

Energy Networks Association – Open Networks Project – Flexibility Consultation 2020

Response on behalf of the Solar Trade Association

About us

Since 1978, the Solar Trade Association (STA) has worked to promote the benefits of solar energy and to make its adoption easy and profitable for domestic and commercial users. A not-for-profit association, we are funded entirely by our membership, which includes installers, manufacturers, distributors, large scale developers, investors, and law firms.

Our mission is to empower the UK solar transformation. We are paving the way for solar to deliver the maximum possible share of UK energy by 2030 by enabling a bigger and better solar industry. We represent both solar heat and power, and have a proven track record of winning breakthroughs for solar PV, storage and solar thermal.

Respondent details

Respondent Name:	Cam Witten (Policy Manager) Kevin McCann (Senior Policy Analyst)
Email Address:	cwitten@solar-trade.org.uk kmccann@solar-trade.org.uk
Contact Address:	Chapter House, 22 Chapter St, Westminster, London SW1P 4NP
Contact Telephone:	0203 637 2945
Organisation Name:	Solar Trade Association
Would you like this response to remain confidential?	No

Summary

We welcome the opportunity to respond to the Energy Network Association's (ENA) Open Networks Project Flexibility Consultation. Our goal is to ensure the deployment of 40 GW of solar capacity in the UK by 2030 as part of residential, commercial, and utility power markets. We know that flexibility services will be essential to enabling greater penetration of variable renewables on the network to achieve the Government's net zero objectives, and our recent research¹ has shown that residential flexibility alone could provide 12 GW of storage capacity. This would offer approximately 40 GWh of system balancing dispatch.

The potential for commercial and residential storage to participate in the UK's emerging flexibility markets is therefore clear, and we support all efforts to ensure this is realised, in particular via the aggregate impact of domestic prosumers. The ENA, and DNOs, can play a key role in this in four ways:

¹ <https://www.solar-trade.org.uk/wp-content/uploads/2020/07/Smart-Solar-Homes.pdf>

- By addressing structural issues, such as connection boundary charges. In our view, these penalise flexible generation developers unfairly, and disincentivise investment in renewable generation.
- By working with and encouraging Ofgem to set clear decarbonisation targets for flexibility markets, and to prioritise access to the grid for green flexibility, such as by developing incentives or requirements for the procurement of green flexibility over fossil fuel flexibility.
- By providing high-level support, from a distribution network perspective, to initiatives to address consumer finance and building regulations issues. This will help maximise the aggregate impact of flexible residential generation.
- By helping to overcome information barriers which make market analysis more difficult. These prevent potential investors in flexibility assets of < 1 MW from understanding where opportunities lie.

We provide more detail on the potential of solar-powered residential flexibility in our response to Q1, and develop specific responses to questions 9, 11, 16, 17 and 18 below.

Thank you for taking our responses into consideration.

STA Responses

Q1 – Do you agree with our proposals within this consultation paper and if not, please provide us with any rationale and alternative proposals? This feedback can be generic to our proposals or provided on a product by product basis.

We strongly support work to increase flexibility in the UK's power networks and develop a smart grid. Battery storage not only provides frequency and balancing services but can also reduce the strain on already congested networks and minimise or defer the need for costly network upgrades.

Our research shows that solar-enabled residential flexibility can and must play a central role in delivering the UK's net-zero ambitions. Delivering 4.4 million 'Smart Solar and Storage' homes – which include rooftop PV self-generation, domestic storage, and intelligent controls – would enable the UK's housing stock to eliminate the evening peak demand on a typical winter's day. 4.4 million homes would provide 12 GW of storage capacity, which would offer approximately 40 GWh of system balancing dispatch. On an annual basis, these homes could reduce peak demand consumption by 97%, while smart solar homes with a 20kWh battery could enable individual homes to come off the grid all day, or provide flexibility services.²

Furthermore, the rapid response time of domestic solar PV and battery storage systems means they can react swiftly to electricity supply issues. Modern solar PV and battery inverters offer frequency regulation response, similar to that usually provided by natural-gas-fired peaker plants. Compared with the principal technology used to balance the electricity system today, pumped-storage hydroelectricity, the distributed nature of storage – which can co-locate with generation assets near key demand sources at all scales – means that resilience is built into the system from the bottom up, where it is needed.

² For more detail on the contribution Smart Solar Homes can make to delivering UK net zero, see <https://www.solar-trade.org.uk/wp-content/uploads/2020/07/Smart-Solar-Homes.pdf>.

Q9 – What challenges are flexibility providers currently facing in respect of baseline requirements?

A major concern repeatedly raised by our members relating to flexible generation projects is unaffordable connection costs. These are holding back the decarbonisation of our energy system. Addressing these costs would remove a major barrier to renewable generators participating in flexibility markets.

Our preferred solution to connection cost distribution is to move to a shallow connection charging boundary. This would remove the barrier presented by upfront costs, enable faster decarbonisation of the network, and create parity between the transmission and distribution charging arrangements, thereby reducing distortions created by different charging regimes.

One of the key issues to consider is how to address the interaction of connection charging boundaries with sites with flexible connection agreements, and how this could be beneficial in mitigating the operating costs of new sites with Active Network Management (ANM) arrangements. For existing sites with ANM connections, a major concern is managing the impacts of curtailment on revenues and operating costs.

Q11 – Are there any other key aspects Open Networks should consider when investigating potential methodologies?

One issue we would like to clarify relates to the proposal to procure flexibility services through tenders, which may mean that asset owners will not be able to rely on potentially unpredictable flexibility revenue to justify their investments. This could in turn lead to investors requiring a higher return, to reflect the higher risk, or a situation where only existing, viable projects apply. As these will in general be fossil fuel based projects – which are viable on their existing revenue models – this means that there is a real risk of this harming the aim of increasing investment in new low-carbon capacity. New assets will not be built to participate in flexibility services, and so instead they may offer only an upside to older, carbon-based projects. Given the goal of flexibility should be to make progress on decarbonisation, the potential outcome of incentivising prolonged usage of fossil fuel assets is concerning. We would welcome further information on the ENA's analysis of potential investment dynamics relating to this.

In addition, DNOs and National Grid need to ensure they work together to manage constraints on flexibility. There is a risk of DNOs defaulting to a flexible connection at all times, with no actual investment in the network. This would cannibalise generation, favouring higher capacity factor technologies and creating a barrier to net zero. It will be difficult to ensure that solar power in one part of the country and wind power in another can reach a third area of the country if flexibility is managed on a regionalised (ie DNO) basis.

Q16 – Please provide feedback on the identified barriers and proposed recommendations and which of these recommendations should be prioritised in any future scheduled development work in the Open Networks Project?

We would like to highlight an additional, informational barrier to the deployment of flexible generation. This is the need to improve the coverage of Embedded Capacity Registers (ECRs) to include all sites of 50 KW and above. We applaud the publication of the first iteration of ECRs, which will be a valuable tool to help demonstrate the growth in UK renewable generation. However, the current register only includes assets of > 1 MW.

As noted above, our members have said that the major obstacle to the further deployment of renewables in Great Britain is a lack of affordable distribution grid connections, and constraints on physical capacity are of course the immediate limiting factor. However, it appears that many DNOs do not have a sufficiently detailed understanding of what is connected to their networks and where. This hampers market analysis and investor confidence in smaller assets, which are not sufficiently visible. It therefore becomes a self-fulfilling barrier to generating support for network reinforcement, premised on the cumulative capacity of multiple smaller assets, and the new connections that would facilitate the integration of onsite renewable generation.

Q17 – Do you have any ideas on how we might better engage and encourage participation of residential flexibility in flexibility service provision? Can you identify any barriers that might currently exist, along with potential solutions?

The potential of residential solar is by its nature based on aggregating the contribution of millions of small-scale assets installed in homes and small businesses. As such, many of the barriers are related to consumer finance, for retrofit, and building regulations, for new builds.

However, consumers are not best-placed to advocate for the system-wide policy changes that would enable (and incentivise) behaviour change, such as the take-up of new products which will be crucial to flexibility markets. These include, in particular, time-of-use tariffs. The ENA and DNOs therefore have an important role to play in signalling to government and industry the importance of broader policy changes relating to green finance, energy markets and construction sector standards.

The ENA should highlight the following targets in all its policy engagement, and ensure a mandatory part of the flexibility market development process is to consider how flexibility proposals reflect these priorities:

- Ensuring that all new build housing developments are smart homes (homes which include solar generation, storage capacity, and intelligent controls). This would help deliver the potential for residential flexibility by default. Building regulations must be set to incentivise onsite solar generation and energy storage, with an underlying Standard Assessment Procedure, updated on a regular basis to keep pace with technology.
- Developing strong standards and protections for consumers and the grid relating to smart home technology. From a network perspective, a type testing and certification scheme for all electrical energy storage devices should be used to negate the need for witness testing by Distribution Network Operators (DNOs). All devices must achieve relevant safety and electrical standards, and there should be management of a device register and testing requirements, with an accrual of benefits only for devices with MCS certification.
- Maximising consumer flexibility through the development of a competitive smart tariff market, with fully functional metering in place, and guaranteed interoperability for consumers.
- Ensuring that Ofgem's remit includes specific net zero targets, which it does not at present. DNOs can encourage revisions to Ofgem's remit to ensure the development and implementation of the RIIO-T2 and RIIO-ED2 price controls, which are central to enabling the transition to clean energy. Ofgem must fundamentally realign the business drivers of Transmission System Operators (TSOs) and DNOs with the objectives of securing a lowest-cost, low carbon, flexible and secure power system.
- Engaging with and encouraging Ofgem to prioritise access to the grid for green flexibility. Incentives or requirements for the procurement of green flexibility over fossil fuel flexibility, including equal access and incentives for smart home smart participation in local flexibility markets, would send a market signal for investment in clean generation capacity. This would in turn encourage suppliers to offer time-of-use energy tariffs, as consumers would be able to realise the full potential of smart solar homes, which can automatically respond to price signals and adjust energy behaviour accordingly.

Q18 – Do you have any ideas on how we might better engage and encourage feedback and input from stakeholders (including non-traditional energy market participants)?

We represent the entire value chain of the UK solar industry, and host regular working groups with key industry sectors relevant to flexibility markets. These include residential, commercial, and industrial PV and storage installers, developers, and asset managers. We would be happy to extend an invitation to a representative to the ENA to

present to one of our working groups as the basis for further engagement. It might be particularly helpful to organise a forum for domestic installers to interact directly with the ENA on these topics. This is the industry sector which will be responsible for actually delivering the domestic energy storage systems which will provide the physical asset base for residential flexibility markets.

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