BEIS Electricity Systems Team
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11 January 2017

Dear BEIS & Ofgem,

Thank you for the opportunity to respond to the Smart and Flexible Energy call for evidence.

Regen welcomes this call for evidence as an important step in enabling the development of a smarter and more flexible energy system.

The shift to decentralised, flexible and clean energy is a key priority for Regen and we have led a number of trials and projects. We have focused our response, therefore, on lessons from this work including:

- Project managing the Sunshine Tariff time of use tariff trial.
- Papers on: "Network Charging for a Flexible Future", "Storage: Towards a Commercial Model" and "Local Supply".
- Chairing the community workstream of the Smart Grid Forum, running a workshop on the this call for evidence with BEIS and Ofgem (focused on local approaches) and two workshops with DNOs and community and local energy stakeholders on "Innovation and Community Energy".

Yours sincerely,

Merlin Hyman
Chief Executive

Regen response to the BEIS and Ofgem call for evidence on "A Smart, Flexible Energy System"

Introduction

Energy generation, use and supply is going through a period of rapid change.

There has been an explosion of deployment of distributed generation since the introduction of the Feed in Tariff. Regen's database records there are now over 700,000 renewable energy projects in England and Wales.

Disruptive technologies like battery storage and electric vehicles are becoming commercially viable. New communication and big data technologies combined with smart meters are enabling smarter approaches to balancing supply and demand.

These technologies enable greater flexibility in our energy provision which are vital to decarbonising our energy, minimising costs for consumers and maintaining energy security.

Developing a smart and flexible energy system should be at the heart of the UK's energy strategy.

The call for evidence is, therefore, a key moment in the future of our energy provision.

Summary of Recommendations

- clarity on introducing a new definition and licencing system for storage should be an urgent priority;
- instances of double charging for storage identified by the call for evidence should be resolved quickly;
- storage shouldn't be treated as generation in the planning system. National best practice planning guidance should be developed that addresses specifically the issues associated with battery storage to enable high quality local planning authority decision making;
- BEIS and National Grid should provide clarity on the scale and timing of commissioning future balancing and auxiliary services. The specification and procurement of these network services should enable energy storage providers to compete and to 'stack' revenue streams efficiently;
- Ofgem should not enact the proposed code modifications for embedded benefits as outlined in the "Open Letter" and instead carry out a holistic review of network charging to ensure the price signals on the network support the move to a smart and flexible energy system;
- Ofgem should actively support suppliers introducing half hourly settlement of domestic customers to enable the development of innovative tariffs;
- BEIS should provide support and funding for local groups to work with vulnerable customers on smart meters and appliances;
- industry standards and a certification scheme are needed for the domestic storage, smart meter and smart appliance market.

- the role of local energy markets and the link to non traditional supply models should be clearly recognised by BEIS and Ofgem. A core principle of the design of Distribution System Operator (DSO) market platforms for flexibility or development of local balancing units should be enabling a wide variety of market participants to participate, including those with less expertise in the energy market.

1) Policy and regulatory barriers: enabling storage

In our recent paper "Energy Storage: Towards a Commercial Model" we set out our view that energy storage is poised to achieve substantial market growth and to make an important contribution to the overall UK energy system. We consider the government energy strategy should be targeting a minimum of 10 GW additional energy storage by 2030 in addition to measures to encourage DSR and interconnection. But, for this to happen, greater alignment between energy storage technologies, the regulatory framework and revenues and costs is required.

We, therefore, welcome the detailed assessment in the call for evidence of how storage can better be addressed in the energy market.

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2) Providing price signals for flexibility

Regen agree that accessible markets and pricing that reflects the true system value of flexibility will be critical to enabling the delivery of a smart, flexible system.

Network charging for a flexible future

The charging regime has a key role to play in: encouraging the most efficient use of the networks; enabling the decarbonisation of the power system; and providing continued security of supply at the lowest cost.

This section of the Call for Evidence focuses only on distribution tariffs. We believe that any review of charging should consider the full scope of all grid charging mechanisms at both a transmission and distribution network level and how they interact.

The current review of 'embedded benefits' is an example of focusing on one area of charging only. This has already had a very negative impact on investment in flexibility.

We propose that a review of network charging should be underpinned by the following principles:

- Be cost reflective and support competition
- Incentivise long term reductions in network costs
- Ensure that grid charging is aligned with other energy policies to meet the UK government's long term decarbonisation and energy security objectives
- Support innovation and the development of new technologies and competitive business models
- Encourage network balancing by strengthening the appropriate locational and temporal signals while retaining, as far as possible, the principle that charging reflects the true cost of the network
- Ensure the charging regime is transparent and charges are visible to all customers
- Changes are made in open consultation with all stakeholders and not subject to vested interest – the use of Ofgem code modifications to make significant tariff and methodology changes, and the current system of consultation through standing committees, is not appropriate for the open and transparent governance of the future energy system

- A holistic approach is taken, specifically any review should:
    - Ensure that the method of network charging and embedded benefits recognises the long term value of flexibility within the energy system
    - Consider the full scope of all grid charging mechanisms at both a transmission and distribution network level and how they interact
    - Strike an appropriate balance between charges levied on generation and those on demand
    - Support increased integration via interconnection with European energy networks and the need to harmonise grid charging to facilitate this.

See our report, 'Network charging for a flexible future', for further information.

Recommendation: Ofgem should not enact the proposed code modifications for embedded benefits as outlined in the "Open Letter" and instead carry out a holistic review of network charging to ensure the price signals on the network support the move to a smart and flexible energy system.

Smart tariffs

Time of use charging has the potential to recognise the value of flexibility. Regen's experience running a trial of a smart tariff suggests that such tariffs can lead to significant demand reductions contributing to reductions in peak generation or demand on the network. However, the response to such tariffs is not yet sufficiently reliable to address specific local network constraints.

Regen has project managed the Sunshine Tariff trial that developed and tested the feasibility of an 'offset connection agreement', which would enable generation customers to connect to the grid on the basis that they could change the pattern of local demand on the network to offset the power generated. The trial involved looking at the feasibility, take-up and response to a time of use tariff offering cheap electricity between 10:00-16:00 in the summer months.

A feasibility study was carried out early in the trial to explore whether a Sunshine Tariff would be commercially viable in current markets. See the 'Sunshine Tariff: Feasibility report' for more information (to be published February 2017).

The study concluded that such a tariff was viable as time of use tariffs already exist on the market, such as Economy 7, which use a combination of increasing the peak tariff to compensate for a lower off-peak tariff with reflecting lower costs from both wholesale prices and distribution use of system (DUoS) charges. The supplier of the Sunshine Tariff, Tempus Energy, settled all of its customers on a half hourly basis, which enabled it to take advantage of fluctuating wholesale prices and DUoS charges.

The potential for a subsidy on top of existing methods to bring off-peak tariffs down could have made the Sunshine Tariff not only viable, but attractive and competitive in the current market. Sources of funding identified for a subsidy were:

- Avoided network reinforcement costs to both the developer and DNO. Estimation of the potential contribution from the generator is a subsidy of 1p/kWh
- The value of being able to connect and generate for a developer that would otherwise find the reinforcement costs prohibitive is estimated to be worth 1p/kWh (depending on market conditions)
- The value to the supplier of community buy-in was estimated to be worth approximately £50 per household.

The study also looked at the Sunshine Tariff model in future markets and found that there was potential for further funding streams to support the reliability and sustainability of a Sunshine Tariff. These future funding streams included:

- Bilateral contracts between either the supplier or generator and the future DSO to pay for system balancing services
- Lower DUoS charges where there is reduced pressure on the distribution network through local balancing and/or time of use that supports load flattening
- Reduced line loss factors (LLFs) where energy is balanced and used locally.

With regard to the take-up of the tariff, recruitment proved more challenging than expected. Learning from recruiting for the Sunshine Tariff suggests that some external factors might need to change for domestic demand side response to become more attractive to customers:

- All customers will need smart meters and ideally be half hourly settled
- Switching suppliers needs to be faster, more efficient and better understood
- Households will need to have more flexible loads
- Some households will require greater automation
- The value of the benefits felt by the DNO/DSO need to be reflected in the price.

The quantitative data indicated that participants on the Sunshine Tariff shifted 10 percent of their demand on average into the Sunshine Tariff period compared to the control. It also demonstrated that customers with automated control technology were able to shift 13 percent compared to 5 percent for those without. And the larger energy users tended to have more flexible load, such as a

hot water immersion system or electric vehicle, and as a result were able to shift 18 percent of their daily demand into the 10:00-16:00 period. Therefore, as smart appliances and energy storage become more widespread, customers will be able to benefit more from time of use tariffs.

The findings also suggest that those that are more engaged in energy issues are more likely to sign up to demand side response schemes. This suggests that a price incentive alone is not enough and that education will need to accompany the introduction of time of use tariffs and automated control technology.

Recommendation: Ofgem should actively support suppliers introducing half hourly settlement of domestic customers to enable the development of innovative tariffs.

3) A system for the consumer: enabling local trusted intermediaries

In Regen's work we have encountered considerable doubts about smart appliances from some consumers. These concerns are particularly around data security.

This gives rise to two challenges. Firstly, some of the potential of smart and flexible energy for the system may be missed if consumers are reluctant to engage with smart meters, appliances or vehicle charging. Secondly, vulnerable customers in particular may miss out on the benefits of smart appliances to reduce their own energy bills.

Regen carried out a survey in Wadebridge, Cornwall, which showed that consumers were more likely to trust advice on these issues coming from local community energy groups than from suppliers or other market players. The role of trusted local intermediaries needs to be considered as part of taking forward the call for evidence.

Recommendation: provide support and funding for local groups to work with vulnerable customers on smart meters and appliances.

Recommendation: industry standards and a certification scheme are needed for the domestic storage, smart meter and smart appliance market.

4) Roles and responsibilities: local approaches to a smart, flexible energy system

Regen agrees with the need for a whole system approach and the move towards a DSO model. However, we think the range of participants envisaged in the call for evidence is too narrow.

The National Infrastructure Commission "Smart Power" report found that "Most of the potential for storage and demand flexibility will be embedded in local networks".

The move to DSOs is, therefore, an important step in operating the system at a local network level. DSOs, however, need to ensure that the ways they access flexibility on local networks enable a wide range of participants.

A number of localities are considering the potential for local energy markets that could aggregate and balance supply and demand. These markets could be linked to providing flexibility to the local network operator to tackle constraints on the local network. Trials like The Sunshine Tariff trial and Energy Local are testing elements of these approaches and a new Local Energy Market project has been launched in Cornwall.

Ofgem also has a work programme on enabling non traditional business models for energy supply which could and should link to the development of local energy markets. Regen set out the current options in a paper with law firm Stephens Scown "Local Supply: Options for Selling Your Energy Locally".

Given these new local energy market and local supply models are emerging it is important their role in the energy market is clearly set out. They could, for example, play a role in local balancing units or respond to market platforms created by DSOs.

The workshop Regen held with BEIS and Ofgem on the 29th November on local approaches to the call for evidence found 1) a strong appetite amongst local authorities, community energy organisations and the private sector to have a role in aggregating flexibility at a local level and 2) a call for market platforms or other ways of pricing the value of flexibility to be open to a wide range of market participants, including local communities.

Recommendation: the role of local energy markets and the link to non traditional supply models should be clearly recognised by BEIS and Ofgem. A core principle of the design of DSO market platforms for flexibility or development of local balancing units should be enabling a wide variety of market participants to participate, including those with less expertise in the energy market.