

Citizens Advice Scotland's response to the BEIS Call for Evidence on Facilitating Energy Efficiency in the Electricity System (September 2019)

Who we are

The policy teams at Citizens Advice Scotland (CAS) use research and evidence to put people at the heart of policy and regulation in the energy, post and water sectors in Scotland. We work with government, regulators and business to put consumers first, designing policy and practice around their needs and aspirations. We aim to represent the views of different consumer groups using evidence of consumer views and supporting research wherever possible.

CAS advocates on behalf of domestic and micro-business consumers on energy-related matter in Scotland, and although we are separately funded organisations, we work closely with our colleagues at Citizens Advice in this area. We therefore welcome the opportunity to respond to BEIS' Call for Evidence on how government might better facilitate energy efficiency in the electricity system. Our thoughts on this are not confidential and may be published in full.

Executive Summary

- The Capacity Market may not be the appropriate route by which to encourage investment in energy efficiency in the electricity market. However, CAS does not believe that the results of the Electricity Demand Reduction pilot definitively show that that energy efficiency is unable to compete in a Capacity Market, and more evidence is needed before firm conclusions can be made
- Notwithstanding the issues identified by the European Court of Justice, the Capacity Market in its current form places electricity demand reduction technologies such as demand side response, flexibility services and energy efficiency at a competitive disadvantage. Although it is proposed that emissions limits are to be introduced to the Capacity Market, these do not fully address this issue. CAS therefore believes that the Capacity Market should be improved to allow the whole system costs and benefits of a given intervention to be considered when assessing the value of bids
- CAS believes that the role of energy efficiency has been underplayed by government and is currently undervalued in the Capacity Market

- Reform of the Capacity Market should seek to take a whole system view of the whole life costs of a given intervention, where competing technologies such as energy efficiency and storage or flexibility services are also seen as complementary to one another
- Scotland has already committed to a net zero target by 2045, and routes to decarbonisation may differ from those employed in the rest of GB. Energy Efficient Scotland and, in particular, the development of Local Heat and Energy Efficiency Strategies, presents a sizeable opportunity to leverage Capacity Market funding for energy efficiency as a form of electricity demand reduction as part of a wider package of measures designed to meet the Scottish Government's climate change objectives

Questions 1 – 4

1. *Do you agree with the market barriers to energy efficiency investment described? Do you think there are additional barriers?*
2. *What are the ways we can overcome the market barriers to energy efficiency investment?*
3. *How can we leverage current markets to facilitate energy efficiency? For example, market flexibility technologies can access revenues from a variety of sources, such as the CM, National Grid Electricity System Operator (ESO) balancing services markets or Distribution Network Operator (DNO) tenders for alternatives to network reinforcement.*
4. *How can we create new markets for energy efficiency? Please provide suggestions on how to design the different mechanisms.*

Response to Questions 1 – 4

The GB Capacity Market (CM) auctions were initially designed to ensure the continuity of reliable electricity supply in a generation market that is increasingly reliant on intermittent renewable sources. CM auctions to date have resulted in numerous contracts being let to existing thermal generators and an increased reliance on fast-response, carbon intensive diesel-based power generation. However, they have also stimulated market interest in the development of storage and demand side response technologies which aim to reduce peak network demand.

Though the way in which the CM assesses the relative merits of these competing interventions has continued to favour new generation capacity over demand side reduction and energy efficiency, CAS notes the November 2018 ruling of the European Court of Justice (ECJ), which found that the government's approach to the CM has been unlawful. CAS

believes this provides an opportunity to fundamentally re-think the objectives of the CM auctions in view of the now-recognised climate emergency.

Until now, CM auctions have been assessed purely on the basis of their cost per kilowatt during times of network stress. However, while this methodology limits the short-term financial costs to consumers, it is now arguably outdated as it takes no account of the longer-term environmental costs of a given intervention (either in carbon or financial terms), nor does it consider the potential downstream effects on electricity transmission or distribution network operators. These 'hidden costs' are likely to result in added costs to consumers, both now and in the future. Recent proposals to integrate EU emissions limits to the CM are therefore welcome, but CAS notes that these were not designed with a view to achieving net zero targets. The government's proposals therefore arguably do not go far enough to address the environmental impacts of continued fossil fuel use in the CM, and they do nothing to address transmission or distribution network capacity constraints.

Though coherent strategies on how this is best achieved remain under development in all nations of GB, efforts to decarbonise heat and transport could lead to greater levels of electrification. Without significant investment in a range of energy efficiency measures, this is likely to increase overall demand for electricity. In turn, this would necessitate significant investment in new generation capacity and in the reinforcement of the transmission and distribution networks – all of which would represent costs that would ultimately be borne by consumers.

With coal-fired power generation due to cease by 2025, the net-zero credentials of biomass, CHP and natural gas reliant on carbon capture and storage (CCS) or carbon offsetting, and the future of nuclear uncertain, it also seems likely that GB will become increasingly reliant on renewable sources of power generation at all scales. The need for a net zero-compatible CM is therefore also likely to become ever greater.

If overall demand on the electricity transmission and distribution networks is set to increase, and with embedded generation capacity increasing year-on-year, electricity distribution network operators (DNOs) are likely to be faced with an increasing number of constraint management zones (CMZs), where active management of peak time loadings at specific substations is required to ensure reliability of supply. RIIO-ED2 provides an opportunity to incentivise DNOs to transition to distribution system operators (DSOs) in CMZs, and to encourage the taking of a holistic view to alleviating local network stress as part of 'business as usual' activities. However, it also provides an opportunity to encourage DNOs to take an Electricity System Operator (ESO)-level view of network capacity and demand such that the

wider system benefits of a given investment are appropriately considered. This would incentivise DNOs to invest in and/or support third party funding of electricity demand reduction interventions on their network outwith their CMZs, reducing the need for additional generation assets to come online at times of peak demand. While demand side response and other flexibility services can play a role in this, CAS believes that the role of energy efficiency has been underplayed by government, and is currently undervalued in the CM.

The government's Electricity Demand Reduction (EDR) pilot was notable for its focus on the replacement at scale of inefficient lighting units with more modern, less energy intensive equivalents – predominantly in large industrial, commercial and public sector environments. Despite this reliance on a relatively mature technology, the cost per kilowatt deemed necessary to support the trial when the relevant auction cleared was still more than 2.5 times that of the main CM auction cap in effect at the time, and more than 11 times the clearing price of the 2015 T-4 auction which took place 1 month prior to the auction for the EDR Phase II pilot.

Though the EDR pilot schemes collectively delivered a positive return on investment to both their participants and society as a whole, a comparison of the auction clearing prices reveals energy efficiency to be uncompetitive on price using current CM methodology. The higher maximum bid price of the EDR pilot was partially justified on the basis that energy efficiency improvements will deliver reduced peak network loads over multiple years, and thus a mechanism was required to align this with other CM participant technologies. However, a blanket assumption that energy efficiency could have competed in only 4 successive CM auctions – regardless of the interventions installed – appears to correlate poorly with the expected working life of many of the non-lighting energy efficiency improvements that could have been included in a CM auction bid. A greater degree of flexibility as to the multiplication factor applied when assessing bids, dependent on the technologies employed, may therefore help to provide a more equitable environment for energy efficiency to compete in the CM in future.

It is also noteworthy that the current design of the CM does not allow for a whole system approach to be taken when assessing the value of a given bid. Notwithstanding the points raised at the ECJ, this appears to disadvantage demand side response, storage and energy efficiency technologies in a variety of ways.

By definition, the CM requires generation assets to be mobilised only during periods of network stress. Normally, this is when demand for electricity is at its greatest. However, while bringing additional generation capacity online at such times solves the problem of

projected demand exceeding supply, it risks creating problems (and costs) elsewhere. Under current proposals, with no requirement for these generation assets to be net-zero compatible, relatively carbon intensive technologies such as diesel-powered reciprocal engines or open-cycle gas turbines (OCGTs) will still be able to provide a cheap and responsive source of power generation if they fall below the proposed emissions limits. However, their current or future environmental costs will not be considered.

In addition, if overall demand for electricity increases, meeting the peaks of that demand will require increasing levels of network reinforcement to provide the capacity for the transmission and distribution of this energy. Thus, while the CM might achieve a competitive per kilowatt price for peak demand electricity, considerable additional investment by the transmission and/or distribution networks may be required in order to get that electricity to where it is need. The whole system costs of providing relatively cheap additional generation capacity could therefore exceed the whole system costs of a demand side response, storage or energy efficiency solution.

While the benefits of additional generation capacity are limited to periods of network stress, energy efficiency also provides year-round benefits to the electricity network by reducing demand in both the peak and off-peak periods. Though the CM only looks at the benefits of a given intervention that arise in the peaks, this overlooks the cumulative benefits that energy efficiency offers when combined with other technologies, such as storage or demand side response. For example, by reducing off-peak demand, energy efficiency can create additional capacity for storage, smart electric heating solutions and off-peak EV charging on the distribution networks, with each of these technologies aiding a reduction in peak time demand that could result in fewer generation assets and/or fewer network reinforcements being required.

Reform of the CM should therefore seek to take a whole system view of the whole life costs of a given intervention, where competing technologies such as energy efficiency and storage or flexibility services are also seen as complementary to one another.

CAS notes that Scottish Hydro Electric Power Distribution Ltd. (SHEPD) has recently taken such a whole system view in their design of the Northern Isles New Energy Solution (NINES) project in Shetland, where large-and small-scale energy storage solutions, active distribution network management and the installation of smart, energy efficient heating systems at scale aims to significantly improve network reliability, improve the energy efficiency of the local housing stock, and reduce consumer bills, while also reducing dependency on fossil-fuel based power generation.

The electricity network in Shetland is unique in that it is totally isolated from the rest of the GB electricity transmission and distribution system. This allows the entire Shetland network to be considered as a CMZ and makes the benefits of taking a whole system approach to CMZ alleviation more obvious. However, CAS believes the approach adopted for the NINES project could be replicated in other areas of the country if funding could be leveraged from sources such as a reformed CM to incentivise the taking of such a holistic view. DNOs could also be incentivised in RII0-ED2 to support the development of commercially-driven third party energy efficiency projects where they meet an ESO-level (rather than just a local CMZ) need.

Questions 5 – 10

5. *What can we learn from other countries' electricity systems from an energy efficiency perspective?*

CAS does not take a view on this.

6. *How could networks ensure that energy efficiency can compete fairly with other solutions as a potential alternative to network reinforcement?*

CAS believes that DNOs should be taking a holistic view to CMZ alleviation measures as part of their 'business as usual' activities in RII0-ED2. However, with the next price control still in early development, we believe that DNOs could also be incentivised to take an ESO-level view to their investments. See also our response to Questions 1-4, above.

7. *Are there potential benefits from combining energy efficiency and flexibility? How can we maximise these benefits?*

CAS believes that the NINES project currently under development in Shetland serves as an interesting case study to the potential benefits of combining multiple technologies to meet electricity network capacity demands. Though NINES is technically a CMZ alleviation effort, the cumulative benefits of the whole system approach adopted by SHEPD in this example would appear to be equally applicable if an ESO-level view to demand management were to be taken in other areas of the country.

Heat is a devolved issue and in Scotland the development of LHEES is likely to present a sizeable market to CM participants offering energy efficiency solutions as part of a wider package of electricity demand reduction technologies. As routes to decarbonisation may

differ between Scotland and the rest of GB, the market conditions for energy efficiency technologies may differ significantly from those elsewhere.

8. *What is the role of aggregators?*

CAS notes that in the EDR pilot, some of the greatest NPV was achieved via multi-site projects co-ordinated by an aggregator. Given the high level of administrative burden imposed by the CM and the relatively small reductions to overall energy demand to be gained through individual energy efficiency measures when compared to other CM participant technologies – particularly in the domestic and micro-business areas of the market – CAS agrees with the authors of the EDR pilot final evaluation report in that aggregation service providers are likely to play an important role in encouraging energy efficiency uptake at scale. However, we would be concerned if lessons from the Green Deal were not learned in terms of consumer protection.

The Scottish Citizens Advice Bureau (CAB) network continues to hear evidence of consumer detriment arising from aggressive or misleading sales and/or marketing activities undertaken by some Green Deal participants. Aggregators – and indeed CM participants more widely – offering energy efficiency solutions and/or flexibility services to domestic and microbusiness consumers may therefore need to be encouraged to partner with a trusted body such as a DNO or local authority in order to encourage consumer confidence in the legitimacy of the technology being offered, with the partner agency held liable for ensuring the consumer interest is met.

9. *How should we best align with existing policies, particularly those referenced in section 2.4?*

CAS notes that while regulations relating to the private rented and owner-occupied domestic housing sectors in England and Wales are referenced in section 2.4 of the Call for Evidence, there is no mention of the efforts of devolved administrations in these areas.

In Scotland, energy efficiency is a national infrastructure priority. As detailed below, the Energy Efficiency Standards for Social Housing (EESH) already place an obligation on social landlords in Scotland to improve the energy efficiency of the majority of housing stock in the social rented sector to a minimum standard of energy efficiency by 31 December 2020.

EESHS minimum ratings for 2020: homes heated by gas or electricity

Dwelling type	SAP 2009		SAP 2012	
	Gas	Electric	Gas	Electric
Flat	69	65	69	63
Four-in-a-block	65	65	65	62
House (other than detached)	69	65	69	62
Detached	60	60	60	57

EESHS minimum ratings for 2020: homes heated other fuels

Fuel	All Dwelling Types	
	SAP 2009	SAP 2012
Oil	54	47
LPG	63	59
Solid Fuel	63	60
Biomass	64	65

By 2025, it is proposed that these standards are tightened such that no home can be let in the social rented sector in Scotland if it does not meet a minimum energy efficiency rating of EPC band D, and by 2032 it is proposed that the majority of homes in the social rented sector will be rated EPC band B or better.

From 2020, the Scottish Government’s Energy Efficient Scotland (EES) program will also begin to introduce a variety of measures to support and encourage property owners in the private rented and owner-occupied housing sectors to make energy efficiency improvements to the rest of the domestic housing stock in Scotland. It is therefore intended that that by the mid-2030s, all homes in Scotland will meet a minimum energy efficiency rating of EPC band C where this is technically feasible and can cost effective.

Regulations will also be brought forward to support and encourage investment in energy efficiency in the non-domestic sector, such that by 2040 all buildings in Scotland will be considered energy efficient.

The Scottish Government has also launched a series of Local Heat and Energy Efficiency Strategy (LHEES) pilots. When fully rolled out, it is intended that LHEES will place a statutory duty on Scottish local authorities to develop and deliver community-focussed strategies to

improve energy efficiency and maximise the use of renewable and waste heat across multiple sectors. In support of this, the Scottish Government has developed the Scotland Heat Map, which combines an array of datasets that collectively show the totality of existing heat demand and production in Scotland, and opportunities for energy generation and supply.

CAS believes that the various components of EES create multiple opportunities for leveraging external funding in energy efficiency as part of a whole-system view to decarbonisation and overall electricity network capacity management. We also believe that a reformed CM could allow interested third parties to secure gap funding that would allow investment in energy efficiency at scale as part of a wider package of measures designed to meet the needs of local LHEES objectives. However, with our CABs continuing to report cases of consumer detriment arising from the government's flagship Green Deal program, we would also caution against creating a market where aggressive or misleading sales and marketing techniques could lead to adverse consumer outcomes. CM participants offering energy efficiency solutions may therefore need to be encouraged to partner with a trusted co-ordinating body such as a DNO or local authority to drive consumer engagement and ensure the contracted savings are met.

10. *Should we support behaviour change? If so, should it be supported in the same way as energy efficiency, which requires installation of measures?*

CAS recognises that behaviour change will be essential to maximising the benefits of technologies such as flexibility services and the move to an increasingly electric future. We believe this will only be achieved if a holistic approach is adopted that includes public, private and third sector participants.

Citizens Advice Network in Scotland

Citizens Advice Scotland (CAS), our 59 member Citizen Advice Bureaux (CAB) and the Extra Help Unit, form Scotland's largest independent advice network. Advice provided by our service is free, independent, confidential, impartial and available to everyone. Our self-help website Advice for Scotland provides information on rights and helps people solve their problems.

In 2017-18 the Citizens Advice Service network helped over 295,100 clients and dealt with almost 800,000 advice issues for clients living in Scotland. With support from the network clients had financial gains of almost £142.2 million and our self-help website Advice in

Citizens Advice Scotland

Broadside, 2 Powderhall Road, Edinburgh EH7 4GB



Scotland received approximately 3.2 million page views. On energy consumer issues in particular, we advised on over 41,000 energy-related issues in 2017-18, generating over £1.8m in client financial gain¹.

Our extensive footprint is important in helping us understand how issues impact locally and nationally across the country and the different impacts that policies can have in different areas.

¹ https://www.cas.org.uk/system/files/publications/cas_energy_advice_detail_2017_18_published.pdf

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