

CHARGING ARRANGEMENTS FOR EMBEDDED GENERATION

THE MAYOR OF LONDON'S RESPONSE TO OFGEM'S OPEN LETTER OF 29 JULY 2016

1. Summary

- a) The Mayor has a strong interest in the charging arrangements for the use by smaller scale generators of the infrastructure through which electricity is transmitted and distributed, because the development of decentralised energy systems in London is an important element of the Mayor's Climate Mitigation and Energy Strategy.
- b) It is recognised that there are major issues about how the transmission system should be financed through charges to electricity generators and suppliers. However Ofgem produces no evidence that rising electricity transmission costs are attributable to the growth of decentralised energy (embedded generation). In particular, the immediate rise in costs appears to be principally from the cost of connecting off shore wind electricity generation, which is directly exported on to the transmission system.
- c) Large scale generators pay for use of the transmission system because they are connected to it and their businesses derive value from its use. In contrast, embedded generators would be disadvantaged by being required to pay for the same asset, since they obtain no value from it where the electricity they generate is consumed under the same grid supply group. 'Embedded benefits' is a misnomer and is no more a benefit than it is a benefit for any party not to have to pay for an asset they neither use nor own.
- d) Not recognising this principle will seriously distort competition between large scale centralised and small scale local electricity generation, not level it. However the Mayor supports the charging system being kept under review. Some aspects which justify particular scrutiny are referred to in paragraph 5.
- e) Ofgem's proposals would also introduce distortions between distributed (embedded) generation and other elements that create negative demand at grid supply points, namely 'on site' electricity generation, the output of which is not exported to the distribution system and demand reduction actions by consumers. All are forms of negative demand, but Ofgem's proposals would impose transmission costs only on distributed energy.
- f) Consideration of whether and how the current transmission charging arrangements should be changed must involve Ofgem using its full review powers, under its Significant Code Review procedure, rather than adopting piece-meal modifications to the Connection and Use of Systems Code currently being considered under the chairmanship of the National Grid.
- g) Pending the completion of a Significant Code Review, it is open to Ofgem to adopt temporary measures to alleviate the potential effects of escalating transmission costs on consumers and on the functioning of the Electricity Capacity Market, such as recommended in paragraph 6 below.

2. The Mayor's interest in smaller scale electricity generation

The development of decentralised energy is an important element in the Mayor's Climate Mitigation and Energy Strategy. Not only does decentralised energy, produced in the form of both heat and electricity, reduce the carbon content of the electricity consumed in London, but the Mayor is also working on the potential for it to be an important tool in effective demand side response systems within London. As a result, apart from carbon mitigation, decentralised energy can contribute to the reduction of peaks of electricity demand, supporting cost effective investment in London's electricity distribution infrastructure and thereby delivering better value to the consumer.

The Mayor is currently working with Ofgem on the granting of a 'licence lite' electricity supply licence, by means of which the Greater London Authority, as a licensed electricity supplier, can offer low and zero carbon decentralised energy generators an alternative route to market and the potential for enhancing their revenue streams and attracting new investment.

London's low and zero carbon electricity decentralised energy plant is directly connected to the electricity distribution systems within London and as such falls within Ofgem's review of the charging arrangements for embedded generation outlined in its Open Letter of 29 July.

The Mayor supports the principle of keeping the embedded benefits system under review and does not seek to support charging arrangements which prevent a level playing field between different types of electricity generating capacity or cause decentralised energy systems to avoid costs that they should bear. To the extent that types of renewable or low carbon forms of energy generation require external support to develop and attract investment, it is recognised that is a matter for Government policy, lying outside the scope of Ofgem's review.

However, the Mayor sees the current thinking of Ofgem as potentially leading to serious distortions in the electricity market, as between centrally and locally produced electricity, the result of which would be to remove or impair unjustifiably the introduction of new investment in decentralised energy systems. Some aspects which appear to justify immediate review are set out in paragraph 5.

3. Impact of transmission use of systems (TNUoS) and balancing services use of systems (BSUoS) embedded benefit

Set out below is the Mayor's view on issues raised by Ofgem in paragraph 3 of its Open Letter, identifying assumptions made by Ofgem which appear flawed or incomplete and which should be revisited in the course of Ofgem deciding upon its preferred course of action.

a) Avoidance of sunk / fixed costs of developing and maintaining the transmission network

Paragraph 3 of the Open Letter states 'the connection of an increasing amount of sub-100 MW EG [embedded generation] to the distribution system logically cannot help to avoid sunk / fixed costs of developing and maintaining the transmission network'.

As a matter of logic, this is a very unreliable assumption, since embedded generation is a form of negative demand, reducing demand for the import of power at grid connection points. Plainly, the potential for embedded generation reducing the need for investment in new transmission system capacity is dependent upon the volume, reliability and consistency

of sources of embedded generating capacity under grid supply points. The potential may also vary substantially from one location to another.

In addition, in paragraph 3.5 of the Open Letter the point is made that embedded generation can benefit the transmission system by avoiding investment at importing grid supply points. If embedded generation can reduce the need for investment in grid supply points, there will be circumstances where it can also reduce the need for investment in the transmission system that energises those grid supply points.

The position requires substantially more investigation and, particularly as embedded generation grows and diversifies, Ofgem's logic is no basis for deciding to remove TNUoS demand side embedded benefits in their entirety.

b) The allocation of demand residual charges between suppliers

Ofgem's view is that changes to how TNUoS demand residual charges are allocated among suppliers would create a more level playing field between sub -100 MW embedded generation (which is treated in practice as negative demand) and other generation.

However, any absence of a level playing field is caused by the escalating size of the demand residual payments made to embedded generators, not their existence. See paragraph c) below.

c) Distortion of the market through the size and increase of TNUoS demand residual payments

Ofgem is concerned that the size and increase of the TNUoS demand residual payments may now be distorting the market by –

- leading to an inefficient mix of generation by encouraging investment in smaller connected generation over potentially more efficient larger transmission connected generators. The equation is not directly between more or less efficient electricity generation, as this statement implies. The absence of economies of scale, for example, may make much of embedded generation less financially efficient (i.e. more costly to run for each MW hour produced); but there are corresponding efficiencies which larger transmission connected generation does not have, notably proximity to the location where the power is consumed, with the resulting reduction in the use of expensive transmission and distribution infrastructure;
- leading transmission connected generating capacity to exit because it cannot compete. In fact the reverse is more likely to happen – if embedded generation loses the financial benefit derived from one of its major sources of efficiency (its proximity to the locations where the power it produces is consumed) through electricity suppliers being required to pay for transmission services which they do

not need to deliver the locally produced power to the consumer, embedded generators will be indirectly loaded with a cost from which they obtain no value. That is in contrast to operators of directly connected large scale electricity generation who do obtain value from transmission services. It is not the existence of the TNUoS demand residual payment embedded benefit which should be the issue – it is its size and whether there are factors which are inflating it so as to cause the distortion which Ofgem observes, for which see below;

- distorting dispatch by dampening prices at peak times when embedded generating plants dispatch out of merit to generate in triad periods. This may be a source of distortion; but the answer lies in reviewing how the triad system works, not in destroying a source of revenue or saving to embedded generators which is in principle correct and not distortive;
- distorting the outcome of the Capacity Market by holding down prices with which centrally connected generating capacity cannot then compete. This is further evidence that there may be a justification for reviewing the size of the TNUoS residual benefit, but not for removing it entirely;
- distorting innovation in the market towards parties who can best capture this large payment. Again, this distortion is introduced by the size of the TNUoS payment, not its existence.

d) CHP and other technologies realising the value of the benefits they bring to the system

Ofgem notes that it is important for all technologies, including combined heat and power (CHP) to be able to realise the value of the benefits they provide to the system. The Mayor entirely endorses this objective. CHP is mainly embedded generation. It not only increases fuel efficiency, but also can be linked with heat storage, potentially making a substantial contribution to reducing peaks in electricity demand, with benefits to the consumer both at distribution and transmission level.

One of the benefits which most CHP plant provides to the system in common with other types of embedded generation, is the proximity of its generating capacity to the locations where the electricity it produces is consumed. The removal of the TNUoS residual benefit would take away the reward for that and distort the competitive relationship between local and transmission connected generating capacity; so threatening the very objective that Ofgem supports, of enabling these technologies to realise their value.

e) Locational signals, TNUoS generation residual, BSUoS charges and other matters

Ofgem refers to the locational TNUoS charge and points out that for embedded generators who generate at triad periods, it does not provide a meaningful locational signal and is not the same as the signal received by transmission connected generating capacity and over 100 MW embedded generating plant.

This anomaly justifies further investigation, as do the other issues raised by Ofgem, relating to the TNUoS generation residual charge, the BSUoS charges and other benefits that embedded generation may be providing (paragraphs 3.3 -3.5 of the Open Letter).

The reality is that the existence of this considerable list of issues, all influencing the justifiable structure and quantum of embedded benefits, points clearly towards the need for a full scale review of embedded benefits as a whole, using Ofgem's Significant Code Review procedure.

4. Ofgem's approach – Significant Code Review

Ofgem notes that there seems to be a widespread view in the industry that the current level of the TNUoS demand residual payments, as one element of embedded benefit, is higher than justified, although there is a range of views as to the extent of the distortion and how to progress its resolution.

Two proposed modifications to the Connection and Use of Systems Code (CUSC) have been raised by industry members. Ofgem is empowered to accept or reject them in their existing or modified form.

These are CMP 264 (Embedded Generation Triad Avoidance Standstill) and CMP 265 (Gross Charging of TNUoS for HH Demand where Embedded Generation is in the Capacity Market). Both are piecemeal solutions. Given the range of issues involved and touched on in Ofgem's Open Letter, neither of these proposed CUSC modifications, whether as currently proposed or modified, could encompass the scope that needs to be addressed. That calls for a more wide ranging and thorough investigation

The issues surrounding the future of embedded benefits satisfies Ofgem's own guidance on the applicability of a Significant Code Review –

- solutions can be given effect to wholly or mainly through Code changes;
- the issues should be regarded as significant in relation to the Authority's principal objective and / or its other statutory duties and functions, or due to obligations arising under EU law, in particular likely significant impact on electricity consumers and /or likely significant impacts on the environment, sustainable development or security of supply.

The review should cover all the embedded benefits, both at transmission and distribution level and re-visit the triad system for embedded benefits relating to transmission charging. The review can also deal with related issues which Ofgem identifies in its Open Letter, for example some aspects of embedded benefits as they relate to Balancing Services Use of System payments and the position of storage and 'behind the meter' generation in any reformed regime for embedded benefits.

A piecemeal basis risks simply replacing one market distortion with another, unjustifiably removing legitimate competitive advantages that should be available to embedded generators; and in addition will imperil future investment in low and zero carbon energy generating systems to the detriment of consumers and the environment.

5. Issues upon which Ofgem's review of embedded benefits should focus

Hitherto there has been implicit in the charging structures, as they relate to smaller scale distributed generation, that the exported output of large scale electricity generators bear transmission system use of system charges because the volume exported necessarily requires the use of the high capacity of the transmission grid; but decentralised generators are relieved from such charges because the supply of their output does not involve its use. Removing that distinction is distortive, because the result would be to cause the output from decentralised energy plants to bear a cost from which the generator obtains no value, in contrast to large scale directly connected generating plants where the generators derive value from the charges they bear.

Smaller scale generation may, as Ofgem suggests, be less efficient than larger transmission connected generation, simply because it has not the advantages of scale; but it has its compensating efficiencies in its proximity to the locations at which its output is consumed. The current charging principles serve to recognise that. This principle is justifiable and should be preserved.

The Mayor is however supportive of keeping transmission charging arrangements under review and believes that there are clearly aspects of the current charging structure that justify re-visiting, in particular –

- the current triad mechanism (whereby the exposure to residual transmission charges is determined by three peak periods of demand) is likely to be introducing significant distortions, because of the incentives for generators uneconomically to manipulate their exported volumes to secure relief from charges. Consideration should be given to reforming the system, perhaps by measuring eligibility for relief over longer periods;
- Ofgem may investigate means by which the actual quantity of locally generated electricity which is not balanced by consumption under the same grid supply point group can attract charges, rather than all embedded generation which generates during triad periods being relieved of those charges;
- the above may be linked to more accurate and realistic locational charging. There is no evidence that the current locational charge (the element of the transmission charge that generators pay related to their location on the transmission system) bears any accurate relationship to the transmission cost savings made or the costs incurred specific to the location of generating plant. Addressing this issue is fundamental to removing market distortion and enhancing cost reflectivity.

6. Temporary measures

Particularly in view of the distortions that appear to be emerging in the Capacity Market and in the interests of consumers, Ofgem is clear about the need for immediate measures.

These should however be measures which –

- are temporary, pending the outcome of a Significant Code Review;
- do not anticipate the outcome of the review by removing current sources of embedded benefit payment or introducing new long term principles regarding the allocation of transmission or distribution costs;

- are accompanied by an impact assessment to ensure that they do not have any unintended and deleterious effect on smaller scale electricity generation or particular types of it.
- in particular might cap embedded benefits so as to remove the apparent excessive volume of the residual demand TNUoS benefit, enabling the merits and amount of the payments to be reviewed in its full context subsequently.

The Mayor is keen to support and contribute actively both to the assembly of a package of any temporary measures seen as needed and in a Significant Code Review.

Greater London Authority

September 2016