

Electricity Transmission Charging Arrangements for Embedded Generators: Consultation Response

Summary

The Electricity Storage Network (ESN), as the UK industry group dedicated to electricity storage, notes Ofgem's consultation on Transmission Charging Arrangements for Embedded Generators. The proposals impact also on electricity storage. We agree that the rising embedded benefit is creating an element of market distortion and in principle we welcome early clarity from Ofgem on direction of travel of network charging. However, we have concerns with Ofgem's "minded to" position:

- **Storage projects that would have automatically been set to export at time of peak demand may no longer do so, with a potential impact on future security of supply.**
- **Storage projects, designed to help the system by reducing peaks, may be pushed behind the meter and become less visible to the system, the consequence and system cost of which does not seem to have been considered.**
- **The argument that the proposals should lead to more efficient market arbitrage has merit but requires distribution connectees to have unfettered access to intra-day markets.**
- **The proposals weaken the locational signal for distribution connected storage, which seems counterproductive given the function of storage on the electricity system.**
- **The proposals lead to a narrow intervention with far-reaching and complex consequences that do not seem to have been fully scoped out in relation to storage.**
- **We encourage Ofgem to consider implementing options that are less abrupt than the almost complete removal of the rebate on the Transmission Demand Residual.**
- **Given the variety of applications and configurations of electricity storage on the network, the governance framework for network charging of electricity storage needs review.**

The ESN would be happy to explore these issues with Ofgem further, and we will be responding to the Targeted Charging Review. We welcome the TCR as a much needed, urgent and focused intervention that does not seem to have the same complexity of consequences as does Ofgem's current proposal on embedded benefits.

Introduction

The ESN was established in 2008 as the UK industry group dedicated to electricity storage. It represents a broad range of members including electricity storage manufacturers and suppliers,

developers of projects, users, electricity network operators, consultants, academic institutions, and research organisations. We strongly support UK companies to deliver solutions for the GB and SEM electricity systems and beyond.

The ESN works on behalf of its members to respond to and address issues affecting the development and utilisation of electricity storage within the GB and SEM electricity systems. We have sat on the Smart Grids Forum and Workstream 6, working to identify the opportunities and barriers to the wider deployment of storage as a tool in a flexible energy system; we have responded extensively to the Call for Evidence on “A Smart, Flexible Energy System;” and we continue to promote active discussion and problem-solving of current and upcoming issues for the sector.

This response represents the views of the ESN as informed by our members and by our mission to promote the wider cause of electricity storage. It should not be taken as representing the specific views of individual member organisations or of new players in the storage market representing individual projects.

The response is structured to set out some key concepts and concerns from the perspective of electricity storage. We have done this because much of Ofgem’s consultation is implicitly structured towards distributed generation connectees, deferring storage considerations to the subsequent Targeted Charging Review. We do not in general find it helpful to consider storage as a distributed generation connectee, although at times this can be the most expedient approach. In the Appendix to this submission we have offered a few brief responses to the explicit questions that Ofgem poses.

Problem Definition

The ESN agrees that the value of the embedded benefit is rising beyond expectation and intention, creating an element of market distortion. In principle we welcome early clarity from Ofgem on direction of travel of network charging, such as that provided to by the “minded to” position. However, we have significant concerns with the current approach.

First, while we agree that the problem needs to be addressed as a market distortion, it is not the only market distortion among transmission and distribution connectees. Others include the upfront payment of connection fees by distribution connectees and, importantly, the hurdles to full market access by smaller distribution connectees. These issues are linked and we believe it is unwise to address them in isolation. The problem and the solutions are wider.

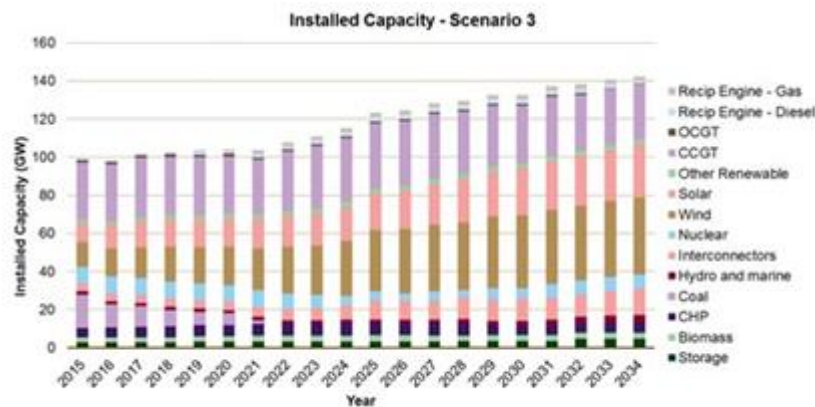
Second, we are concerned that the full value of distribution connected electricity storage is not captured In Ofgem’s analysis. In their extensive body of work in this area,¹ Imperial College make a distinction between storage connected at transmission and distribution level, and suggest that the value of storage to the whole electricity system is overall higher when connected at distribution

¹ Ofgem and BEIS themselves draw on work by Imperial College, notably “An Analysis of Electricity System Flexibility for Great Britain,” Imperial College & Carbon Trust, November 2016.

level.² The additional value amounts to an indicative £1bn/year, assuming an ongoing and credible reduction in the cost of storage (see also response to question 9).

The value of storage deployment seems further to be underestimated in Scenario 3 of the analysis in the consultation, by suggesting no correlation between deployment rates for storage for variable renewables (wind and solar), as shown in Figure 1.

Figure 1: Modelled Deployment Rates, Scenario 3



Source: Frontier/LCP

Frontier Economics / LCP, 2017

In practice, subject to removal of market barriers, storage deployment is likely to be proportional to renewables penetration. This is because it is a key tool for minimising constraints and curtailment, and for balancing the system and offering peaking services instead of new, transmission connected OCGT for example. This value of storage in minimising spilt energy and avoiding the CAPEX of new transmission lines and peaking plant should be captured in the modelling.

In summary, we believe the problem of market distortion is wider than just that of rising embedded benefits, and we believe that the suggestion that distribution connectees lend little additional value to the system is, in the case of electricity storage, unsubstantiated.

Given the rising value of embedded benefit, we do accept the need for pragmatism. Indeed, in the spirit of pragmatism, we welcome Ofgem’s recently released Targeted Charging Review (TCR), to which we aim to respond. Under the current proposals, we would encourage Ofgem to consider implementing options that are less abrupt than the almost complete removal of the rebate on the Transmission Demand Residual.

Potential Impact

² Strategic Assessment of the Role and Value of Energy Storage Systems in the UK Low Carbon Energy Future, Imperial College, 2012

The ESN is concerned about the potential impact of the reduction in embedded benefits, in relation to: security of supply; system operation; and the viability of wider services that storage can offer to the system.

On security of supply, first, storage projects (and distributed generation plant) that would have automatically been set to export at time of peak demand may no longer do so, with a potential impact on future security of supply. The consultation acknowledges that this may happen, but does not necessarily capture the full process risk introduced by making export an active market decision rather than a default position.

We acknowledge the argument that the proposals should lead to more efficient market arbitrage, by allowing for a clearer market signal for export and peak demand when needed. However, this argument seems theoretical in the absence of wider reform; smaller distribution connectees may not have full access to intra-day markets, and therefore may not be in a position to calculate and recoup the value foregone through embedded benefit reduction. Thus the export from distribution connected storage and generation may diminish at peak demand, the exact opposite of what is likely to be needed. We cannot know for sure how this will play out, but we see a risk of the proposals proving counterproductive.

On system operation, the consultation acknowledges that storage projects, designed to help the system by reducing peaks, may be pushed behind the meter as they no longer see the automatic benefit of being in front. By doing so, these projects become less visible to the system, which makes it more difficult to forecast, manage, and balance the system. Ofgem's proposals do not seem to have considered the additional cost of system operation that results from moving behind the meter. Again, we cannot know for sure how projects will respond, but the sensitivity analysis should consider the full potential costs.

Finally, on wider services, we note that a requirement on distribution connected storage to pay a significant residual (in the form of the Transmission Demand Residual) necessarily dilutes the locational signal. Yet the business case for storage will often be reliant on a locational signal; storage in a particular location can support more economic and efficient management of the system, for example through asset deferral and constraint management services, as well as other services such as voltage support. Therefore charging of a significant non-locational residual seems counterproductive given the function of storage on the electricity system, a function that is different to "pure generation."

Process

Regardless of the impact on individual storage projects, and again, while we accept the need for pragmatism, the ESN is concerned by the decisionmaking process for this particular review of embedded benefits. – The reduction in the Transmission Demand Residual rebate seems a narrow intervention but it has far-reaching consequences which do not seem to have been fully scoped out, as set out above, i.e: impact on security of supply; cost system operation; dilution of locational signal for storage.

The process also raises concerns about other possible interventions that may be drawn up with a bearing on electricity storage. Industry governance on network charging is dominated by larger generators, and these generators may have little interest in furthering the cause of storage as an independent player in the energy markets. We very much welcome Ofgem's recent consultation on the Targeted Charging Review, to which we aim to respond, but would already flag our concern that the governance for implementation of the measures could again be dominated by larger generators.

Given the variety of applications and configurations of electricity storage on the network, the ESN believes that, as a longer-term measure, the governance framework for network charging of electricity storage needs review. We have already set out in the BEIS/Ofgem Call for Evidence why we think electricity storage cannot be universally treated as "pure generation" in regulatory terms, and the embedded benefits review is another example of how this can be problematic.

Next Steps

By way of next steps, we would like to see Ofgem conduct further modelling to capture the full benefit of distribution connected storage to the system, and demonstrate how this will be realised with reformed network price signals.

We would then encourage Ofgem to consider implementing options that are less abrupt than the almost complete removal of the rebate on the Transmission Demand Residual.

The ESN would also be keen to have assurance that there will be no hiatus in between any reduction of the embedded benefit and the implementation of measures arising from the Targeted Charging Review.

The ESN will be responding to the Targeted Charging Review. We welcome the TCR as a much needed, urgent and focused intervention that does not seem to have the same complexity of consequences as does Ofgem's current proposal on embedded benefits.

In the longer term, given the variety of applications and configurations of electricity storage, we believe the governance framework for network charging of electricity storage needs review.

APPENDIX: Consultation Questions

We offer select answers to the explicit questions below. We are unable to comment in detail on many aspects of Ofgem's analysis, and instead would like to highlight the most obvious areas of agreement or concern.

Question 1: Do you agree with our problem definition and that the Transmission Network Use of System (TNUoS) Demand Residual (TDR) payments to sub-100MW Embedded Generation ("smaller EG") are distorting dispatch, wholesale price, the capacity market (CM) and that they pose an increased cost to consumers?

We agree there is an issue and that this is one of many in the non-level playing field between transmission and distribution connectees. Another issue is non-comprehensive market access to smaller distribution connectees, which seems to be a key part of the equation for allowing these players to realise the benefits of higher arbitrage as a result of the reduction in embedded benefits.

Question 2: Do you agree that rising TDR payments to smaller EG is a problem which needs to be addressed?

Yes, it is a problem together with many others.

Question 3: Do you agree with our interpretation of the applicable CUSC objectives?

Question 4: Do you agree with our assessment against the applicable CUSC objectives and statutory duties? Please provide evidence for any differing views.

Question 5: In our assessment against the objectives, do you believe there are any relevant assessments we have not taken into account?

Yes. There seems to have been no assessment of the impact on electricity storage, including storage in a variety of configurations, for example: ancillary services provision, local asset deferral, energy arbitrage. These things have been deferred to the Targeted Charging Review, a review that is welcome, but it does not substitute for a thorough impact assessment of Ofgem's "minded to" position in relation to electricity storage.

Question 6: Do you agree with our assessment that, in this instance, grandfathering as set out in the WACMs would be unlikely to best facilitate the CUSC objectives when compared to the other options available to us?

Question 7: Do you agree with our assessment that the value of the avoided GSP investment cost best facilitates the applicable CUSC objectives?

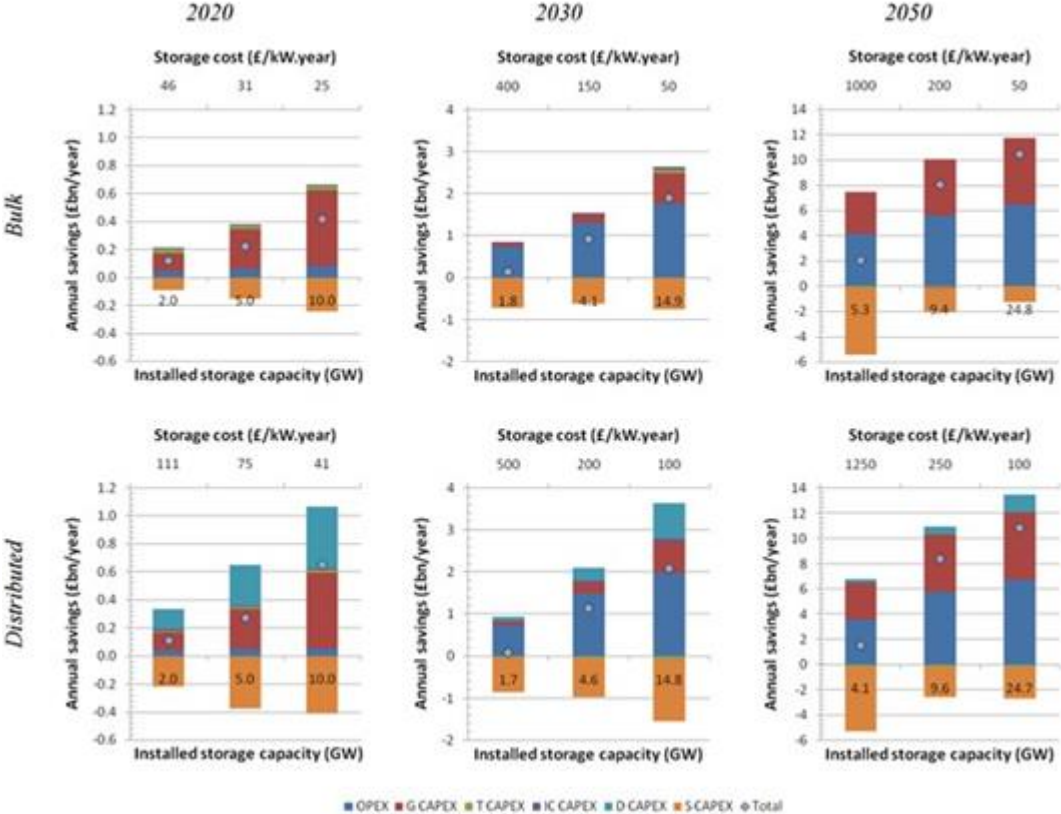
Question 8: Do you agree with our assessment of the impacts on security of supply? Please provide evidence for provided views.

No. In the short term it seems inevitable that security of supply will be detrimentally impacted, although it is hard to see if this will be a material impact. In the longer term, the proposals impede the deployment of storage facilities that can lend substantial support to the system, saving cost and improving security of supply.

Question 9: Please provide evidence to show if there are other cost savings which small EG drive in comparison to larger (over 100MW) EG on the distribution system.

In their extensive body of work in this area,³ Imperial College make a distinction between storage connected at transmission and distribution level. They suggest that the value of storage to the whole electricity system is higher when connected at distribution level. Realising the value that storage creates at distribution level will be greatly impaired if Triad income is removed, hindering the economic case of long-duration storage systems.

Figure 2: Relative Value of Distribution Connected and “Bulk” Storage



Strategic Assessment of the Role and Value of Energy Storage Systems in the UK Low Carbon Energy Future
Imperial College, 2012

The value of avoided curtailment and avoided CAPEX in new peaking generation resulting from the deployment of storage is not recognised in the modelling of Ofgem’s Scenario 3. This value has been assessed in multiple studies developed by Imperial College.

Question 10: Is there other evidence that payment above avoided GSP/generation residual would better facilitate the applicable objectives?

Question 11: Do you believe you have a legitimate expectation or contractual right for the continuation of TDR payments? If so, please provide evidence.

Question 12: Do you agree with our assessment of the distributional issues?

³ Ofgem and BEIS themselves draw on work by Imperial College, notably “An Analysis of Electricity System Flexibility for Great Britain,” Imperial College & Carbon Trust, November 2016.

Question 13: Are there any sectors that we may have overlooked?

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Question 14: Do you agree with our modelling approach?

Question 15: Do you think that our background assumptions and using FES data is an appropriate approximation for status quo?

Question 16: Where WACMs are not modelled directly, do you think our assessment is appropriate (see appendix 8 for detail)?

Question 17: Of the options available to us, do you agree that WACM4 best facilitates the applicable CUSC objectives?

No. A more measured approach would be preferable, where a signal to generate at peak demand remains and where the business case for facilities that provide this service continues to be supported.

Question 18: Do you believe that an implementation date of April 2018 best facilitates the applicable CUSC objectives?

We support a phased approach. In the event of implementation as proposed, the date should ensure continuity with changes proposed under the Targeted Charging Review, i.e: should avoid a hiatus in revenue streams and business case.

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