



Tackling Fuel Poverty through Smart Metering

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1 Executive Summary

Purpose and context

Over the past two years, rapid increases in energy prices have contributed to an unprecedented cost of living crisis. Despite Ofgem's forthcoming price cap, an estimated 6.5¹ million households are projected to be living in fuel poverty, with millions more at risk.

The resulting impact is profound - under-heated homes, stress caused by debt and self-disconnections. Tens of thousands of people are dying every year due to a cold home.²

Fuel poverty is not new, but the current extent and severity of the challenge is. Many new measures and services have arisen in response, but the reach and impact remain insufficient to tackle the scale of the problem. For many, this forthcoming winter looks likely to be an extremely difficult time.

Concerns over the current situation, in conjunction with the outcry over the force fitting of prepayment meters, have led to calls from across the political spectrum to do more to improve outcomes for fuel poor homes. It is clear coordinated action across the public and private sector is now required to deliver tangible benefits to millions of households.

"It is incumbent on all of us as an industry to identify those [vulnerable] customers, and do everything we can to support them"

Jonathan Brearley

In line with this call to action, we have considered how the smart metering system can be used to its fullest extent to help tackle this issue. With 26 million meters already connected today (53m at the completion of the roll-out) the system provides secure connectivity to every home across Great Britain. With over 1.5bn data transactions already taking place across the network every month, it offers a unique data set from which insight can be gained to support targeted services.

Moreover, as an already established national asset, with a proven track record of delivery, the DCC and the smart metering network provides a platform for policy implementation at pace. A platform that can contribute to the challenge, both in the short term as we prepare for the forthcoming winter and long term to ensure a just transition to net zero.

Smart metering infrastructure and fuel poverty

This paper highlights the capabilities of the smart metering system and the potential ways in which it could be leveraged to support Government, Ofgem and industry in tackling fuel poverty. These can be grouped in three main areas:

Understanding fuel poverty through greater insight – appropriate use of smart meter data (for example - visibility of households on emergency credit and those who have self-disconnected) when combined with other data sources can help to identify those in fuel poverty and to develop a deeper understanding of their needs and behaviours. The dynamic nature of the data can enhance research, policy making, support scheme design and measurement through up-to-date segmentation and profiling. Government's latest statistics on fuel poverty are produced from data which does not encapsulate the impact of the Price Cap rises, undermining the accuracy and usefulness.

Enabling targeted and tailored support services – data and insights from the smart metering system can be used to better connect consumers in need with the various support measures available (e.g., financial and energy saving advice, energy efficiency measures, retrofit grants and healthcare services), ensuring more accurate, efficient deployment and greater impact. Through a previous innovation

¹ 'Nearly 6.5m households will still struggle despite new energy price cap' - Energy Live News

² BRE report finds poor housing is costing NHS £1.4bn a year - BRE Group

project, we helped establish insights that can be drawn from anonymised data to enable local authorities and energy suppliers accurately deploy energy efficiency investment to those households most in need.

Direct intervention through the system – the connection into homes could be leveraged to enable more direct intervention. This includes maximising the functionality of installed devices including load control for assets such as storage heaters and retrieval of temperature and humidity data securely through the system. More holistic services include the direct transfer of credit to the meter for grant schemes such as the Warm Homes Discount. The capability of the system to support the implementation of a social tariff, or managed energy service could be life-changing for households perpetually at risk of fuel poverty and unable to afford the poverty premium levied through pre-payment meter tariffs.

We believe maximising use of the smart metering system offers the opportunity to accelerate our understanding of fuel poverty and deliver enduring support schemes which make a real difference to people's lives, a critical enabler of greater equity in energy use and a significant step towards a just transition as the energy system transition gathers pace. Doing so holds the potential to deliver significant benefit: to consumers, to our customers, and to Great Britain plc

1. **Better outcomes for consumers** – physically, emotionally, and financially as they are able to receive more targeted support quicker
2. **Better outcomes for our customers** – reduced costs in meeting regulatory commitments such as the Energy Company Obligation and the DNO consumer vulnerability incentive framework
3. **Better outcomes for GB plc** – accelerate delivery of enduring support schemes by using established national infrastructure, efficiently target support to those who need it most - reducing overall outlay and deliver substantial savings on other health and social care services (for example £857m p.a. estimated cost of treating illness caused by cold homes).

Next steps

As an already established national asset, with a proven delivery model, already paid for by consumers and operating at scale across Great Britain - the DCC stands ready to support industry and Government action to address the challenge of fuel poverty.

This paper provides several areas in which smart metering capabilities can support. Those options are at varying degrees of development – but a number have already been proven through innovation projects and trials and are ready to scale.

Other options we will look to develop more through further research and proof-of-concept in collaboration with industry and public sector partners.

Given the scale of the challenge, and the multi-sector intervention and support required, we see value in an Ofgem convened Fuel Poverty programme, bringing together stakeholders from across Government and Industry to collectively agree on the actions required, both in the short term and as part of more enduring solutions. This programme, would help to galvanise, with our key stakeholders, what activity we should further progress - whether now to help tackle the challenge without delay or longer term as part of the future Licence period.

2 Purpose and context

Fuel poor households spend a high proportion³ of their household income to keep their home at a reasonable temperature.

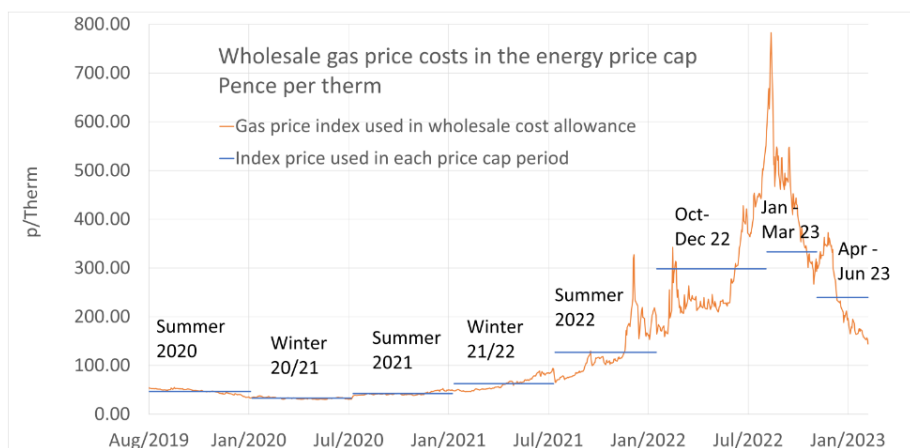
The recent increase in energy prices and unprecedented cost of living crisis has pulled many more households into fuel poverty, creating challenging lived experiences and broad ranging societal impacts in healthcare, employment, education and more.

Within this paper we consider the context, current scale of the challenge and consider how the smart metering system can be used to its fullest extent to help tackle this issue.

The Energy Crisis

Energy prices have more than doubled in the past two years. From £1,100-£1,200 in April 2021, to £2,500 currently (supported by Government's Energy Price Guarantee (EPG) Scheme⁴) while the Ofgem Price Cap⁵ stands at £3,280 (figure indicates how much consumers on their energy suppliers' basic tariff would pay if the EPG scheme were not in place). The price rise is driven mainly by the rise in wholesale costs. The failure of several energy suppliers (31 suppliers serving over 4 million households) worsened the situation as the cost of supplier failures was £2.7 billion (roughly £100 per household).

Wholesale gas price costs in the energy price cap



Source: [Ofgem Price Cap Announcement-February 2023](#)

Scale of the Challenge

Official Fuel Poverty Statistics published in March 2023 identified 3.24m homes in fuel poverty however this is built on data from 2021-22. National Energy Action (NEA), a leading charity working across England, Wales and Northern Ireland to help households that are in fuel poverty, has estimated that around 7.5 million households can be currently classified as fuel poor today, with the potential for this to rise to 8.5 million or higher this year.

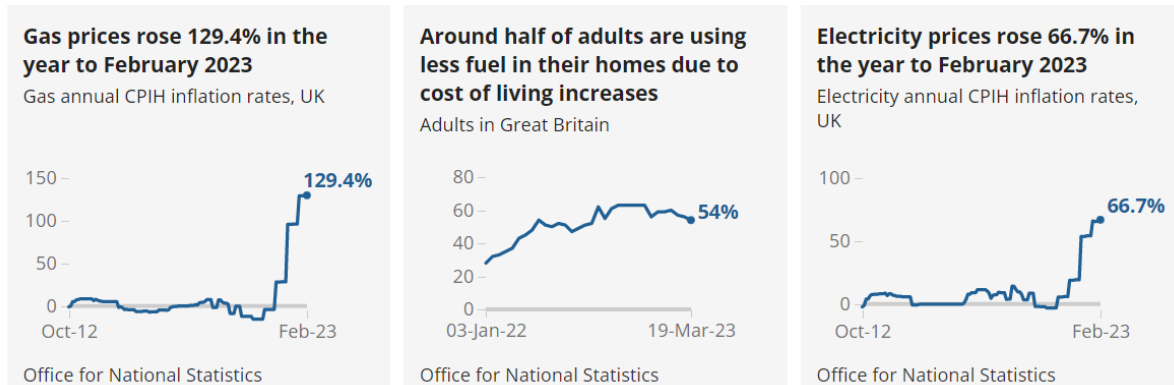
³ 10% as defined by National Energy Action

⁴ The energy price guarantee is a temporary additional measure to protect consumers from the recent significant increases in wholesale gas prices. The guarantee was put in place on 1 October 2022 and will last until April 2024. However, the guarantee price can go up during this period.

⁵ The energy price cap sets a maximum price that energy suppliers can charge consumers for each kilowatt hour (kWh) of energy they use. In the current scenario, it indicates how much consumers on their energy suppliers' basic tariff would pay if the government's Energy Price Guarantee (EPG) were not in place.

The severity of fuel poverty can also be seen in the rise of consumers self-disconnecting and self-rationing. More than 8,500 people couldn't afford to top up their prepayment meter in the first two months of 2023 alone, this is three times the number in 2022 and more than the whole of 2021⁶. Citizen's Advice helped more than 27,000 people in 2022 who could not afford to top up their prepayment meter - more than the whole of the previous ten years combined.

A significant rise in energy bills, has caused many households to accrue substantial debt with energy suppliers. The average level of debt owed by domestic customers in arrears (who do not have a debt repayment arrangement set up) was £1,056 for electricity and £797 for gas in Q4 2022⁷ (up by 17% than that in Q4 2021).



Source: [Cost of living insights - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/cost-of-living-insights)

Fuel poverty is also directly linked to health and well-being. Damp and underheated homes can lead to respiratory problems and infections, damage to a patient's immune system, and cause or exacerbate allergies and asthma. Living in substandard conditions can also cause considerable stress and affect people's mental health. Research⁸ estimates that over 10,000 people die every year due a cold home. Treating illnesses caused by cold homes is estimated cost NHS £860 million a year.

Policy Context

In recognition of the current scale of the crisis, the Government has implemented various rebates and payment schemes including the Energy Price Guarantee (EPG), the Energy Bills Support Scheme (EBSS) and council tax rebate. These measures taken together are worth £94 billion⁹ over the past year and this year, averaging over £3,300 of cost-of-living help for every household in the country. This has contributed significantly to the increase in public borrowing which stood at £139.2¹⁰ billion for the 2022/23 financial year. Chancellor Jeremy Hunt has expressed concerns over this saying, *"We stepped up to support the British economy in the face of two global shocks (Covid and energy crisis), but we cannot borrow forever."* And it has been clear through the spring budget that there is increased focus on reducing the debt and enhancing energy security with more sustainable measures.

The government has also announced that the 'prepayment premium, higher tariff paid by customers with PPM than those who pay by direct debit, will be removed from July 2023. Ofgem has also implemented restrictions and stricter rules on PPM installs for vulnerable consumers.

DNOs and energy suppliers also have regulatory obligations to provide appropriate support and services to consumers in vulnerable situations including those in, or at risk of, fuel poverty. Similar obligations also exist for energy suppliers including the Energy Company Obligation (ECO) under

⁶ [CA cost of living data dashboard | Flourish](#)

⁷ [Debt and Arrears Indicators | Ofgem](#)

⁸ [BRE report finds poor housing is costing NHS £1.4bn a year - BRE Group](#)

⁹ [Spring Budget 2023 speech - GOV.UK \(www.gov.uk\)](#)

¹⁰ [Public sector finances, UK - Office for National Statistics \(ons.gov.uk\)](#)

which suppliers must promote measures that improve the ability of low-income, fuel-poor and vulnerable households to heat their homes.

Traditionally, the focus of policies supporting fuel poor households has been on improving the energy efficiency of homes or providing income support to be able to afford energy. These included the Energy Efficiency Programmes (ECO scheme, Green Homes Grant) and the Social Support Payments (Warm Home Discount, Winter Fuel Payments, etc.). Identification of households has been seen as a significant challenge for these schemes. This can be overcome with the use of data to a great extent.

The potential of better use of data to enable benefits for fuel poor households is identified within the Committee on Fuel Poverty (CFP) sponsored report by Deloitte 'Better use of data and advanced statistics/ machine learning in delivering benefits to the fuel poor' (2020). In responding to the report, the CFP noted difficulties in identifying the estimated [at that time] 2.4 million households in fuel poverty which had resulted in challenges for the allocation of £2.5bn budget of schemes designed to help fuel poor households. The CFP noted that Fuel Poverty Statistics from BEIS show that only 47% of fuel poor households are in receipt of benefits and, therefore, out of a total spend of circa £2.5 billion per year cost for the Energy Company Obligation (ECO), Winter Fuel Payment and Warm Home Discount schemes, only about 15% of benefits are received by fuel poor households.

In response, government continues to evolve the ECO scheme to reward more data driven approaches. And, a new DNO consumer vulnerability incentive framework with stretching targets and common metrics will drive further improvements in services for vulnerable consumers.

Industry initiatives

95 Charities and non-profit organisations across the UK have joined together to call for more targeted support in the form of a social tariff for the energy market to help the households most in need. A bill was also introduced to the Parliament last winter, called the Energy Costs (Pre-payment Meters and Social Tariffs) Bill.

Various countries in Europe have social tariffs (for example- *Bono Social de Electricidad* in Spain) and are widely used in the ongoing energy crisis, however the complexity of design and delivery has been significant with different discount percentages for vulnerable and severely vulnerable households as well as different treatment for different households in the event of non-payment of bills.

Other industry-led initiatives include Energy UK's Vulnerability Commitment - a voluntary agreement from energy suppliers to support customers in vulnerable circumstances in addition to existing industry regulations. Over the past year, they investigated: the identification of vulnerable customers; the support available for them; and training and support for front-line staff. They released a Good Practice Guide on 'Using smart data to identify and support pre-payment meter customers at risk' amongst other things.

In addition, Energy Systems Catapult research 'Fair Futures', 'Fuel poverty in a smart energy world' and recent initiatives like the DESNZ Inclusive Smart Solutions Programme are focusing on the lived experiences of households in fuel poverty to ensure that any solution design is human-centered.

Summary

Industry collectively invests hundreds of millions of pounds each year to deploy support measures that seek to provide financial support, energy efficiency investment advice and more. Opportunities to enhance the efficacy and impact of these measures include more effective use of data to understand household needs and change behaviors and more accurate and efficient targeting and deployment of support services. In parallel, demand for more holistic and transformative solutions such as the introduction of a social tariff is growing.

Within the following section we set out the capabilities of smart metering system and some ways through which it could be leveraged by Government and Industry to help alleviate fuel poverty.

3 Supporting fuel poor households through the smart meter system

3.1 The DCC and Smart Metering Infrastructure

DCC operates and maintains the national Smart Metering Infrastructure which will connect 53million smart meters, at scale, in 33 million homes and small businesses across Great Britain to a single secure, digital network.

We have demonstrated a proven ability to act as a delivery vehicle for Government and Ofgem priorities, such as enrolling first-generation smart meters and delivering the central systems needed to support faster, more reliable switching.

Smart meters and smart metering data will be at the heart of many of the reforms required to enable the energy sector to transition to net zero. Energy consumers benefit from having their meter connected to the DCC network as it gives them greater control over their consumption, allows them to switch suppliers without the risk of losing smart capability and enables time-of-use tariffs. It also helps network operators and suppliers by providing real-time data on network performance and energy consumption.

Operating the DCC network generates a range of system data which has already demonstrated the potential to significantly accelerate the identification of fuel poor households (see Appendix 1). This includes such as descriptions and timings of transactions including prepayment top ups, low credit alerts and outages for example (for more information on the range of system data (see Appendix 2). Increasing appropriate access to this data set for public interest purposes is a key focus of DCC's data access initiative – 'Data for Good'. Doing this successfully offers significant potential to foster innovation and drive further cross sector engagement, ultimately for the benefit of consumers.

3.2 Fuel Poverty Options

Fuel poverty is a complex problem with no single solution. A combination of policy levers, industry collaboration and better use of data and technology must be balanced with a deep understanding of the multiple, inter-related and dynamic factors that shapes experiences for fuel poor households.

The duration and level of fuel poverty can vary significantly across households and is driven as much by behaviors, needs and attitudes as hard facts around income, property efficiency and energy cost.

It is imperative that the capabilities and data generated through smart metering are not under-utilised by Government, Ofgem and the industry in helping to tackle fuel poverty.

Opportunities to make an impact are grouped into 3 main areas:

- 1) Understanding fuel poverty through greater insight
- 2) Enabling better targeted and tailored support services
- 3) Direct intervention through the system

3.2.1 Understanding fuel poverty through greater insight

Appropriate use of smart meter data, when combined with other data sources can help to identify those in fuel poverty and to develop a deeper understanding of their needs and behaviours

Summary

Understanding the prevalence and severity of fuel poverty is challenging – household income, weather, energy cost, usage, consumer behaviours and needs are all dynamic. Official statistics are unable to provide a dynamic and up to date view. As Emma Pinchbeck (CEO Energy UK) stated at the Vulnerability Summit hosted by Ofgem, *“better data can help us identify vulnerability, and this is critical, to understanding its transient nature, particularly in crisis years”*.

This creates challenges in identifying fuel poor households and understanding their needs, so that policies and support services can be designed efficiently and effectively. This was also seen as a limitation of the cost-of-living support packages provided by the government. The Work and Pensions Select Committee¹¹ has raised concerns through an inquiry on the design and delivery of these packages, believing they may not have provided/ provide sufficient support for all low-income families who need it.

As a GB-wide, temporal dataset, smart meter data can, where used appropriately and combined with other data (weather, property typology etc), enhance understanding of consumer segments, challenges, and requirements.

Potential data insights from smart meter data include:

- **Smart metering penetration rates** - which areas are less able to benefit from smart solutions due to a low rate of take up
- **Fuel type** – are households off gas and paying more for alternative fuels
- **Energy system engagement** - are there opportunities to increase supplier or tariff switching, what are the rates of participation in flexibility services (e.g. ESO Demand flexibility services)
- **Payment patterns** - are credit or pre-payment meters more commonplace and what is the scale and frequency of remote switching between states
- **Financial difficulty indicators** - are pre-payment meter top-ups occurring more frequently, are households transferring credit between electricity and gas, volume of low or emergency credit activations or self-disconnections from the system
- **Energy consumption** – how much energy / gas are households using (N.B. not currently available without consumer consent)
- **Energy supplier reporting** – to what degree are energy suppliers meeting obligations demonstrating robust operational capability and providing timely intervention for households in financial difficulty

Impact

- Enhanced consumer segmentation E.g., extremely fuel poor, fuel poor with health issues, etc. Scotland currently identifies extremely fuel poor households as those who spend more than ‘20%’ of their income on energy bills. While there are no such criteria for other countries, there is scope to enhance this segmentation as well.
- Statistics and reporting, GIS mapping or open data accessible via APIs to support research, and policy making and scheme design.
- Enhanced utilisation of public funds. Over £2.1bn¹² of public investment committed for energy efficiency and heat decarbonisation for 2020-25 remains unallocated.
- Reduce Government debt. The cost-of-living support measures are estimated to have cost the government c. £100 billion. Scheme design and development using better data can help to increase efficiency of government programmes.
- Measurement of efficacy of support schemes and interventions will enable more tangible demonstration of the progress made and the work still to be done

Delivery Considerations

¹¹ [Cost of living support payments - Committees - UK Parliament](#)

¹² [The-spring-budget-and-the-retrofit-revolution_E3G-briefing.pdf](#)

- Smart meter 'system data' already exists within our Technical Operations Centre and we have data analytics capability to develop robust models and validate insights.
- Demand for this data has already been shown from numerous organisations in the energy, public, third and academic sectors
- Embedding change will require recognition of public sensitivity around data use, regulatory approvals and further alignment of data legislation obligations across all industry participants.
- We have made proposals to accelerate access to this data through our companion paper 'Data for Good' which explores some of the changes needed to maximise data access on an enduring basis.

3.2.2 Enabling targeted and tailored support services

Better data can help industry and key stakeholders to better shape, target and tailor support services that are more aligned in meeting consumer needs, leading to improved outcomes and greater efficiency in deployment.

3.2.2.1 Advice services and energy efficiency investment programmes

Summary

DCC can help to enable enhancements across many services from basic energy savings or financial advice through to establishing areas of eligibility as part of major energy efficiency investment programmes via the Energy Company Obligation or the Social Housing Decarbonisation Fund. Opportunities exist at both an area level and at a household level (where consumers have granted consent for data access).

At an area level, data insight can help with accurate targeting and deployment of services. For example, as part of the UK Research Institute's Modernising Energy Data Applications (MEDA) programme, DCC worked on a project led by Urban Tide which successfully demonstrated that smart meter data along with other datasets could be highly effective in helping to identify geographic areas at high risk of fuel poverty.

At a household level, data can provide more detailed understanding of consumer needs enabling accurate advice – whether savings, energy efficiency grant availability or other support.

For example, as part of the Smart Meter Advice Portal, the Energy Savings Trust will use smart meter data to provide a more personalised energy saving service to Home Energy Scotland customers.

Impact

- Improved targeting, accuracy, and efficacy of support services across a range of fuel poor household needs. The Committee on Fuel Poverty has identified industry savings of over £100m through reduction in 'search costs' through deployment of schemes such as ECO¹³.
- Maximize the impact of government schemes. E.g., An average of £3,300 of cost-of-living help was provided for every household. Deployment based on eligibility criteria that combines smart meter data could ensure greater efficiency and enable more support for those most in need. (for example – second home-owners received double support through the Energy Price Guarantee leading to 'donate the rebate' campaigns¹⁴)

Delivery Considerations

- Through participation in uZero under UK Research Institute's Modernising Energy Data Applications programme we have helped industry partners to understand how smart meter data can help to prioritise areas for the delivery of energy efficiency investment.

¹³ CFP's recommendations better use of data to support fuel poor 29 May 2020 (publishing.service.gov.uk)

¹⁴ [Donate the rebate: Here's what to do](https://www.ft.com/content/2020/05/29/donate-the-rebate) | Financial Times ([ft.com](https://www.ft.com))

- Demand for the data from local authorities and charities is significant – we are in discussions with numerous organisations, for example - Greater Manchester Combined Authority, the Greater London Authority, Suffolk Council, Energy Systems Catapult, the Resolution Foundation and the Centre for Sustainable Energy.
- We are continuing to improve access to smart meter consumption data for non-energy suppliers through the ‘Other User’ mechanism, with efforts underway to support users through the process. Many organisations accessing smart meter data (Loop, Hugo, uSwitch etc) are helping consumers to save money through greater visibility of their usage and energy savings advice
- More widescale access to data including on aggregate will require further alignment of data legislation obligations and regulatory approvals.

3.2.2.2 Health, wellbeing, and rapid re-active support

Summary

The correlation between fuel poverty and adverse health is well established and multiple initiatives are seeking to overcome the challenge. Improving health conditions may not directly resolve the root cause of fuel poverty but can improve consumer outcomes as well as delivering financial savings across the NHS – £857m p.a. is estimated as the cost of treating illness caused by cold homes.

A recent report commissioned by Smart Energy GB¹⁵ investigated some of the main ways smart meters can support healthcare including, monitoring health conditions, assessing population health and self-monitoring.

Smart meter data, particularly if high resolution (i.e. consumption profiles at sub-10 second intervals), can help support providers to identify changing behaviours among consumers with health conditions – as demonstrated through services such as Howz¹⁶ (a DCC Other User).

Differences in day-to-day interaction with energy appliances and deviation from typical routines can indicate worsening conditions or may indicate a downward trend in their overall health. Healthcare professionals can use such data (where consumers have opted in) to suggest the best support, including intervention to increase energy usage and reduce underheating.

The ‘Warm Home Prescription’ programme is an example application. Within the service, developed by Energy Systems Catapult and trialled across England and Scotland, eligible patients identified by ‘local energy advisors’ are provided energy credit to ensure they can heat homes to a healthy level.

Smart meter data also holds potential to enable rapid, re-active support. Alongside UKPN, Smart Energy GB, Citizens Advice and SAVVI¹⁷, DCC have been exploring how appropriate data sharing between DNOs, councils and charities could enable rapid support to fuel poor households who have self-disconnected and particularly during cold weather spells.

Impact

- Improved outcomes for some of the most vulnerable consumers in society across physical health and mental well-being. For example, early detection could enable treatment when conditions are less severe, resulting in swifter recovery. Remote insights provide the possibility of remote monitoring and reduces the stress of the carer.
- Reduced NHS costs¹⁸. Potential reduction in calls to 999 and 111, GP appointments, inpatient stays and short stay admissions, and the strain on social care. The health service is estimated to save £0.42 for every £1 spent on retrofitting fuel poor homes.

¹⁵ [How smart meters could help improve healthcare | Smart Energy GB](#)

¹⁶ [Energy Level Monitoring | UK | Howz – Howz](#)

¹⁷ [Scalable Approach to Vulnerability Via Interoperability \(SAVVI\) | Local Digital Funded Project](#)

¹⁸ [CBP-8730.pdf \(parliament.uk\)](#)

- Innovators such as Howz¹⁹ and Liverpool John Moores University²⁰ have demonstrated how smart metering data can enable remote healthcare through analysis of usage pattern to identify changes in routine
- Provision of proactive and highly reactive support services to individuals most at risk. Monitoring of vulnerable households with health conditions could prompt proactive intervention in the event of self-disconnection or deviation in consumption pattern from usual.

Delivery Considerations

- Opportunities exist for greater collaboration between the health and energy sectors – a cross-sectoral forum to explore effective data sharing and data governance best practice could help to unlock innovation funding to deliver impact on a major scale. DCC could provide smart meter system data to innovators and service providers including for example Integrated Care Systems (i.e. regional groups of health services) to support monitoring.
- Further system capability (as described in the following section) could enable new service provision including additional data flows such as temperature and humidity and potential re-use of the communication network for emergency / helpline alerts.

3.2.3 Direct intervention through the system

Exploring inherent or potential functionality within a unique GB-wide secure technology infrastructure to provide direct, dynamic support or enable more holistic intervention.

3.2.3.1 Maximising device functionality

Summary

Inherent and potential functionality in smart meter system devices may be used to greater effect in three areas, use of the In-Home display as a communication channel, Internet of Things (IoT) sensors and devices attached to the communications hub and load control of assets (e.g. storage heaters) via the HAN-connected auxiliary load control switch (HCALCS).

In-home display as a communication channel

In-home displays (IHDs) are installed alongside smart meters to help the consumer visualise their consumption of energy and manage their expenditure.

Whilst primarily used to communicate and display energy usage and spend, the device holds potential to be used to transmit specific messages to households relating to energy advice schemes – freephone or text numbers or advice services. A dedicated freephone number is a recommendation of the current Ofgem consultation on framework for consumer standards and policy options to address priority customer service issues²¹.

With further technological development the IHD could support two-way communications to confirm a household's need for support, at a point of reaching emergency credit for example – helping to mitigate situations whereby households have no active broadband service, phone line or mobile phone.

Smart Meter System (SMS)-based Internet of Things (IoT) Applications

A government innovation programme is exploring the potential re-use of the communication hub to support smart metering system based IoT sensor devices – for example temperature and humidity sensors. Combining these data flows through the same secure, reliable, always-on network would allow even greater understanding of consumer behaviours (e.g. self-rationing /underheating, health risks) and needs in context with many of the support services already discussed.

¹⁹ [Energy Level Monitoring | UK | Howz – Howz](#)

²⁰ [Smart meter data could help identify dementia | Liverpool John Moores University \(ljmu.ac.uk\)](#)

²¹ [Consultation on a framework for consumer standards and policy options to address priority customer service issues | Ofgem](#)

Load control via the system (Auxiliary Load Control Switch (ALCS) or HAN-Connected (HCALCS))

The smart metering system contains inherent functionality to enact 'load control' of appliances enabling cost effective usage at off-peak times. One specific application is the replacement of the Radio Tele Switch Service (RTS) which enables households to access 'Economy 7' for programmed, lower cost use of storage heaters. The RTS will be shut down in March 2024. A concerted and combined industry effort is needed to ensure the smart metering system can replace this much needed service.

Impact

- Greater security, service reliability and availability in comparison with services provided via broadband (11% of low-income households remain without internet access)²²
- 32% of PSR customers rely on landline telephones only. As outlined by Lawrence Slade during Ofgem's recent Vulnerability Summit, there is a need for industry collaboration to ensure vulnerable consumers can contact providers at a time of crisis and once landline technology is switched off in 2025
- Maximizing use of installed assets and potential enhancements to the CBA for the smart metering implementation programme
- Enhanced data insights from combining multiple data streams (energy use, temperature, humidity). These could include factors such as energy rationing, quality of homes (risks of mould), health concerns (respiratory and allergy problems)
- Ensuring 3m households currently reliant on RTS can continue to benefit from flexibility services

Delivery Considerations

- Technical design review and business process mapping needed to determine the broadest capabilities of the in-home Display.
- DCC is continuing to participate in the smart meter Internet of Things competition, as part of the wider DESNZ Flexibility Innovation Programme, to support scaling and adoption of this capability.
- We urge industry parties to help enable further deployment of the ALCS or HCALCS and particularly in context with replacement of the RTS

3.2.3.2 Transferring credit directly to the meter**Summary**

Smart prepayment meters already have the feature to provide emergency and friendly credit. Such services are designed to provide a little extra energy to keep a household going until they can top up their meter.

A potential expansion of this process could involve transferring credit directly to the meters – prepayment or direct debit – of households identified as eligible for specific benefits. This could be funds from schemes such as Warm House Discount, Winter Fuel Payments, Cold Weather Payments, etc. as well as ad-hoc schemes such as the Energy Support Scheme.

Impact

- Helps improve the accuracy of scheme deployment, ensure a greater number of eligible customers benefit – reportedly, over 340,000 households with prepayment meters are at a risk of missing out on over £22 million worth of energy vouchers under the Energy Price Guarantee²³, and improve the consumer experience of Government services.
- Improve the take-up of various existing schemes. A recent study²⁴ suggests that the total amount of unclaimed income-related benefits and social tariffs is nearly £19 billion a year.

²² [Digital divide narrowed by pandemic, but around 1.5m homes remain offline - Ofcom](#)

²³ figures revealed via a Freedom of Information request by Times Money Mentor

²⁴ [Missing-out-19-billion-of-support.pdf \(policyinpractice.co.uk\)](#)

Delivery Considerations

- System capabilities exist that can enable the transfer of credit to the meter by energy suppliers (as in the case of emergency and friendly credit). However, given ongoing volatility in the retail market, we believe it would be prudent to consider liability and continuity of service in the event of supplier failures if this path of action were to be pursued.
- Due to the cryptographic model in smart metering, deployment of credit or grants by an independent entity would likely require that entity to operate under an energy supplier licence.
- Further research and industry collaboration is needed to explore scheme design and ethical considerations in context with household eligibility for funding under specific schemes.

3.2.3.3 Social tariff and Managed Energy Service

Summary

For some consumer segments, irrespective of financial advice, energy efficiency improvements to properties or provision of benefits, the cost of energy will remain problematic.

For those consumers, a more holistic intervention in the form of a social tariff or managed energy service (MES) may be the most effective means of ensuring households can access energy. This might take the form of lower energy charge (below the tariff price cap) or/and reduced standing charge and potentially fixed for a longer duration of time. Increasingly, there has been demands for more significant action (including social tariff) from the government given the EPG will end in April 2024.

We recognise that this type of intervention would require significant policy development, regulatory change, and industry activity. However, from a smart metering perspective, there are technical system capabilities that could help to enable and manage this type of service:

Data – using data categories described previously to help determine eligibility for the scheme initially and assessing on-going eligibility. Organisations such as the National Energy Action have requested that eligibility for this type of scheme is broader than simply means-tested benefits.

Remote tariff change / centralised switching service – the provision of a social tariff could sit with energy suppliers, or an independent organisation could hold responsibility for delivering a universal managed energy service. In either case, capability exists within the system to enact remote transfer of a household on to or off a specific tariff or from a supplier onto a managed energy service provider via the centralised switching service.

Any subsequent design will, of course, require careful considerations around market competition, sensitivities around auto-enrolment, perverse outcomes, and equity of service provision.

Where social tariffs have been established in the water and broadband sectors providing cheaper than regular tariffs, very small or zero set up cost, free switching, no exit fees, etc., they are offered based on other income related benefits claimed.

There are learnings from those sectors which should also be considered such as improved consumer awareness. For example, whilst an estimated 4.3 million households are estimated to be eligible for a social tariff for broadband, the current rate of sign up is just 220k (5.1%)

Impact

- Enhanced support for those perpetually suffering from the impact of fuel poverty. Due to higher energy prices, the Warm Home Discount uplift²⁵ to the fuel poor has been observed to be lower.

²⁵ Annual Fuel Poverty Statistics LILEE Report 2023 (2022 data) (publishing.service.gov.uk)

- Reduce Fuel Poverty Gap²⁶. The average fuel poverty gap for England in 2022 was estimated at £338.
- Improvements to means tested benefits approach and tackle the issue of non-take up, passporting²⁷ and cliff-edges²⁸.
- Improved targeting and better utilisation of public funds, easing broader funding pressures.

Delivery Considerations

- Technical capabilities already exist within the system to support this type of service. Managed Energy Service provision could potentially arise through the creation of a new DCC role type or via an independent organisation operating under an energy supplier licence (therefore not requiring system change)
- Scheme design would require significant policy development, research, regulatory change and industry collaboration.
- Opportunities exist to learn from other sectors e.g. water and broadband and comparable delivery models in Europe.

3.3 Summary of Options

There are a multitude of areas in which the smart metering system can make a significant impact on the challenge of fuel poverty.

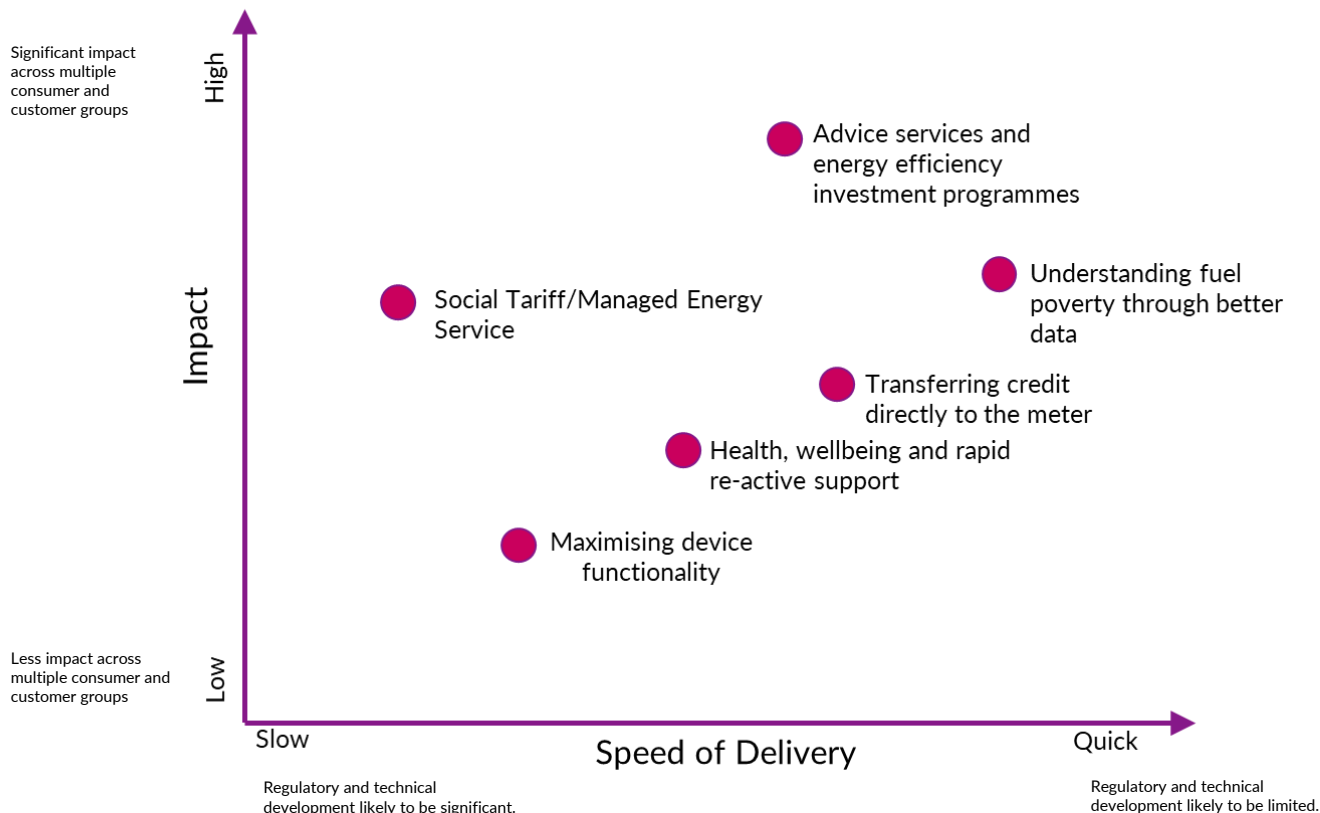
To help contextualise the options, we have completed a high-level assessment of the potential impact and speed of deliverability, taking into account:

- **Benefit to consumers** – outline estimate of number of households impacted and impact on disposable income
- **Benefits for industry** – the potential to enhance scheme efficiency and effectiveness.
- **Technical delivery complexity** – the degree to which the option relies on inherent capability or would require development
- **Regulatory & data legislation considerations** – the viability of delivery within the current regime and data governance model

²⁶ The reduction in fuel costs needed for a household to not be in fuel poverty

²⁷ Not already being in receipt of certain means-tested benefits, despite being eligible, and consequentially being prevented from accessing emergency support

²⁸ Not being in receipt of a certain means-tested benefit, because households failed marginally to meet certain qualifying thresholds



3.4 Technical, regulatory and consumer considerations

This paper sets out several areas in which the smart metering system can help contribute to the challenge of fuel poverty, the next step will be to work with stakeholders to determine which areas may merit further attention, evaluation and development.

We have addressed several issues that would require further and detailed consideration:

Data legislation - access to data and further alignment of data legislation obligations across all industry participants, now, and as and when the data protection and digital information bill is passed.

Consumer choice, trust and transparency - public sensitivities around data use remain and particularly in relation to emotive topics such as fuel poverty and health. Effective consumer engagement will be vital.

Data analytics, data validity and technology development - multiple datasets and advanced analytics will be needed to develop robust models and validate insights. In some cases, technology change will be required to implement the direct system interventions.

Regulatory approvals and development funding - many of the areas explored are not identified within DCCs current regulatory framework (the Licence and Smart Energy Code), regulatory approvals, code and or Licence change may be required. Further assessment and development of proposals would need funding.

Industry collaboration and co-ordination - greater collaboration across industry as well as other sectors (support services providers, local authorities etc.) will be key, particularly in context with data sharing and data access agreements.

4 Next Steps

The smart meter system is a unique technology infrastructure already operating at scale across Great Britain. It holds significant potential to deliver further public benefit.

In line with government and Ofgem's call to action, we have identified several areas in which smart metering capabilities can help. Some of these rely on inherent system capability, others have been proven through innovation projects and trials and are ready to scale. However, it is clear that no one solution can address the complex and differing needs of all of those who suffer with fuel poverty.

The varied nature of the solutions and the number of actors required means it is imperative that Government, Ofgem and industry come together to identify and coordinate the interventions. Actions that will ensure we are taking actively supporting vulnerable consumers over the course of the upcoming winter, and putting in place a more enduring solution for the millions of consumers who face an ongoing struggle between heating and eating.

To this end, we see value in an Ofgem convened Fuel Poverty programme which could bring industry stakeholders together and support collective decisions for the benefit of fuel poor households.

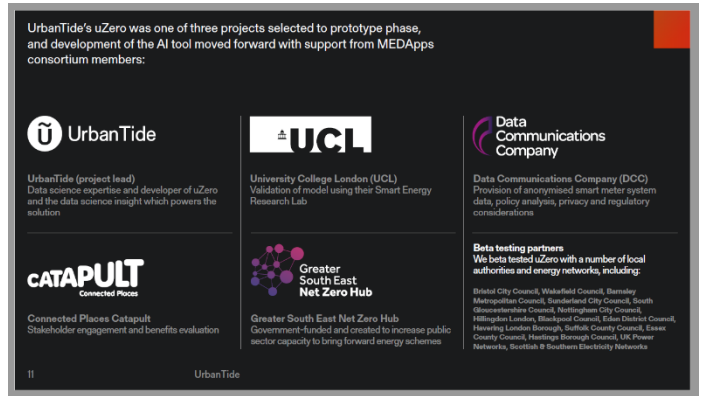
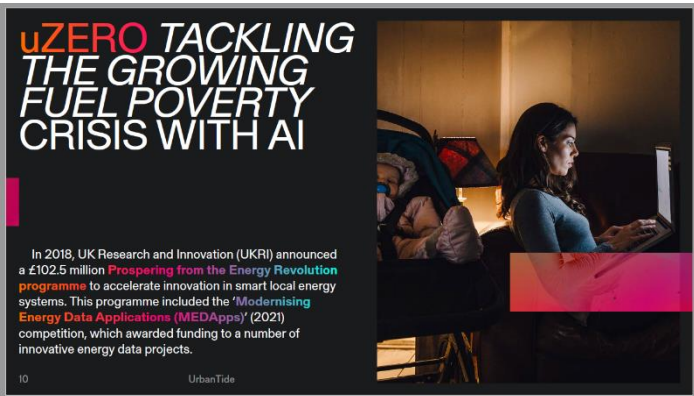
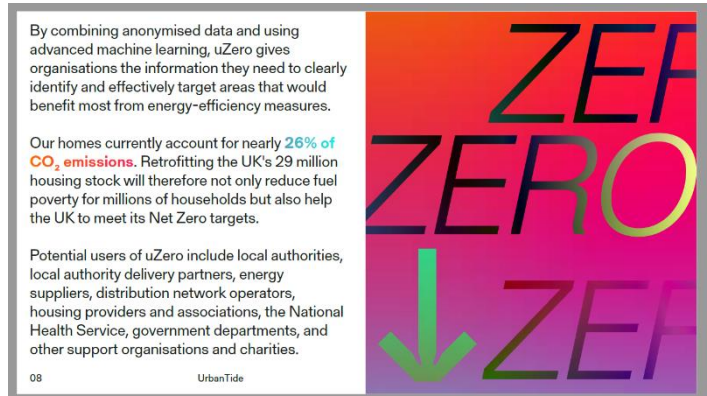
We are already, and will continue, progressing with near term opportunities, including broadening access to relevant system datasets for fuel poverty initiatives. Some options may require more development through further research and proof-of-concept in collaboration with industry and public sector partners such as the Greater Manchester Combined Authority.

We would welcome the opportunity to determine, with our key stakeholders, activity we should further progress – both in the short term to help tackle the immediate challenge without delay or longer term as part of the future Licence period.

Appendix 1: uZero (Modernising Energy Data Applications) project case study

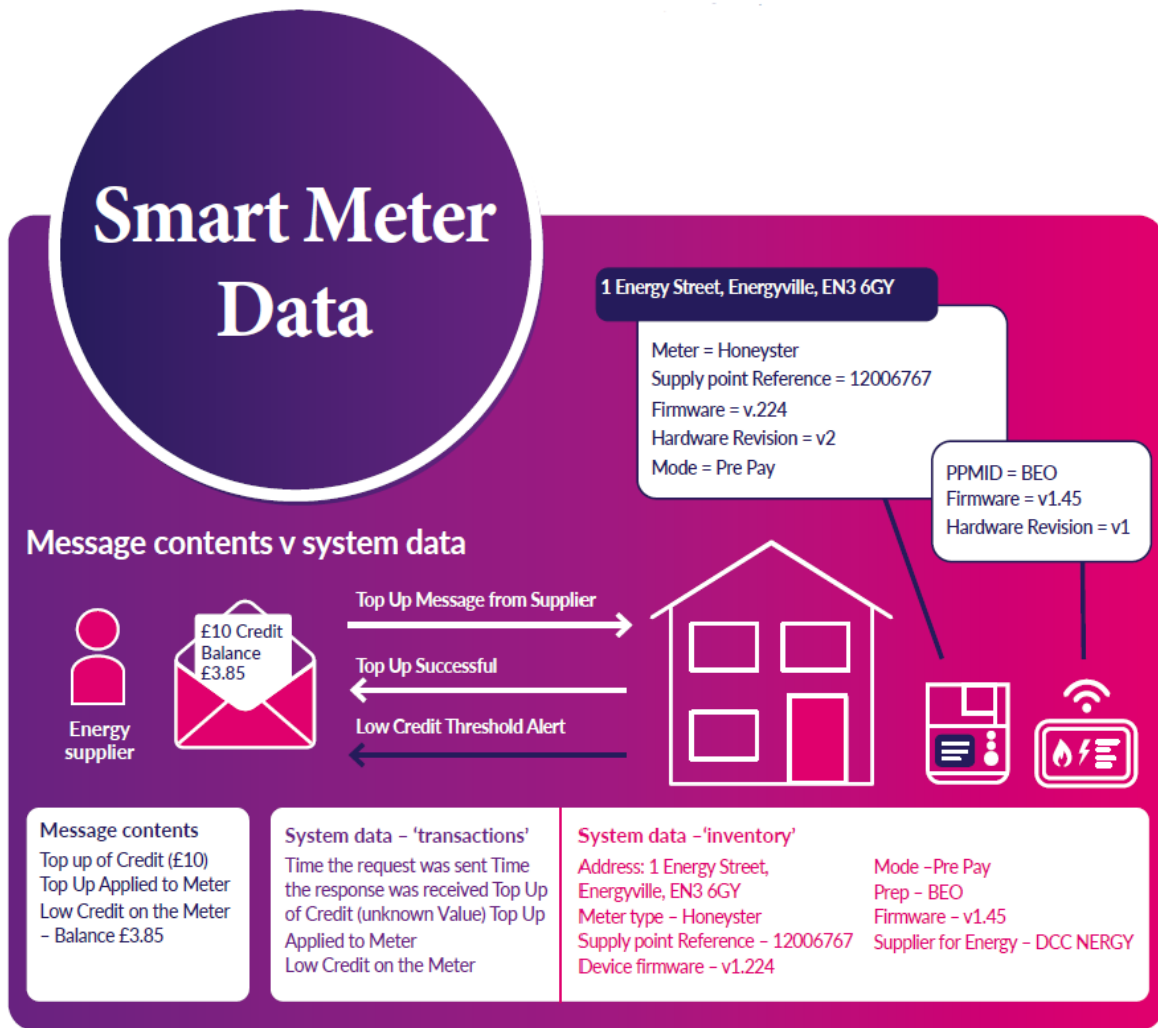
DCC’s involvement in the “Supporting fuel poor households through data integration and AI” project led by Urban Tide involved the use of data from cross-sectoral sources to enable the development of an algorithmic model. The model has been designed to help local authorities, energy suppliers and distribution networks to identify and provide support across geographic areas at greatest risk of fuel poverty.

The project represented the first use of smart meter ‘system data’ in this way and led to positive results in the potential to identify hidden pockets of fuel poverty, enabling better targeted support and improving the uptake of energy efficiency schemes.



Source: [uZero – UrbanTide Summary Report](#)

Appendix 2: Smart meter data defined



Smart meter data is commonly described as either 'message contents' or 'system data'. A letter sent by post provides a useful analogy to explain the difference:

The letter – the message content sent to or from devices connected to the system within premises, e.g. the amount of energy consumed (consumption data) or amount added to a pre-payment meter. This data is encrypted and only accessible to energy companies or third-party users to whom consumers have given their consent.

The envelope – system data or information about the message, e.g. where it was sent and to which device, at what time and whether it arrived safely. This data is retained centrally within the DCC's system and visible to manage the performance of the network. Currently, no mechanism exists for external access (except in limited circumstances where the Government can request access).