



*Action for Warm Homes*

## **National Energy Action (NEA) response to the Department for Business, Energy and Industrial Strategy (BEIS) and Ofgem's call for evidence - "A smart, flexible energy system"**

### **Introduction**

1. NEA is an independent charity which seeks to end fuel poverty and tackle exclusion in the energy market across the UK<sup>i</sup>. NEA undertake key research, national and local advocacy and work with partners<sup>ii</sup> from national and local government, with the regulator Ofgem, industry and the third sector to deliver practical solutions to improve the quality of life for those living in cold homes. NEA achieve this by improving access to energy and debt advice, providing training, supporting local energy efficiency policies and projects, extending access to related services and trialling new technologies. NEA also provide the secretariat for the All-Party Parliamentary Fuel Poverty & Energy Efficiency Group which was first established in 1995 as the Parliamentary Warm Homes Group, to raise awareness of the problem of fuel poverty and the policies needed to eradicate it.
2. NEA welcome the joint call for evidence by BEIS and Ofgem which highlights several opportunities for improving how electricity demand and supply could be better forecast and balanced in the future. This follows the work of the UK wide National Infrastructure Commission (NIC) within their Smart Power report<sup>iii</sup> which also highlighted the potential to avoid unnecessary investment in new power generation; avoid overly subsidising existing electricity capacity and help reduce the need for (and cost) of network reinforcement<sup>iv</sup>. Alongside adequate deployment of conventional energy efficiency measures, many of the proposals for a smarter and more flexible energy system can reduce the cost to energy consumers of the transition to the low carbon energy system. There is also an opportunity to improve the quality of life for the most vulnerable<sup>v</sup> and meet the ambition presented by current statutory targets (carbon budgets, fuel poverty targets and minimum energy performance standards in the private rented sector). The remainder of this response highlights how NEA has worked with partners to cultivate these opportunities. Whilst we have not responded to the consultation questions we profile our key recommendations and hope the response supports BEIS and Ofgem in their policy development in these key areas.

### **Our work in this area**

3. NEA's current Technical Innovation Fund specifically aims to facilitate community-level trials of innovative solutions utilising energy saving measures and approaches not traditionally within the scope of current retrofit or energy saving programmes. Grant recipients from the programme are working to install a range of technologies and work with NEA to ensure that robust monitoring and evaluation takes place. The projects are delivering 1,488 measures, plus further additional measures through match funding. There are 30 technologies being tested using 81 products, providing vulnerable groups with the opportunity to be early adopters of innovative measures.

4. Examples of innovative measures being installed include hybrid and ground source heat pumps, new approaches to park home insulation, district heating, domestic CHP and biomass, new heating control systems; voltage performance optimisation units, heat stores, battery stores and heat recovery systems. There are also several projects trialling smaller complimentary technologies with the potential to reduce energy consumption or improve comfort. NEA are committed to ensuring the findings of this work feed into national policy making and where relevant this response draws on early learnings, as well as evidence from other programmes and initiatives.
5. In 2016 NEA announced that we would jointly fund the Big Energy Saving Network (BESN) along with the UK Government. The £1.7 million programme will support organisations to deliver a programme of outreach to vulnerable households and train frontline workers to tackle exclusion within the energy market and enable advisors to help vulnerable households make decisions about tariffs, switching, how to access the Priority Services Register and energy efficiency programmes.
6. NEA also has a long-standing interest in smart meters and their roll-out in Great Britain, particularly with regard to their impact on vulnerable consumers. NEA have completed a number of research projects into smart meters, including *Smart for All* (Phases 1 and 2) which looked at consumer vulnerability during the experience of smart meter installation on behalf of the UK Government and *An Extra Help Scheme for Vulnerable Smart Meter Customers* which interviewed stakeholders to assess potential models for delivering additional assistance during the roll-out for Citizens Advice.
7. More recently, to help directly overcome access, engagement and savings barriers NEA has become a consortium partner for the Smart Energy GB in Communities programme. The project aims to support vulnerable consumers throughout the smart meter rollout by working with local community based organisations to tackle exclusion in this national infrastructure programme. NEA is also currently delivering SMART-UP – a European Union-funded project – that is giving simple and effective tips on how to use IHDs and engage with its data to be able to consider the need or desire to make appropriate behavioural changes. As a result of this work, NEA welcome the fact that the call for evidence and highlights the need for the UK Government and industry to continue to prioritise the roll-out of smart meters alongside IHD to ensure the most is made of opportunities to end estimated bills, estimated energy usage and give households accurate information and advice they understand.
8. To understand the potential impacts of domestic demand side response NEA draws BEIS and Ofgem's attention to a project dubbed "The Customer-Led Network Revolution" (CLNR). This was funded as part of the first competition for the Low Carbon Network Fund (LCNF). The first element of the project focused around understanding current, emerging and possible future customer (load and generation) characteristics. Constructing a detailed understanding of customer consumption and generation profiles across a representative cross section of customer and demographic groups. The next phase focused on assessing to what extent customers are flexible in their load and generation, and what is the cost of this flexibility. This included testing different customer perceptions, such as static and dynamic time of use tariffs and direct control tariffs, for customers with different Low Carbon Technologies<sup>vi</sup>. The results were very mixed with over 40% of households failing to make any financial savings, mainly as a result inflexible energy use.

9. This highlights the need for further trials before any move to half hourly settlement is made mandatory. Half hourly settlement could however help better balance supply and demand but it is also clear the potential distributional impacts of the likely subsequent changes to tariff structures are currently unknown. In addition, how any impacts will be monitored by BEIS and/or Ofgem is not addressed clearly within the call for evidence, nor how different possible customer segments could be protected. Nor is it clear if Ofgem and BEIS intend to subsequently change current regulations to compel consumers who have a smart meter to provide their half hourly data to a supplier, rather than opt in.
10. This uncertain outlook also exists at a time when rules limiting the number of tariffs suppliers can offer is being opened up and it is unknown if the market will return to the previous proliferation of complex and confusing tariffs evidenced before the introduction of the Retail Market Reforms (RMR). This could make it very difficult for customers to benchmark and compare future Time of Use tariffs. More generally, it is not yet clear how the moves towards introducing Principle Based Regulation (PBR) will enhance current protections either, particular for vulnerable consumers and maintain the current minimum level of safeguards afforded under current licence conditions. In terms of future protection for vulnerable customers, as well as analysing potential distributional impacts and actively monitoring these risks, NEA suggests that if half hourly settlement is made mandatory the Priority Service Register (PSR) could be used as a mechanism to ensure the mass adoption of ToU tariffs does not negatively penalise low income and vulnerable households with inflexible energy demand services. A first step would be to ensure the PSR aligns with vulnerable customers' needs with regard to smart metering.
11. NEA also highlights a project entitled energywise<sup>vii</sup> which also seeks to investigate how distribution network operators (DNOs), in collaboration with a supplier, charity groups and local community actors, can engage with vulnerable customers in order to facilitate energy efficiency and potentially provide networks services. The project, which also received funding under Ofgem's 2013 LCNF competition, is led by UK Power Networks with NEA as a consortium partner. University College London is the lead academic research institution for the study and British Gas is the energy supplier providing the smart metering technology. Alongside our partners, NEA is working with over 300 social housing tenants in the London Borough of Tower Hamlets, and targeting those tenants who are in or near fuel poverty, the project explores opportunities for this customer group to participate in energy efficiency and demand side response campaigns. This involves, in the first instance, the provision of a smart meter, energy saving devices (eco kettle, LED lights, standby shutdown) and energy efficiency advice, and secondly, using a time-of-use tariff.
12. Early findings are particularly relevant to the necessary recruitment and engagement activities that need to be developed for an effective energy efficiency and demand side response campaign. The project has achieved a 40% response rate with door knocking the clear winning recruitment method accounting for 82% of the last interaction that led to the sign-up. Having team members who interact with the customers speaking at least one of the local non-English languages also helps start to gain trust with the target audience and ensure the benefits of the scheme are not restricted to those that have English as a first language. The study will also help electricity network companies understand how demand side response can sit alongside a wider role to deploy energy saving measures which also help manage peak demand and equally defer or avoid network reinforcement.

13. NEA has been involved in or is aware of a number of projects which demonstrate the potential of this new model and the opportunities in the future if DNOs are encouraged to become Distribution System Operators (DSOs). For example Solent Achieving Value from Efficiency (SAVE)<sup>viii</sup> was led by Scottish and Southern Energy Power Distribution (SSEPD) in the Solent and surrounding area. The project aimed to establish to what extent energy efficiency measures can be considered as a cost effective and predictable by quantifying theoretical expectations with investigating actual customer responses to a range of different technologies. In particular the trial compared the effectiveness of four energy efficiency measures (LED installation, data-informed engagement campaign, DNO price-signals direct to customers plus data-informed engagement, and community coaching). The project also produced an investment decision tool that introduces the deployment of energy efficiency measures as a solution to network constraints.
14. This followed the *Less is More*<sup>ix</sup> initiative which was led by Western Power Distribution who partnered with the Centre for Sustainable Energy to help communities reduce their electricity demand, especially at peak times so that less money was spent on upgrading substations. The project encouraged ten communities, “attached to” a monitored substation to consider their electricity use and find ways to reduce it and/or shift it to off-peak times, in return for up to £5,000. The project was presented as a solution to create savings for everyone, with reduced bills and reduced upgrade costs.
15. Outside of the LCNF, there have been other projects which have provided insights which can support the development of this model. The *Power Saver Challenge*<sup>x</sup> project aimed to extend the life of existing network assets by working with customers to reduce the amount of electricity they use, in return of a reward. Electricity North West Ltd worked with NEA in Stockport on a proof-of-concept, gathering 10 teams in a competition, to aim for the challenge of a 10% reduction in winter peak electricity compared to the previous year, and with the help of advice and energy-saving equipment. The aim was explicitly to test the feasibility of avoiding investment in an urban primary substation and extend the life of the existing asset.
16. NEA was also involved in a project entitled *Supporting Local Energy Efficiency as an Alternative to Network Reinforcement*<sup>xi</sup> with Agility ECO. This desktop study produced a report investigating the possibility to divert budgets currently allocated to Northern Power Grid’s load-related network upgrades on into local schemes that improve energy efficiency for those who need it the most. In the report this concept is explained fully and is referred to as Alternative Investment Strategy (AIS). Specifically, the report looks to analyse the “Size of the Prize” on Northern Power Grid’s network, the economic feasibility of investment in local energy efficiency and how this compares to conventional network reinforcement and practical feasibility.
17. The alternatives to reinforcement that may be appropriate could be encouraging a DNO/DSO to help replace inefficient electrically heated systems, provide a contribution towards connecting a household to a modern efficient district heating or gas network, help fund solid wall insulation or provide capital towards lighting improvements, low cost energy saving measures or battery storage alongside microgeneration. In order for these alternative energy efficiency projects to occur, first they must be located in similar locations to those places where the DNO is planning to invest in network reinforcement alongside areas with relatively high population density, high deprivation and high penetration of electrically heated housing. This means the opportunity to invest in these projects will not be evident in every instance and this ‘convergence’ may only occur in a smaller number of planned reinforcements a DNO’s may be planning on their network.

18. Another critical challenge for these alternative investments (and the key for delivering value to all energy customers, not just the direct beneficiaries of these measures) is that the contribution by the DNO to the cost of these projects would always have to be lower than the cost of the business as usual network reinforcement (a so-called 'Golden Rule'). However, complying with these criteria should not always deter a DNO from considering these approaches and taking a longer-term view of reinforcements to their network as potential exists for leveraging national or local energy efficiency programmes funds that can defray some of the cost of the in-house measures (should these exist)<sup>xii</sup>. Where the 'Golden Rule' criteria is met this would ensure the investment in energy efficiency is more cost effective; benefiting all energy consumers whilst also providing a direct social outcome for the recipients of the energy saving measures.
19. To further highlight the value for money of expanding this innovation activity into BAU, DNOs are incentivised to deliver ED1 outputs as efficiently as possible. The effect of this regulatory framework should mean that where a DNO makes a saving in the cost of their investments (by implementing the new DNO model); they get to keep a proportion of the saving, with the remainder returned to consumers. As noted above, provided the contribution by the DNO to the cost of alternative projects is always lower than the cost of the network reinforcement, DNOs can then look to this mechanism to incentivise the installation of alternate heating technologies or in-home energy efficiency to offset the need for network reinforcement<sup>xiii</sup>. However, due to a range of non-financial barriers (such as distrust of new approaches or the need for many parties to work together to pull through this opportunity) and a lack of reliable third party funds for domestic energy efficiency which would allow a DNO to 'piggyback' their investment alongside third party funds, consideration of alternative investments in energy efficiency is often still being overlooked. The consequence (or costs) of this inertia could be energy consumers paying for unnecessary reinforcement projects throughout the remainder of the distribution price control.
20. Beyond the current ED1 period, NEA would highlight the opportunity for BEIS and Ofgem to collectively press for DNOs/DSOs to undertake the following activities more consistently on their networks:
  - Identify ahead of time load related 'reinforcement hotspots' across their geographic territory
  - Obtain a forecast of the business as usual reinforcement costs
  - Establish an alternative cost-benefit analysis indicating which 'other actions' could be taken to either defer or mitigate the reinforcement need in an area entirely (through permanent electricity demand reductions, not demand shifting). This will require working with supportive agents to simultaneously assess the scale of electricity demand reduction potential within that area of the network and aggregate this potential
  - Identify complementary domestic energy efficiency activity that is also currently being planned within this area and match the initial alternative investments to this existing or planned activity within that area and approach the delivery partners (this latter element is critical because the most valuable role DNOs can play is simply to provide capital to an existing or planned project, rather than starting a new one)
  - Grade the potential aggregation of electrical demand reductions by prioritising electrically heated **domestic** customers on the basis that there are positive social impacts and wider benefits (reduction in local health costs etc)
  - Provide capital or develop projects which meet the 'Golden Rule' test set out below
  - Produce annual reports on the aforementioned activity.

### **Key recommendations and actions required:**

- I. The UK Government and industry must continue to prioritise the roll-out of smart meters alongside the in-home display (IHD) to ensure the most is made of opportunities to end estimated bills, estimated energy usage and give households accurate information and advice they understand
- II. These benefits must reach all customers so Ofgem should ensure, through the Smart Meter Installation Code of Practice, that the customer experience for installation provides for extra time for certain vulnerable customer groups to help them understand their new meter and how to get the most out of it
- III. NEA emphasises a careful and phased introduction of time-of-use pricing is critical to ensure tariffs do not impact unfairly on vulnerable consumers. Any requirement for consumers to adopt time-of-use pricing will penalise low income households that have inelastic energy usage and may need to maintain high demand at peak periods
- IV. NEA suggests the Priority Service Register (PSR) be used as a mechanism to ensure the mass adoption of Time of Use tariffs does not negatively penalise low income and vulnerable households with inflexible energy demand services. In addition the PSR must align with vulnerable customers' needs with regard to smart metering
- V. If further consideration is given to the trialling of alternative Distribution Use of System Charges (DUoS) charging methodologies for networks where there is a high percentage of local generation and local use (and low income consumers fail to benefit from these reforms) Ofgem should consider zero rating these charges for these customers
- VI. The UK Government and Ofgem must draw on the evidence from successful trials under the Low Carbon Network Fund (LCNF), the Network Innovation Allowance (NIA) or NEA's own TIF projects. This work highlights the scale of the opportunity to work with network companies and a range of other parties to ensure low income and vulnerable consumers can be early adopters of innovative measures when barriers are deliberately identified then mitigated
- VII. NEA urges the UK Government to encourage the National Infrastructure Commission (NIC) to continue to explore priorities within their National Infrastructure Assessment which prioritise domestic energy efficiency improvements. Currently the call for evidence doesn't fully recognise the opportunity to create a smart, flexible energy system which values improving national competitiveness by reducing energy demand.
- VIII. BEIS and Ofgem should work together to establish the contribution a smart, flexible energy system could play in helping to accelerate the UK Government's fuel poverty commitments in England<sup>xiv</sup> over the next 14 years as well as support the other UK nations to meet their own statutory fuel poverty targets<sup>xv</sup>

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<sup>i</sup> NEA has a network of offices throughout England, and also in Cardiff and Belfast which work to support low income energy consumers in Wales and Northern Ireland respectively. NEA also collaborate closely with our sister charity Energy Action Scotland (EAS). In addition, NEA's Warm Zones subsidiary community interest company has operated successfully since 2001 and in that time has helped more than one million households, delivered over 500,000 insulation and heating measures and provided welfare benefit advice and claims support which has resulted in increasing households incomes in excess of £50 million p.a. For more information on NEA please visit [www.nea.org.uk](http://www.nea.org.uk) or [https://twitter.com/NEA\\_UKCharity](https://twitter.com/NEA_UKCharity).

<sup>ii</sup> NEA's supporters are made up of energy efficiency installers, manufacturers, utility companies, Escos, gas and electricity network operators as well as other key actors such as local authorities, housing associations, health agencies, community groups and other voluntary sector agencies.

<sup>iii</sup> Smart power: A National Infrastructure Commission report, March 2016

<sup>iv</sup> The Energy Efficiency Strategy: The Energy Efficiency Opportunity in the UK, DECC, November 2012.

<sup>v</sup> These opportunities have begun to be responded to in other nations across the UK. The Scottish Government has announced that Scotland's Energy Efficiency Programme will be a "National Infrastructure Priority"<sup>v</sup>. This move has been emulated by the Welsh Government and the 'Infrastructure and Wales Investment Plan'<sup>vi</sup> which also aims to drive improvements in the energy performance of buildings and tackle fuel poverty<sup>v</sup>.

<sup>vi</sup> For all final reports and further information on the CLNR project visit the project website at <http://www.networkrevolution.co.uk/>.

<sup>vii</sup> For further information visit <http://innovation.ukpowernetworks.co.uk/innovation/en/energywise/>.

<sup>viii</sup> For more information visit: [www.smarternetworks.org/Project.aspx?ProjectID=1325](http://www.smarternetworks.org/Project.aspx?ProjectID=1325)

<sup>ix</sup> For more information visit: <http://www.lessismore.org.uk/>

<sup>x</sup> For more information visit: <http://www.powersaverchallenge.co.uk>

<sup>xi</sup> For more information visit: <http://www.northernpowergrid.com/downloads/1704>

<sup>xii</sup> In some instances, meeting the requirement to ensure the costs of an alternative project is always lower than the cost of the network reinforcement may not be feasible and therefore, justifiably, the aforementioned generic efficiency incentive would not provide a reward. This challenge may therefore result in DNOs being understandably reluctant to invest in any projects where the 'margin of feasibility' is tight. It is therefore important to understand how the regulatory regime incentivises a DNO to identify complementary energy efficiency activity that is already being planned or developed within an area. This is where the potential exists to 'piggyback' a DNO investment alongside 3rd party fund instead of making the investment entirely independently (albeit with the same intention of avoiding an unnecessary reinforcement of the network).

<sup>xiii</sup> Ofgem have also set out some clear requirements to improve the quality of information DNOs (or other parties) have access to about vulnerable consumers and request that there is a clear explanation of how this information will be used

<sup>xiv</sup> The Fuel Poverty (England) Regulations 2014 are now law.

<sup>xv</sup> The 2010 Fuel Poverty Strategy sets out a target to eradicate fuel poverty in Wales by 2018. The Housing (Scotland) Act 2001 requires the Scottish Government to eradicate fuel poverty in Scotland, as far as is practicable, by November 2016.