

# A smart, flexible system: Call for evidence

## RenewableUK priorities

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### Executive Summary

RenewableUK strongly supports the ambition shown in this call for evidence from BEIS and Ofgem. We are pleased to see close collaboration to ensure that the transition to a smart energy system will be achieved in a timely and cost-effective manner.

It is urgent that the transition to a smart and flexible system is supported by a suitable policy and regulatory framework. The renewables industry believes with the sector, from the System Operator to disruptive new demand side actors, that the inevitable trajectory of changing technologies, markets and behaviours is for a smarter, more flexible system. Government needs to act to make sure this transition is delivered without disruption or cost to consumers and to ensure that it can generate the most value from the change.

Our key priorities are therefore as follows -

1. The Spring 2017 Plan should reflect the energy system as three, closely interrelated energy markets. All participants should be incentivised to offer multiple services across all three markets. The Government's vision for a subsidy-free investment signal and the required revenue stabilisation measures for new generation are a crucial pillar to its overall strategy for a smart energy system, not a distinct issue.
2. The Plan's objective must be to create a fair and level-playing field for *all* flexibility providers through reform that is technologically-agnostic. A focus on changes for specific technologies will not create the best value for consumers.
3. A smarter system will require a significant increase in the volume of ancillary service provision and the number of participants providing it. This requires formalising the ancillary services market towards a rationalised basket of clearly defined services in place of the presently large number that often overlap. Procurement of these ancillary services should move from opaque processes to open and transparent tendering that is regular, predictable and fully accessible to non-traditional flexibility providers.
4. In line with this, the Spring 2017 Plan must have stronger ambition for the role of renewable generators in providing flexibility services – thereby expanding the number of participants contracted with the SO across a large range of services, increasing competition and thus cost-competitiveness of flexibility service procurement as well as making the most use of existing as well as new assets.
5. Network charging and service procurement should be consistent across all voltage levels. The Spring 2017 Plan needs to reflect and coordinate very closely with National Grid's Network Charging Review.
6. There is a clear need for much stronger coordination between a more independent SO and the equivalent role at the distribution level - in the case of basic network planning and in procurement of new services immediately but leading to much deeper coordination in the long term.

7. BEIS and Ofgem need to demonstrate they are actively programme managing this large body of work. The Spring Plan 2017 must set out a clear timetable for the actions arising, their interdependencies and how these will be managed by BEIS and Ofgem as well as set out the performance metrics by which progress is measured and the type of actions that will be taken in case it is less efficient than expected.

## Introduction

RenewableUK is the leading trade association in the renewable electricity sector, representing over 440 organisations across the value chain in the wind, wave and tidal stream industries. In 2015, these technologies generated 11% of the UK's electricity needs, which represents 52% of the total electricity generated by all renewable technologies last year.

In the following, RenewableUK has not addressed the following sections as outside of the business activity of its members:

- Removing barriers: Aggregators [qu. 7-10]
- Price signals for flexibility:
  - Smart tariffs [qu.15-18]
  - Other Government policies – Further changes to CM [qu. 26]
- A system for the consumer: All sections [qu. 28-42]

## Approach

RenewableUK strongly supports the publication of this call for evidence on flexibility and particularly its overall aims – namely, effective competition across all markets, and improved visibility for buyers and sellers of flexibility, security of supply and innovation.

To achieve these, we believe it is crucial that a few principles are adhered to.

Firstly, there must be a fair and level-playing field for all flexibility providers. In practical terms, this requires moving away from the approach taken at times in this consultation of adapting system aspects to the assumed behaviour and commercial arrangements of storage, aggregation and DSR. Instead, we should focus on incentivising valuable behaviour regardless of the technology providing it. For example: the question of whether storage should jump the queue where there are local network constraints takes the former approach if it assumes that a storage installation per se should be considered. If it considers whether the connection agreement and network charging ensures it will relieve network constraint, it takes the latter.

There is a marked lack of ambition regarding the contribution renewable energy generators can make to flexibility services – both through storage co-location on the considerable fleet of existing assets but also through their own significant technical capability. The use of the existing fleet of renewable generation (with or without storage) for ancillary service provision should be seen as a significant and relatively easy way to increase the number of participants and volume of provision to which network operators have access.

This call for evidence does not address the Government's vision for the characteristics and role of an investment signal for low carbon generation within such a smart, energy future. The Spring 2017 Plan should set out a clear vision for understanding the energy system as three increasingly interrelated markets (wholesale, capacity and ancillary) across which all participants are expected and incentivised to offer multiple services where they can provide value. The wholesale market and the use of revenue stabilisation measures to create an investment signal for new generation is not distinct from this flexibility work but a central pillar of it.

Secondly, there should be as much consistency as possible across different voltage levels in the energy system. In practical terms, this entails very close coordination with National Grid's Network Charging review to ensure its reform to TNUoS and this work's reform to DUoS

reflect each other. This is also the case with distributed markets for ancillary services and development of connection agreements that should similarly be consistent.

### **Leadership to ensure a flexible system in a timely and cost-effective manner**

In moving to such a flexible system, there are many dependencies where urgent action is required now. It is critical that the Spring 2017 Plan demonstrates BEIS and Ofgem's leadership in coordinating this significant programme of work to ensure best value to the consumer.

To address this, it would be very helpful if the Spring 2017 Plan sets out BEIS and Ofgem's comprehensive programme plan of these dependencies and where delays to 2020 and beyond carry significant risks. This would be best served by this Plan setting out a short-term plan to 2017-2020 as part of a longer-term strategy covering the 2017-2030 period.

In addition to this, it would be extremely helpful to understand clearly how BEIS and Ofgem will measure progress against this programme plan and the type of remedial actions that will be taken in the case of issues. In the case of the former, performance metrics that are based on delivery, not contracting, would be preferred.

It is also important that the manner in which any changes will be developed and implemented is clearly set out in the Spring 2017 Plan. In line with National Grid's Network Charging review, actions arising from this call for evidence must be signalled well in advance and informed by significant and early consultation as proposals are developed. Care should be taken to ensure that as many stakeholders as possible have been actively consulted on the principles to be applied in a network charging review, so that the business risks attached to the review can be understood and managed appropriately. As part of this, RenewableUK considers it to be crucial that grid code modification forums are representative.

Finally, it is crucial that reforms are not made in a piecemeal fashion without a comprehensive review of its impact on the wider system. This is a complex area where changes have implications on many different parts of the system. Therefore, the siloed approach taken to the recent review of embedded benefits cannot be the approach taken for this work.

## **Chapter 2: Removing policy and regulatory barriers**

The call for evidence includes an ambition that storage is able to compete on a level playing field against more traditional solutions. However, the substantive actions taken by 2020 include only that ancillary services are made more accessible and that a decision has been taken on the appropriate regulatory regime. There is a need for further ambition towards securing by that point –

- Implementation of new definition of storage (regardless of approach preferred);
- Fair network charging for storage;
- Clear process and regulation for co-located storage with supported renewable generation; and
- No double-counting faced by storage with respect to final consumption levies.

### **Q1 Additional barriers faced by the industry**

#### *Accessing markets*

Overall, Government needs to reassure investors and banks that these market opportunities will be enduring. This is by clearly setting out the present and future system requirements and regulating to ensure the services should be procured on a rational, transparent basis.

Although National Grid is to be lauded for its current work to make existing ancillary services more navigable, the same barriers stated in this document with respect to aggregators' access to ancillary services still pertain to storage. In particular –

- Complexity;
- Lack of transparency;
- Procurement process; and
- Product specifications do not provide a level-playing field for different technologies capable of offering the services; including duration of response, pre-determined utilisation prices, availability window obligations.

With respect to the Capacity Market, EFR is not considered a relevant ancillary service and thus is not allowed 'Adjusted Load Following Capacity' (ALFCO) adjustment despite such allowance being made for FFR. This issue is unlikely to be resolved until next year at the earliest. The use of open-ended capacity obligations, that could in theory last indefinitely, also unfairly discriminates against non-traditional flexibility providers and is not necessary as the sole type of obligation when the majority of system stress events are less than 1 hour.

With respect to accessing ancillary services, there is a need for more regular procurement for a broader range of contract lengths. This would help reduce the risk of financing 4-year only contracts as is the case with the EFR contracts. This range of contract lengths must include a focus on procuring services closer to real time to support participation from non-traditional providers cost-effectively; including storage assets and renewable generators.

Finally, the lack of clarity with respect to the rules for stacking multiple contracts from the Capacity Market and ancillary services further acts as a barrier.

## **Q2 Network connections for storage**

As is the case at the Transmission level, adding storage to a site without affecting its physical capacity or the capacity that it has already the right to export should not affect the original network agreement. It is crucial that the retrofitted flexibility assets, be that storage or other technologies, are considered with respect to their specific impact on the grid – rather than simply assessing the retrofit as maximum export capacity. An example would be the case of retrofitting storage for black start capability that should not affect the connection agreement. In such cases, the connection agreement should be novated without requiring a new agreement. This is critical to incentivising such retrofitting that is likely to be one of the most cost-effective ways of bringing significant storage onto the system in the next 5-10 years.

With respect to queue management, there should be a broad, technologically-agnostic requirement that new applications pay proportionate assessment and design fees – in order to place the costs onto those creating them rather than the taxpayer and also deterring truly speculative applications.

Similarly, whether an asset should jump the queue should be based on the behaviour of that specific installation and not on a technology basis. There is no guarantee that a given storage asset will necessarily relieve network constraints and therefore connection agreements and TOU tariffs that ensure this should be part of the criteria for assessing whether any asset can move up the queue. In these cases, it is important that the process

does not allow speculative applications to move up the queue. It is also important that this action does not significantly delay the connection dates for those already in the queue or unfairly alter who bears upgrade costs.

Finally, Guaranteed Standards of Performance on the delivery of network stability studies could be set to hasten the connection process for all applicants. At present, the review of network supply characteristics can be extremely slow and there is currently no pressure or incentive on DNOs to conduct these studies in a timely manner.

The need for a technologically-agnostic approach also pertains with respect to flexible connection agreements for storage. Such agreements should be made available to and further developed for all flexibility providers in a manner that is technologically-agnostic.

### **Q3 Network charging for storage**

It is not clear that storage should be treated as non-intermittent generation for the purposes of network charging. In line with the comments above, a more appropriate approach would be to develop a classification that is based on the specific function of a given asset on the network.

It is also not clear that cost-reflexive network charging should be determined simply by the use of the network. In the case of charging on import and export, the impact on the network is significantly different dependent upon whether this is done at times of network stress since in such cases, the asset will be reducing the costs of the network through avoided reinforcement. Therefore, there is a need for a more accurate method for network charging upon import and export that makes more effective use of TOU tariffs – rather than a blunt charge or depending on an assumed profile of only exporting/importing when it is needed.

### **Q4 Use of storage by network operators**

RenewableUK does not agree that the present arrangements for network operators to incentivise investment in storage are sufficient. In particular, RIIO-ED1 does not go far enough in incentivising network operator investment where it would be of value to the broader network.

We have significant concerns regarding network operator ownership of storage and consider that this should be seen as the preferred option only in very extreme cases where there is no other competition. Firstly, the network operators have far greater sight of local areas of network need that independent companies cannot access. This advantages the former in identifying where storage would be most useful to the grid. It is crucial that this information becomes fully publicly accessible to ensure flexibility providers can make the right siting decisions. Secondly, there is currently no market for network deferral. At present, such savings can only be accrued by the network operator which gives a significant competitive advantage. Opening up this market to competition has significant potential to drive more cost-effective investment for consumers. Finally, it must also be borne in mind that network operators are likely able to access finance on better terms than individual energy companies, however large, and that this could further create distortions to the market.

### **Q5 Regulatory clarity**

#### *Final consumption levies*

Double-counting on final consumption levies must be urgently removed and at most, levies should only be charged on energy lost in the charge/discharge cycle. RenewableUK considers that a separate definition of storage would allow for easier resolution of this issue.

### *Planning for storage*

Above all, it is crucial that Government clarifies the ‘use class’ under which storage falls with respect to planning.

Further, planning requirements are different in England, Wales and Scotland and depending on the capacity installed. This is particularly onerous where storage is considered to be an ‘onshore generating station’ as it can lead to very costly consenting regimes.

At the same time, any changes to this arrangement, including any arising from a separate definition, must recognise that the uncertainty caused by putting in place new requirements would take time and cause significant uncertainty for investors and developers.

### **Q6 Definition of storage**

RenewableUK supports the ESN definition of storage. Moreover, we consider that a distinct definition that bears sufficient legal weight may help solve many of the barriers identified in this chapter. RenewableUK considers therefore that a separate definition in primary legislation is the preferred approach in the long term.

However, we recognise that the use of an amended generation license would be useful in the short-term and urge BEIS and Ofgem to confirm the ESN definition as soon as possible.

In creating a separate definition for storage, it is crucial that the relationship between a separate definition for storage and DNO ownership is addressed so that a new asset class does not allow inappropriate forms of the latter. Similarly, retrofitting onto existing generation sites and new hybrid sites should be incentivised as far as possible and so it is important that any development of a new license for storage does not make more difficult the treatment of such sites. Finally, a new form of license must not lead to differential treatment for storage relative to renewable generators.

As Government has recognised, this transition may create issues for existing storage operators licensed as generation. We therefore support a transition period for currently licensed generators where they are able to transfer their license across to the new regime over time, perhaps over the course of a year.

## **Chapter 3: Providing price signals for flexibility**

### **Q12: Opportunities and barriers to stacking revenues**

With respect to storage as well as renewable generators and in addition to the comments made above, barriers to stacking services would be reduced by –

- Tendering contracts for flexibility services at the same time
- Where possible, reducing the complexity of pricing models used so that allocation risk and likely revenue from each service could be more easily forecast
- Increase the range of contract durations for ancillary services
- Procuring services nearer to real time to support participation from non-traditional providers
- Ensure procurement is more regular and on a rolling basis to avoid make or break tender opportunities
- Reducing the minimum size to 1MW to increase the number of eligible participants
- Shortening settlement periods



### **Q13 Non-remunerated or under-valued flexibility services**

Wind turbines have significant technical capabilities with respect to flexibility services that are currently not used. Without storage co-location, wind turbines alone are able to offer frequency response, reactive power, demand turn-up and -down and a form of virtual inertia among others. When providing these services, wind farms have very minimal 'zero time' between ramp down and ramp up. This speed of response is therefore extremely competitive with traditional providers of flexibility and can support the System Operator to manage the grid most cost-effectively. Although some sites are now progressing this, generators still cannot in general capture the full value of these services because product specifications cannot accommodate this provision among other barriers.

There is no mechanism to value network deferral despite its significant contribution to network resilience and cost-effective management of the system.

There is also no mechanism to value constraint and curtailment management at the distribution level – in contrast to the transmission level. In relation to the need for sight of a network's areas of stress, the lack of a value for constraint and curtailment means that it is not possible to understand where flexibility provision would be most useful and so weakens the investment signal.

### **Q22 Underlying network drivers**

Consideration of network charges on both import and export raises the broader principle that the time and manner of actions will become far more important to assessing how to allocate network costs appropriately. Simple use of network can no longer be taken as straightforwardly an indicator of network demand.

### **Q23 DUoS sending both short and longer-term signals**

There is clearly a need for both short term and longer term signals at distribution level. However, RenewableUK considers that possible options include both a hybrid approach to DUoS and splitting cost recovery from system operation payments. The latter would move the distribution network operation closer to the model used at the Transmission network and could create a stronger investment signal for flexibility services.

Sharper signals would support the investment case for flexibility assets, including storage and renewable generation, by creating more value to wholesale price arbitrage. However, extreme volatility must be avoided.

At present, there is no clear forward view of DUoS charges. This means it cannot act as a strong investment signal.

Finally, within a smarter system, balancing demand, generation and storage within limited, physical areas of the network may emerge as most cost-efficient to the system in some places. This form of local energy would have the potential to be cheaper to the consumer, be a way in which investment in new low carbon generation would be brought forward by the market as well as allowing consumers to choose to use energy consumed locally.

This type of arrangement is still largely limited to pilot studies or limited trials and there is a need to develop the evidence base further. However, and as recognised in this call for evidence, it touches a number of the issues addressed here. Firstly, it relates to how UoS charging at all voltage levels better reflects avoided network reinforcement. In the case of net balancing demand, generation and storage in a given area, it necessarily follows that this



would reduce network reinforcement and use at higher voltages. Secondly, it relates to how changes to the system address incentives towards behind-the-meter arrangements that are created by the application of charges and levies as soon as an asset is connected to the grid. This may lead to duplication of network infrastructure if private wire arrangements become cheaper than use of the network whilst also raising questions on cost recovery.

One test of a new DUoS charging regime is therefore how far it appropriately reduces such incentives through exposing any economic benefit to balancing assets that are physically close to each other.

## **Q25 How existing Government policies help or hinder this transition**

In comparison to the analysis and future perspectives set out for the Capacity Market, balancing market and ancillary services, there is a marked absence of any equivalent vision for the wholesale market and the system's ability to bring forward volumes of low carbon generation.

Although the call for evidence states that the Government supports the continued deployment of renewable energy, the current framework of support will have closed to the majority of new generation by 2020 and any future deployment at scale will remain entirely dependent upon an effective route to market through revenue stabilisation tools at unsubsidised levels.

## **Q27 Measures to incentivise renewable generation whilst accounting for system costs**

Renewable generation can make a significant contribution to the flexibility of the energy system in its own right, and in addition to the shift to metered export for FiT-level generation and potential for co-location with storage identified in this call for evidence.

In order to make the full use of the flexibility services needed from the system, it is imperative that the Spring 2017 Plan considers explicitly its overall vision for how the value of renewable energy assets will be valued across the system, subsidy-free revenue stabilisation arrangements to bring forward new investment and, within this, how markets are opened up to renewable generation.

With respect to the first, a key and immediate action is reform of the Levy Control Framework to reflect the shift to a flexible system, as set out in this call for evidence. This call for evidence clearly demonstrates that it is no longer appropriate to value any energy asset against a specific market within the energy system and thus, the Levy Control Framework should reflect the whole system benefits and costs of renewable generation, not just the relationship with the wholesale price. There is a need for a procurement trajectory based on the actual demand for low-carbon generation, as defined by our need for new-build generation and decarbonisation (carbon intensity) trajectory but also the industry's need for smooth deployment pathways to avoid damaging boom and bust cycles that undermine industrial development, price minimisation and job and skill development and retention.

Secondly, the Spring 2017 Plan should set out the substance behind the Government's statement of continued support for renewables during the timeframe considered in this report; namely, 2020 and beyond. With respect to small-scale generation, the Plan needs to acknowledge and set out further detail regarding the future role, if any, of the FiT export tariff. Potential small generators need clarity on whether this tariff, or other mechanisms for ensuring consumers with small-scale generation have the right and correct investment signal to sell their own energy into the wholesale market, will be available in the future. There also needs to be clarity on if, and how, such generation would be incorporated into a more substantive DSO role. With respect to larger-scale generation, the Government needs to set

out how such assets will be brought forward in a manner that is subsidy-free, and how such arrangements would relate to wider developments – including, for example, whether they can enable the volume needed of variable renewable generation on the distribution networks to participate in balancing and ancillary services.

Thirdly, it is likely that only very limited deployment will be brought forward through innovative models such as local energy or corporate PPAs, unsupported by Government instruments such as the FiT or CfD. It is important that this call for evidence includes accommodation for such models – including exemption from final consumption levies.

Finally, it is crucial to remove the barriers faced by wind generators and storage providers to accessing ancillary services, namely –

- Complexity;
- Lack of transparency;
- Procurement process; and
- Product specifications do not provide a level-playing field for different technologies capable of offering the services; including duration of response, pre-determined utilisation prices, availability window obligations.

## **Chapter 5: Roles and responsibilities**

### **Q45 and 46 Immediate and longer term reform to roles and responsibilities**

#### *Coordination of network planning*

Most urgently, there is a need for a significant improvement in basic coordination between the TOs and TO-DNO. As an example for the former, failure to coordinate on agreements for the expansion factors used for subsea cabling costs has created TNUoS price shocks for generators.

The volume of applications made for storage connections took the industry, network operators and Government by surprise. This experience reinforces the need for a forward-looking plan to be set out at distribution, as well as transmission, level. It also clearly demonstrates the need for strongly coordinated network planning across different voltage levels and regions. This supports either an SO-led or system-wide single party approach to network planning.

Anticipatory investment has the potential to improve the efficiency of network investment over the long-term but DNOs are currently very strongly discouraged from this approach. This should be reviewed for the Spring 2017 Plan and, in particular, how far it is required if there is to be much stronger coordination between SO and DNOs.

The management of outages at distribution level must also be significantly improved – including exploring limits on the duration of outages and financial incentives for early completion of the works.

Finally, the emerging system requirements laid out in the call for evidence must also reflect the changing nature of the transmission network. From a network built around central generation and demand and acting as the highway from the former to the latter, it is becoming increasingly integrated with European networks and markets through the construction of interconnectors, initiatives such as Project Terre and broader progress towards the Internal Energy Market. This needs to be reflected in the evolving role of the SO and is likely to require one that is significantly more independent.

### *Procuring and operating system resources*

Storage business models are likely to be based on providing both system-wide services as well as relieving local issues such as congestion. Similarly, in a system of subsidy-free, however defined, renewable investment, it is likely that maximising revenue streams from the balancing and ancillary services markets will be crucial to bringing forward new generation. Therefore, the ability to provide both system-wide services as well as local services procured by the DSO is likely to be important.

However, it is crucial that this doesn't lead to a level of complexity that becomes a barrier to participation. In particular, it is important that the transition to distribution-level system operations does not create significant regional differences but progresses the overall objective of consistency across all voltage levels.

## **Chapter 6: Innovation**

### **Q48 The right areas for innovation support**

RenewableUK considers that further innovation to demonstrate co-location of multiple technologies with storage and to demonstrate real-time direct control of renewable generation assets by the SO would support these objectives.

Local energy models are still at trial phase. Firstly, storage will be crucial to these models as the most obvious way to allow balancing within a defined, geographical area. Therefore, urgent removal of the barriers to its deployment – even if only for such trials or other more limited ways at first - need to be addressed with considerable urgency to allow these models to develop in the next ten years. Secondly, there are a number of elements of such models that are currently very costly because of their immaturity; including, for example, elective half-hourly settlement. At present, this can often only be compensated for by the support offered by a portfolio of existing FiT- or RO-supported generation. Therefore, there is a need to align the closure of these programmes with reductions in cost for settlement over the next five years to ensure local energy trials can continue to develop.