achieve environmental targets, paired with a strong green agenda and public lobbying is a huge catalyst for change, and is why the Government, have set out a series of key dates to tackle the carbon challenge (milestones).

Whilst these milestones are an important step, they are failing to drive the changes required to deliver a programme that would make a significant change, which is why landlords and local authorities who understand the commercial opportunity are now taking action.

Central and local government need to be working with social and private housing providers to create delivery models which stimulate demand and deliver solutions that resolve the carbon challenges.

Identifying those tasks and then building effective delivery models will help resolve the Global Carbon Reduction Targets – (GCRT).

Carbon Capture and Storage (CCS) along with on-site energy generation will be essential solutions that drive long term commitment plans and is why funding from RHI and Fit is essential until the commercial price point reaches a free issue cost at which point the correct model is Energy Sale from Free Issue Technology.

Domestic gas used for heating and hot water is one area that housing professionals can affect and whilst the challenge is huge with over 24 million homes in the UK using gas, the social housing sector is used to managing complex projects, dealing with this market is also a huge challenge but with careful planning it is possible.

Forming landlord consortiums could support the required cost necessary to deliver delivery models at scale.

Social housing accounts for 5 million homes across the UK with 4.5 million homes using mains gas, removing this reliance will go a long way to achieving the 2050 carbon reduction targets.

This proposal is to develop a plan to replace mains gas heating and hot water with low cost electrical heating and hot water, so how? this plan is ambitious and will need local and central Government support to succeed. This paper explains how we deliver that plan

A project on this scale would only be achievable if the supply chain is sufficiently developed and resourced to meet the demand; the technology is proven; there is robust consumer confidence in both supply chain and products, and financial value in procuring is transparent and affordable for consumers.

The Every Home Counts report delivered by:



Dr. Peter Bonfield provides the blueprint in developing community focused energy efficiency programmes where consumer awareness, engagement, trust and confidence are key aspects in ensuring a successful delivery.

Changing the behaviour and attitude of home occupiers will also be a critical requirement in adopting alternatives to fossil fuelled heating systems.

This combined with improvements to home energy efficiency performance to reduce heat energy demand and current wastage.

Emerging and established alternative renewable technologies have the potential to change this landscape providing the economic and environmental factors which can help change public behavior.

This project creates the need to establish ‘**Driver Partners**’, driver partners are seen as critical to resolving these challenges and gain consumer confidence by commercialising the opportunity via a long-term vision to create sustainable communities.

The role of Local Authorities and Landlords as driver partners provides an opportunity to maintain, develop and shape the drive to change, they have access to finance, they challenge convention and they are able to create a legacy in delivering a low carbon environment.

Engaging with all the stake holders will ensure the success of the project.

The project within the local authority and social housing sector alone is 4.5 million homes, commencing in 2020 we would need to be replacing mains gas with alternatives at the rate of 12,000 every month which with 1200 landlords across the UK is not an unrealistic.

Social housing has historically carried out large scale housing projects, that have demonstrated the range of heating alternatives such as heat pumps and district heating.

This knowledge is essential in delivering large-scale projects, which are both affordable and comfortable, affordability is essential to the omission of risk in particular risk for non-payment of rent, therefore the housing standard for the future needs to reflect both affordable and healthy homes.

The Government's Position

The need to plan to reduce our reliance on gas between 2020 – 2050, is critical if we are to reach the government's commitment to reducing carbon. The climate change act 2008 is designed to meet the 80% carbon reduction target.

Domestic gas used for heating and hot water generates 73 million tonnes of carbon each year, removing carbon from domestic gas can only be undertaken as part of large scale carbon capture.

Meeting an 80% carbon reduction target is challenging, however, feasible if based on a range of options including government support.

Milestone - Target Dates in line with Climate Change Act 2008

- 2018:** Updated RHI & ECO schemes - business models for selling heat
 - 2019:** Technology price premium declines based on volume sales - business
 - 2020:** Heating controls linked to smart meters – government
 - 2011:** Revised renewable heating incentive based around CCS
 - 2022:** Time-of-use energy tariffs available - energy companies
 - 2024:** Whole house heat service packages available - business
 - 2025:** Social housing stock to achieve minimum EPC 'D' band
 - 2030:** CCS legislation to encourage the move from gas to renewable heat
 - 2030:** Social housing stock to achieve minimum EPC 'C' band
 - 2050:** Gas supplies used for power generation and district heating.
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Behavioral Change

Altering the public perception and engagement with low carbon technologies is a large task, needing careful management.



Social landlords have a proven track record of delivering large-scale, high-value improvement programmes, including energy efficiency projects, with mixed customer feedback.

Behavior change initiatives must be developed to maximise reducing energy bills and delivering a low carbon affordable heating strategy.

Funding Support

Looking short-term, the government has provided finance incentives through Renewable Heat Incentive (RHI) and Feed-in-Tariff (FiT) to encourage take up of renewable technology and although tariffs have been reduced over time to lessen the commercial opportunity, they still remain as a means to off-set capital expenditure, and combined with reduced energy bills do create viable platform for take-up.

Government sources have advised that from 2020 RHI will be re-assessed to reflect the needs of the changing markets, in line with Fit in 2019.

We also believe that assessments of the fabric Standard Assessment Procedure (SAP), will be a factor in assessing council tax leading to taxing those homes which are less energy efficient than others.

This supports a move away from providing incentives towards, a process similar to vehicle taxation linked to carbon emissions.

Establishing a proven knowledge base which supports low carbon, affordable heating technologies, and their advantages, is required to support large scale projects, collaborating with manufacturers is one way to support large-scale development and delivery.

Additional money to support the low carbon heating industry would drive innovation and bring the upfront costs of emerging technologies down.

Technology that provides the means to generate an income from heat and power generation is required to support a low energy tariff.

Heat sale agreements when combined with subsidies including RHI and Fit support the drive for innovation and scale.

The areas that landlords can directly affect are:

1. **Energy Efficiency Improvements**, loft, cavity wall insulation and EWI along with the use of more efficient appliances.
2. **Decarbonisation of the Power Sector** through a range of technologies including the increased use of heat pumps combined with modern energy storage and energy management.
3. **Re-focusing** on the de commission gas between 2020 and 2050.

Our challenge is that 80 % of the homes we will be living in by 2050 are already built, add to that we have an ageing population, urbanisation and changes in the ways we live and work, creates enormous pressures on our businesses to support society.

These pressures and planned major infrastructure projects will drive growth and create opportunities for UK businesses to develop, commercialise and adopt innovative solutions that deliver affordable energy.

Innovation is essential if society is to get the most value out of its infrastructure over the coming decades, but disruptive innovation in these sectors needs to overcome significant barriers.

Manufactures such as Minus7 has proven that their products work in both private and social housing, they have designed renewable heating and hot water using endothermic roofing that connects directly to highly efficient heat pumps, providing heat and hot water at less than gas prices.



When combined with demand side management, provides not only the technology but the means to reduce local energy demand.

Energy Security is one of the most discussed topics when considering future scenarios, within the UK, this question was posed to the former Secretary of State for Energy and Climate Change Amber Rudd who outlined 3 options for energy security leading to 2050 from 2020.

The debate focused on three main areas as detailed below.

Whatever your option it is clear gas for domestic use is being phased out to reduce carbon, however gas is a major fuel source and will continue to be a major contributor to the energy mix for centuries to come.

1 - Small Modular Reactors – SMR

2 - Gas - Including Shale

3 - Renewables

SMR

The case for SMR is an ongoing debate with many believing SMR will never happen, it is also believed that there is no economic case for large nuclear reactors and as such we do not believe the long-term solution is nuclear.

Gas / Shale

Gas on a global scale has the capacity to provide sufficient energy supply for more than 200 years, this is without shale gas.

Gas will continue to meet the UK energy demands although this will be from gas powered power stations providing energy to the electrification requirements of transport.

The Scottish Government recently announced that all shale gas and on shore gas exploration will stop, this decision is not based on technology but on the pressure from the Green Party to only support the SNP if fracking and on shore gas exploration is banned.

Renewables

The government's view is that we don't have all the answers to decarbonisation today however technologies have been fully developed to provide technical solutions that are both low cost and green. Unleashing innovation is about innovation, and therefore is not just about investing money in new bits of kit. It is about locally-generated energy supported by storage and interconnection which offers the possibility of a radically different model.



Government needs to be the enabler

Following the initial deployment of Carbon Capture & Storage infrastructure by the CCSDC (Delivery Company), a government in the late 2020's will have two choices.

1. Continue to write regulated contracts for players in sectors of the energy industry to sequester CO₂. This clearly requires a degree of continued direct involvement.
2. The second, and recommended approach, is to implement a well-designed and functioning CCS obligation system to provide a single, long-term, economy-wide incentive, which removes the government from direct involvement in CCS projects.

The future of unabated natural gas, is often talked of as a bridge fuel from a high-carbon to a low-carbon energy system, it is lower carbon than unabated coal, but not as clean as renewables, CCS on coal and gas, or nuclear power.

However, most decarbonisation scenarios for the UK do not have unabated gas for power generation in the energy mix beyond 2050.

Recent work shows that little or no new natural gas capacity in power generation without CCS can be accepted from now on.

Certainly, a power station with a notional 20-30 year life span, constructed in the 2020's, risks its life being shortened if it is not fitted with CCS , and if the UK sticks to its emissions targets.



Report Conclusion :

Driver Partners within housing is evident – they lead and direct, setting the pace that others will, and can follow. Clearly the will to change must be understood, this can take time - regrettably time is not on our side, in fact time is short.

We will need to design delivery plans over the next three years that can deliver a low carbon future.

We must look at how over the next 30 years from 2020, we can replace domestic gas in our homes.

It is accepted that this is a huge target however it is deliverable providing we plan to succeed.

Local authorities and social housing providers has a long and established record in delivering energy projects, this project not only helps the planet but provides energy security for future generations.

I would like to explore the option of setting up a steering group made up from the construction, housing, supply chain partners and key stake holders to form a working group whose role would be to create a delivery plan which can be replicated across the UK, your support in setting this group would be greatly appreciated.

Your clear ambition to do the right thing would certainly give this project the drive it needs, I am clear that we need to tackle climate change and whilst we cannot affect all the changes required we can affect housing in a positive way.

I look forward to hearing from you in due course.

Kindest regards,

David Greensmith – GKPR Group
