

## **The Intelligent Energy Saving Company**

### **Answers to questions pertinent to our Responsive Power Optimisation technology**

5/5/17

#### ***Question 16: Do you agree with our view that storage should not pay the current demand residual charge, at either transmission or distribution level?***

An argument was made that, in effect, residual charges paid by storage systems both during their charging and discharging phases puts it at a competitive disadvantage because:

1. Residual charges do not relate to specific costs that any user imposes;
2. Demand is an end user of electricity and storage does not 'use' electricity; and
3. The primary purpose of storage connecting to the network is not for the provision of energy or flexibility.

The first argument was analysed in detail and convincingly by both Imperial College and Cornwall Energy and although the reports were referred to by Ofgem in the recent "minded-to" consultation, the key relevant evidence was not commented on and seemingly not taken into account. Those reports provided clear evidence that, in the medium to long term, certain transmission costs should be treated as variable rather than fixed and therefore the sustained impact of load management on the demand side in fact offsets the cost of network maintenance and expansion.

The second point is semantic at best and in any case, factually incorrect because most storage systems have a cycle efficiency. Consider for example, a small sample of the different types of system that might offer storage:

- Batteries, which might waste 5 to 10% of input energy during a cycle, which cannot be regarded as anything other than final consumption;
- Pumped storage, which may require electricity consumption to open the taps prior to generation lose between 10% and 15% of the original energy;
- Hydrogen storage which may waste two thirds of the energy re-delivered;
- Many other forms of storage with a range of characteristics but all of which use the system both during charging and discharging.

As well as the factual inaccuracy of the second point, it is dangerous to build an argument around the semantic convenience of a particularly selective definition of demand. The fact is that the system cannot tell the difference between demand arising from consumption and storage. Storage systems are adding to the use of the system both when they create demand for electricity and then again when they release it.

Finally on the second point, the effect of storage may be to move a problem that it solves at one point in time to another point in time. Muting the costs of the use of the system during the charging phase will give incorrect signals regarding time of use.

The third point is also semantically misleading and factually incorrect. The system cannot distinguish between the motives for using storage and its costs are responsive only to physical use, not assertions regarding putative intentions. The factual incorrectness is the suggestion that storage does not compete for the provision of energy or flexibility. In fact, it does compete for the provision of energy at times of stress. If, for example, we had storage capacity of, say, 1 GWh on the system (close to consumers to avoid waste in using the transmission system), then for one hour, this could

displace the need for 1GW of generating capacity at peak times. On a statistical basis, and to meet the security of supply standard, it would be less, but it means that power stations can be retired or not build and associated transmission network capacity could be retired or not built. Moreover, batteries could provide frequency response on timescales of the order of 200ms as shown by recent bids into the first Enhanced Frequency Response auction.

The assertion that storage ‘largely competes with generators’ is particularly worrying because it carries a clear implication that competitors other than generators should be ignored and that it would be acceptable for such competitors to be disadvantaged while they are relatively small regardless of their potential to compete on a wider scale if there were a level playing field. To take one example as an illustration, Power Responsive Optimisation (which incorporates voltage control, phase balancing and harmonic suppression) has been demonstrated both at DNO and consumer voltage levels to provide similar functions to storage by increasing or decreasing demand and doing so, if required, at levels that are imperceptible to consumers but which in aggregate can have a material effect of hundreds of MW or potentially GWs throughout the system. (See, for example, the CLASS project carried out by Electricity North West). If the behaviour of storage providers becomes tilted by allowing them to escape the charges that everyone else in the system is expected to bear, players such as the suppliers and operators of Power Responsive Optimisation would be disadvantaged for exactly the same reasons as made by Ofgem in respect of embedded generation.

In conclusion, giving storage operators an unfair advantage in respect of their use of the system would harm competition and act detrimentally to the interests of consumers by discriminating against the best solutions available.

***Question 17: Do you agree with our view that storage should not pay BSUoS on both demand and generation?***

No. See Question 16.

***Question 18: Which of the BSUoS approaches describe is more likely to achieve a level playing field for storage?***

They all distort the playing field against the interests of consumers. See Q16.

A better way to even the playing field would be to make a proper analysis of the long-term impact of assets in the system and to reward them where, in the medium to long term, they reduce the need for centralised generation and reinforcing, expanding or retiring the transmission or distribution system. This should look at the transmission and distribution systems as a single, physical entity for this purpose as reinforcing the distinction and separation is only for the benefit of shareholders of the protected entities and not consumers.

***Question 19: Do you think the changes in this chapter should be made ahead of any wider changes to residual charging that may happen in future? Do you agree with our view that these changes should be implemented by industry through the standard code change process?***

No. The rash of underlapping and overlapping consultations that have proceeded since last summer are highly dysfunctional. They are driven by entities under the control of dominant self-interested parties, such as the CUSC panel, they clearly seek to prove pre-determined outcomes and appear to ignore high quality evidence (such as that presented by Imperial College and Cornwall Energy). These consultations are proceeding on a basis that is visionless, as can be seen from the fact that we do not even have the first response to the November 2016 consultation on Smart Networks and very

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