

## 1.0 Plutus PowerGen response to Ofgem call for evidence

This document is the Plutus PowerGen response to the Ofgem call for evidence.

Plutus PowerGen's strategy is to develop a portfolio of generation assets that provide flexibility services to the UK. We are already an investor and operator in back-up generation and have assets that provide balancing services. We are also actively exploring developing sites as energy innovation parks by combining proven technologies with new low-carbon ones, including storage technologies. This is intended to make sites which are a mix of exhaustible, low inertia and firm generation more investible from the mainstream sources, such as pension funds and banks. Achieving this outcome would lower the cost of capital thereby providing the necessary balancing services at lower cost.

We welcome the Ofgem and BEIS call for evidence and believe it is vital that many of the barriers and uncertainties to the provision of flexibility presently at play in the market-place are dealt with in a timely manner. This will avoid inefficient allocation of resources and investment in assets that may become redundant at a later date, with the associated impact on investor confidence at an important point in the UK's energy industry.

The section below provides responses to the individual questions contained within the call for evidence.

## 2.0 Call for evidence questions

### Removing policy and regulatory barriers (Enabling Storage)

#### 1. *Are the right policy and regulatory barriers identified?*

We agree that the barriers identified within the call for evidence represent the main barriers to enabling storage within the UK. We highlight the importance of bringing forward change in these areas in a timely manner to ensure these barriers are removed as quickly as possible and do not delay the take up of storage, which is a key component of moving to a flexible future.

#### 2. *Are the right connection issues identified?*

We agree that the queue management for new connections is an important issue that needs to be clarified with clear rules set down that are consistent across all areas. The impact of a new storage connection is likely to vary depending on the use of the storage. For example, a storage facility that has an EFR contract could be importing at times of system peak to re-charge the battery, whereas a storage facility that is arbitraging between peak and off-peak prices is very unlikely to import at peak times. We believe that it will be necessary to differentiate between the various uses of the storage facility within the connection agreement to ensure the network operator can accurately assess the likely running regime of the facility and its impact on the network.

Any new storage facility could enable more demand or generation capacity to connect without the need for reinforcement, but this will depend on how the storage facility is operated. If storage is moved up the queue, it must be to the benefit of all users of the network. We are particularly concerned that storage may be moved up the queue as it reduces the reinforcement associated with a demand customer, but increases the cost for a generator who is planning to connect to the same part of the network.

We recognise the benefits of further transparency in the connection process and the provision of more information relating to where spare capacity exists and where it would be most beneficial for either storage or embedded generation to connect. We would support any initiatives in this area such as more detailed heat maps or on-line tools that would enable developers to access the DNO connectivity systems and determine the degree of spare capacity in certain locations under different system conditions.

A further issue may arise with the increased take up of storage. This is when national drivers that impact the running regime of a storage facility do not align with the local requirements of the network operator. This could lead to the storage facility acting in such a way that it makes an Active Network Management scheme more constrained at certain times and therefore more embedded generation curtailed. To avoid this, the connection agreement should place an obligation on the storage provider to inform the DNO of their state of charge to ensure that the DNO is able to manage the local network accordingly and provide notice or robust signals to any likely curtailment that may occur for local generation.

#### 3. *Are the right network charging issues identified? Are flexible connections one solution?*

The issue of whether storage should be treated as intermittent or non-intermittent needs to be resolved as soon as possible. We note that DCP268, if accepted, will mean that all generation will receive credits based on the red, amber and green timebands in the CDCM. However, within the EDCM, the DNOs have not yet clarified the status of storage in terms of intermittency and whether it would be eligible for credits.

The call for evidence addresses the status of storage as a binary output, either intermittent or non-intermittent. In reality, storage is partially non-intermittent, in that it can be instructed to run on command, but only if the battery is

charged. The response is therefore limited. On this basis, it may be worth considering a new category of generation which is called “restricted non-intermittent”. This category would bring less benefits to a network owner/ operator and the network charges could be determined accordingly.

The benefit of connecting storage is the flexibility these facilities inherently possess which enable them to offer a wide range of services. However, from a network charging perspective, this makes it very difficult to levy charges in a cost reflective way that takes account of all the possible uses of the storage facility. The charging structure needs to be more flexible to take account of this. Most large customers have time of use network charges for part of their charge. However, one beneficial change in this area would be to move to a time of use for capacity charges. This would align the use of a storage facility more closely with their impact on the local network.

*4. Do you agree with our assessment that network operators could use storage to support their networks?*

We agree that storage would potentially be beneficial to network operators by reducing the need for future reinforcement and managing their networks at a local level. Storage could also be used as part of Active Network Management (ANM) schemes and prevent the need for curtailment of embedded generation if used purely for this purpose.

The current regulatory set up does not prevent a DNO from contracting with a storage provider if it can lower their own costs from, for example, reduced capital expenditure on future reinforcement. The totex incentive already incentivises the DNO to adopt such a course of action as the DNO retains a proportion of the savings. However, the DNO is only incentivised to adopt this approach until the end of each price control. Therefore, as the DNO approaches the end of the RIIO period, the incentive on a DNO diminishes. The regulatory regime needs to be adapted to take account of this perverse incentive.

The current regulatory regime is also set up for a DNO to minimise their own expenditure. However, in the case of ANM schemes, a storage facility may result in additional cost to the DNO and the saving would accrue to the embedded generators whose curtailment would be reduced. This means there is no incentive for the DNO to contract with a storage provider as they would not see the benefit of the storage facility. However, the DNO would be best placed to manage the storage facility as they would be operating the ANM scheme and should therefore be incentivised to adopt this approach.

Aside from these issues, where a DNO contracts with a storage facility, it should be through an open and transparent process that enables all potential providers to fully participate.

*5. Are the right regulatory approaches identified? [These are: 1.no change- continue with storage as generation asset for licensing purposes; 2. introduce a modified generation licence with storage as a subset of generation; 3. add a storage definition in primary legislation as a subset of generation; or 4. add storage definition in primary legislation as a new activity with its own licence]*

We believe that storage should have a separate definition in primary legislation together with its own licence. We feel that storage is sufficiently different from generation that a separate definition would be warranted. This approach could be time-consuming to implement, but would be beneficial in the longer term. We also note, that the introduction of a licence would not preclude a new definition for storage being introduced within the industry codes through the open governance process in the short term.

*6. Do you agree with any of the proposed definitions of storage? If applicable, how would you amend any of these definitions?*

We agree with the preferred definition for storage as set down by ESN.

## Removing policy and regulatory barriers (Aggregators)

7. *What are the impacts of the perceived barriers for aggregators and other market participants? Please provide your views on:*
- *Balancing services;*
  - *Extracting value from the balancing mechanism and wholesale market;*
  - *Other market barriers; and*
  - *Consumer protection.*
8. *What are your views on these different approaches to dealing with the barriers set out above?*
9. *What are your views on the pros and cons of the options outlined in Table 5? Please provide evidence for your answers.*
10. *Do you agree with our assessment of the risks to system stability if aggregators' systems are not robust and secure? Do you have views on the tools outlined to mitigate this risk?*

In response to questions 7 to 10 it would seem natural that the role of suppliers and aggregators became aligned, as the action of one can impact on the other. To achieve this is not easy, and any change that would allow aggregators direct access to the BSC should also include a relationship with the supplier to provide notice of the DSR activity together with compensation in certain situations. These rules should be set down within a code and the dataflows automated to enable suppliers to incorporate the requirements into their risk management systems.

## Providing price signals for flexibility (System value pricing)

11. *What types of enablers do you think could make accessing flexibility, and seeing a benefit from offering it, easier in future?*

Standardisation and open transparent procurement processes would enable flexibility providers to access markets in a direct and efficient manner. Open platforms that use standardised products will benefit not only the individuals offering flexibility services, but also result in more competition which will ultimately benefit the end consumer.

The standardisation of products could be undertaken within a code, even where the product is offered locally by, for example, one DNO. However, developing a suite of contracts and using standardised credit requirements, payment terms and other contractual terms that are pre-set would be an efficient mechanism for enabling these markets.

We would like to see the development of the market platforms that enable flexibility providers to see what services are being procured and in what location to ensure that the service provider has full visibility of the market for his services. Full market reporting after the event is also essential to ensure flexibility providers can ascertain the value of different products.

We note that the concern that standardisation of products, particularly at an early stage, could stifle innovation in developing new markets. However, if a large number of regional products are developed each with different sets of terms and conditions, we believe this could be detrimental to the providers of flexibility who we need to manage a large range of commercial agreements. In this case, we would recommend the development of standardised products as a priority to ensure the market for flexibility services develops in a timely manner.

12. *If you are a potential or existing provider of flexibility could you provide evidence on the extent to which you are currently able to access and combine different revenue streams? Where do you see the most attractive opportunities for combining revenues and what do you see as the main barriers preventing you from doing so?*

Plutus PowerGen is a provider of flexibility services and combining different revenue streams is key to ensuring a successful return from our projects. We see the capacity market as a key revenue stream that provides long-term security with the ability to stack income from ancillary services contracts, embedded benefits and wholesale market income. As many of our sites are small, one barrier we would highlight is the difficulty for small players to participate in the balancing mechanism even though we are able to provide a similar service to larger transmission-connected generators.

Providers of small generation flexibility services such as ourselves are also reliant on Power Purchase Agreements with suppliers as a main source of market access. This means there is no direct access to the wholesale market, and value is lost through the supplier who retains a portion of the revenue from embedded benefits and can also apply transaction fees or discount the power value. We would request that alternative routes to market are considered as

part of the call for evidence that would remove the barriers for embedded generation in participating in the wholesale market and balancing mechanism.

*13. If you are a potential or existing provider of flexibility are there benefits of your technology which are not currently remunerated or are undervalued? What is preventing you from capturing the full value of these benefits?*

We refer to our answer to question 12.

*14. Can you provide evidence to support any changes to market and regulatory arrangements that you consider necessary to allow the efficient use of flexibility. What might be the Government's, Ofgem's, and System Operator's roles in making these changes?*

We refer to our answer to question 12.

*[Continued]*

## Providing price signals for flexibility (Smart tariffs)

15. *To what extent do you believe Government and Ofgem should play a role in promoting smart tariffs or enabling new business models in this area? Please provide a rationale for your answer, and, if you feel Government and Ofgem should play a role, examples of the sort of interventions which might be helpful.*

While not directly our business at this stage, we believe that smart tariffs are essential to ensuring GB as a whole gets the full benefit from the investment in Smart meters and believe that the government and Ofgem have a role to play in promoting the move to smart tariffs.

16. *If deemed appropriate, when would it be most sensible for Government/Ofgem to take any further action to drive the market (i.e. what are the relevant trigger points for determining whether to take action)? Please provide a rationale for your answer.*

Any should be undertaken as soon as possible to allow all suppliers and customers to get used to the new concept(s).

17. *What relevant evidence is there from other countries that we should take into account when considering how to encourage the development of smart tariffs?*

No response provided.

18. *Do you recognise the reasons we have identified for why suppliers may not offer or why larger non-domestic consumers may not take up, smart tariffs? If so, please provide details, especially if you have experienced them. Have we missed any?*

We recognise the main barriers to the take up of smart tariffs identified within the call for evidence. We see these barriers as primarily consumer led, as suppliers will offer these tariffs, if a demand exists.

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## Providing price signals for flexibility (Smart distribution tariffs – Incremental change)

*19. Are distribution charges currently acting as a barrier to the development of a more flexible system? Please provide details, including experiences/case studies where relevant.*

The most substantial risk to potential investors in flexibility services is the CUSC change modifications 264 and 265, which would remove or materially reduce the Triad Benefit for most distribution network connectees. We note that Ofgem has not yet reached a decision on these change proposals but have indicated in their latest open letter that they view the avoided cost of embedded generation to be at the lower range of possible outcomes. We are concerned that, if Ofgem approve one of the low alternatives, there is a risk that it will need to be amended at a later date as part of the full embedded review that will start in 2017. This could materially reduce potential investment in new infrastructure designed to provide flexibility services in short order. It also removes a fundamental driver for large demand to shift out of current peaks as the business case for so doing is reduced. This may result in the perverse outcome of higher peak demand and greater volatility leading to lower security and higher cost.

Additionally, the existing mechanism for balancing is achieved by having large generation (typically 100's of MW) put in a 'warm' or 'standby' state during periods of high uncertainty in the grid. This is as they are not flexible enough to respond quickly as required unless in this state. This creates the perverse outcome of conforming operational constraints of large plant to the most efficient way to meet the need for flexibility – with resultant higher balancing costs and emissions. Smaller plant is able to start quickly on demand without the need and associated costs of warming and this benefit should be captured by any changes.

Finally, the primary focus on unit based charging for demand customers is leading to long term network costs being spread over a decreasing number of units each year, due to more energy efficiency measures and more embedded generation. We believe the structure of distribution charges needs to be amended so that a greater proportion of the final charge is recovered on a fixed basis, either through a higher standing charge or a higher capacity based charge.

*20. What are the incremental changes that could be made to distribution charges to overcome any barriers you have identified, and to better enable flexibility?*

We believe that a holistic review of embedded benefits should be undertaken as CMP 264 and 265 could restrict potential investment in providers of flexibility services in the short term.

Ofgem should undertake or request DNOs to undertake a study to determine what proportion of DNO charges should be recovered on a fixed basis and the options for achieving this.

*21. How problematic and urgent are any disparities between the treatments of different types of distribution connected users? An example could be that in the Common Distribution Charging Methodology generators are paid 'charges' which would suggest they add no network cost and only net demand.*

We believe embedded generators offset costs for DNOs and are therefore entitled to receive credits for this. We would expect the extent to which DNOs can rely on embedded generation to avoid network reinforcement to increase under Engineering Standard P2/7. However, we would highlight that intermittent generation, particularly solar, receive credits from DNOs when in reality they cannot be relied upon for the provision of security and therefore consideration should be given to reducing the credits to intermittent generation.

We would also highlight the different connection policies between transmission and distribution which causes a disparity between the same classes of generation that connect at different network levels. The deeper connection charges incurred by distribution connected generation means a higher up-front charge for these generators and this issue needs to be considered as part of the Ofgem embedded benefits review due to commence in 2017.

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## Providing price signals for flexibility (Smart distribution tariffs – Fundamental change)

22. *Do you anticipate that underlying network cost drivers are likely to substantively change as the use of the distribution network changes? If so, in what way and how should DUoS charges change as a result?*

As stated earlier, we think DUoS charges require a fundamental shift to recover a greater proportion from fixed charges rather than unit based charges. We also see an increase in ANM schemes by DNOs as the most efficient way for DNOs to manage their assets. This will enable more generation to connect without costly reinforcement which will make the network more resilient against future demand growth if there is a large uptake in EV or the electrification of heating load.

23. *Network charges can send both short term signals to support efficient operation and flexibility needs in close to real time as well as longer term signals relating to new investments, and connections to, the distribution network. Can DUoS charges send both short term and long term signals at the same time effectively? Should they do so? And if so, how?*

It is important to distinguish between DUoS and flexibility services. DUoS provides a longer term price signal to customers to act in a certain way. Excessive volatility in DUoS has resulted in higher risk premiums to end customers and a subsequent change proposal approved by Ofgem to require DNOs to provide 15 months' notice of DUoS price changes. While we support the increasing role of DNOs as system operators and their procurement of flexibility services at a local level, we would prefer this was undertaken as a separate procurement exercise and not implemented by amending DUoS.

24. *In the context of the DSO transition and the models set out in Chapter 5 we would be interested to understand your views of the interaction between potential distribution charges and this thinking.*

We refer to our answer to question 22

*[Continued]*



## **Providing price signals for flexibility (Other government policies)**

- 25. Can you provide evidence to show how existing Government policies can help or hinder the transition to a smart energy future?*
- 26. What changes to CM application/verification processes could reduce barriers to flexibility in the near term, and what longer term evolutions within/alongside the CM might be needed to enable newer forms of flexibility (such as storage and DSR) to contribute in light of future smart system developments?*
- 27. Do you have any evidence to support measures that would best incentivise renewable generation, but fully account for the costs and benefits of distributed generation on a smart system?*

In response to questions 25 to 27, we are concerned that the approval of CMP 264 or 265 could have a detrimental impact on investor confidence and result in higher hurdle rates for new projects. A more appropriate way forward would be to capture CMP 264 and 265 within the wider embedded review that Ofgem plan to undertake in 2017. We continue to believe that this review should be taken forward as a Significant Code Review (SCR) so that the inter-dependencies of the many issues can be fully taken into account.

*[Continued]*



## **A system for the consumer (Smart appliances)**

28. Do you agree with the 4 principles for smart appliances set out above [interoperability, data privacy, grid security, energy consumption]?
29. What evidence do you have in favour of or against any of the options set out to incentivise/ensure that these principles are followed? Please select below which options you would like to submit evidence for, specify if these relate to a particular sector(s), and use the text box/attachments to provide your evidence.
- Option A: Smart appliance labelling
  - Option B: Regulate smart appliances
  - Option C: Require appliances to be smart
  - Other/none of the above (please explain why)
30. Do you have any evidence to support actions focused on any particular category of appliance? Please select below which category or categories of appliances you would like to submit evidence for, and use the text box/attachments to provide your evidence:
- Wet appliances (dishwashers, washing machines, washer-dryers, tumble dryers)
  - Cold appliances (refrigeration units, freezers)
  - Heating, ventilation and air conditioning
  - Battery storage systems
  - Others (please specify)
31. Are there any other barriers or risks to the uptake of smart appliances in addition to those already identified?
32. Are there any other options that we should be considering with regards to mitigating potential risks, in particular with relation to vulnerable consumers?

In response to questions 28 to 32, we are supportive of the move to encourage the development of smart appliances. Our primary concern in this area is that a level playing field is maintained between DSR services and embedded generation. Both services can provide the same degree of flexibility and should be rewarded in the same way. However, some of the recent proposed changes to industry rules such as CMP 264 and 265 and the application of the supplier levy on a gross rather than a net basis distort the market for flexibility services. Under the present rules, generation or storage that connects behind the meter or DSR through Smart appliances captures the full benefit of their actions whereas a standalone generator cannot receive the same reward from avoiding the triad or the supplier levy. We believe this issue should be addressed as a priority.

[Continued]

## **A system for the consumer (Ultra low emission vehicles)**

33. *How might Government and industry best engage electric vehicle users to promote smart charging for system benefits?*
34. *What barriers are there for vehicle and electricity system participants (e.g. vehicle manufacturers, aggregators, energy suppliers, network and system operators) to develop consumer propositions for the:*
- *Control or shift of electricity consumption during vehicle charging; or*
  - *Utilisation of an electric vehicle battery for putting electricity back into homes,*
  - *Businesses or the network?*
35. *What barriers (regulatory or otherwise) are there to the use of hydrogen water electrolysis as a renewable energy storage medium?*

In response to question 33 to 35 we believe that EVs could be a both a source and a driver of flexibility services. Where EVs are used to provide flexibility services any market arrangements that are put in place should ensure a level playing field between all providers of that service.

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## **A system for the consumer (Consumer engagement with DSR)**

- 36. Can you provide any evidence demonstrating how large non-domestic consumers currently find out about and provide DSR services?*
- 37. Do you recognise the barriers we have identified to large non-domestic customers providing DSR? Can you provide evidence of additional barriers that we have not identified?*
- 38. Do you think that existing initiatives are the best way to engage large non-domestic consumers with DSR? If not, what else do you think we should be doing?*
- 39. When does engaging/informing domestic and smaller non-domestic consumers about the transition to a smarter energy system become a top priority and why (i.e. in terms of trigger points)?*

No response is provided to questions 36 to 39.

*[Continued]*

## **A system for the consumer (Consumer protection and cyber security)**

40. *Please provide views on what interventions might be necessary to ensure consumer protection in the following areas:*

- *Social impacts*
- *Data and privacy*
- *Informed consumers*
- *Preventing abuses*
- *Other*

41. *Can you provide evidence demonstrating how smart technologies (domestic or industrial/commercial) could compromise the energy system and how likely this is?*

42. *What risks would you highlight in the context of securing the energy system? Please provide evidence on the current likelihood and impact.*

No response is provided to questions 40 to 42.

*[Continued]*

## The role of different parties in the system and network operation

43. Do you agree with the emerging system requirements we have identified (set out in Figure 1)? Are any missing?

We agree with the principle of the move from DNOs to DSOs. This will be beneficial in moving to more actively managed networks which is fundamental to DNOs, and therefore customers, getting the most out of their networks. The successful transition from DNO to DSO will require the identification and standardisation of products and the procurement process for these products as we highlighted in our answer to question 11.

44. Do you have any data which illustrates:

a) The current scale and cost of the system impacts described in table 7, and how these might change in the future?

b) The potential efficiency savings which could be achieved, now and in the future, through a more co-ordinated approach to managing these impacts?

We do not have access to any data in this area.

45. With regard to the need for immediate action:

a) Do you agree with the proposed roles of DSOs and the need for increased coordination between DSOs, the SO and TOs in delivering efficient network planning and local/system-wide use of resources?

b) How could industry best carry these activities forward? Do you agree the further progress we describe is both necessary and possible over the coming year?

c) Are there any legal or regulatory barriers (e.g. including appropriate incentives), to the immediate actions we identify as necessary? If so, please state and prioritise them.

We see the emergence of ANM schemes as the start of DNOs become DSOs through necessity. However, the process of transitioning to DSOs needs rules and guidance to be established to ensure it is undertaken consistently, efficiently and that the resultant arrangements are effective. Given that the transition is already happening, it would be useful if Ofgem or BEIS established some over-riding principles that market participants could work towards and prevent code governance changes being brought forward that undermine the longer term goal.

46. With regard to further future changes to arrangements:

a) Do you consider that further changes to roles and arrangements are likely to be necessary? Please provide reasons. If so, when do you consider they would be needed? Why?

b) What are your views on the different models, including?

- Whether the models presented illustrate the right range of potential arrangements to act as a basis for further thinking and analysis? Are there any other models/trials we should be aware of?
- Which other changes or arrangements might be needed to support the adoption of different models?
- Do you have any initial thoughts on the potential benefits, costs and risks of the models?

The models identified within the call for evidence capture the main ways in which the transition to DSOs could be implemented. To assist in the process, further work is required to determine the criteria that should be used to establish a local zone that is managed separately by the DSO. Some DSO's may decide to manage their network area as one unit, while others may decide that a BSP or a primary substation is the overriding criteria. Establishing local markets too far down the network could become unmanageable with high costs which are not outweighed by the benefits. We see this as an important piece of work that Ofgem needs to undertake or to instruct DNOs to undertake which will enable the appropriate market structure to develop.

Once a consistent set of criteria is established, DNOs need to be incentivised to operate as DSOs. Where they manage the system well and bring overall benefits to customers they should be rewarded for this. Where the benefits are not realised, the DSO should incur additional costs. These incentive schemes will need to be carefully constructed to ensure DSOs do not just focus on developing services which reduce their costs. For example, contracting with a storage facility as part of an ANM scheme will benefit the generators, who will no longer be curtailed, but will not directly benefit the DNO.

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## Innovation

47. *Can you give specific examples of types of support that would be most effective in bringing forward innovation in these areas?*
48. *Do you think these are the right areas for innovation funding support? Please state reasons or, if possible, provide evidence to support your answer.*

In response to questions 47 and 48, we believe that support for the establishment of local markets is essential to allow these to develop in an efficient manner. However, these markets are reliant on the local DNO understanding their own requirements and having an incentive to procure them. Consequently, support should be provided to both independent developers of market platforms, but also to DNOs to help establish the types of services they require and the monitoring infrastructure requirements for their networks to help determine these requirements.