Grid Edge Policy Ltd

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To: tcr@ofgem.gov.uk

Dear Judith,

Ofgem's Targeted Charging Review – response to consultation

Until last year I was Senior Partner in Ofgem responsible for regulation of the distribution networks, including network charging and the wider challenges around smart grids and flexibility. As such I have a strong interest in and understanding of the issues raised in this consultation. I am currently Director Grid Edge Policy providing consultancy advice to a range of organisations, including community energy projects. However this response is provided in a personal capacity. I am also a visiting fellow at the Oxford Martin School, Oxford University contributing to their work on connecting renewables. As a apart of that I am preparing a paper on network charging which I would be happy to share with Ofgem in due course.

I have set out below some key high level observations on Ofgem's approach and have then attached some short points in response to the questions raised.

The need for a holistic view

The targeted charging review is focussed purely on the question of the residual element of network charging. If Ofgem is going to the effort of conducting a significant code review then it should be looking at charging in the round.

The "forward looking" element of costs was last reviewed for distribution when CDCM was established following a review launched back in 2005. The energy system has changed radically over the intervening years and it is to be expected that the structure of costs and key considerations in determining "forward looking" charges will have changed too.

Intuitively one would expect a charging review to start with the cost reflective element. Understanding the scale of the residual and the drivers of costs is likely to be a critical input to decisions on the residual. For example, if you are considering capacity based charging the question of whether this should be coincident peak capacity or individual capacity would most logically follow from what was considered appropriate from a cost reflectivity view point. The principal of simplicity (and the need for suppliers to reflect any structure in their tariffs) would point to common definitions being used where possible. This points to the need for work to progress on the "forward looking" element before decisions are made on the residual.

This is not simply a mechanistic process of updating the cost models used (which industry can lead) but needs a fresh debate around issues such as the time horizons (long run incremental costs or short / medium term marginal costs?) reflecting the fact that the options open to the networks and to users will vary depending on the time horizon and signals are needed for both operational and investment decisions. The structure of costs will also be shaped by the trajectory of demands on the system. In a world where we expect increased electrification of heat and transport and also increased distributed generation, the demands on the system and the extent of incremental costs compared to historic costs will be higher than in a world where (as is the case on gas) there is likely to be surplus capacity on an enduring basis. The fact that Ofgem uses interchangeably the terms

"sunk costs" and "fixed and common costs" (which are different things) suggests it is not really clear what is covered in the cost reflective element. And in so far as the increasing residual on TNUOS is actually a reflection of the fact that total transmission costs are increasing, Ofgem might usefully look to understand the drivers for that (and whether that points to changes to the cost reflective element).

The only reason for departing from this obvious ordering (looking at the cost reflective element first) would be if the distortions caused by the residual were causing serious and immediate problems – as Ofgem believed they were with embedded benefits – but the case has not been made beyond that. Clearly Ofgem is concerned about the unintended consequences of its embedded benefits decision driving generation behind the meter but this approach just risks further unintended consequences as Ofgem unravels network charging a step at a time.

As the consultation indicates there are also links between network charges and connection charges (though the paper is wrong in suggesting that connection charges count towards RIIO revenue recovery – they do not). The connection charging regimes for transmission and distribution are currently very different (both in terms of the levels of reinforcement that a connectee pays for and whether the connection is firm or not and whether you are paid for being constrained off). Connection charging therefore needs to be considered as part of any attempt to address distortions between transmission and distribution. Connection charging is also a key element of the price signal which drives locational decisions for generation – the point of connection is the key time when locational price signals can fully be taken into account by a generator.

Increasingly DNOs are concluding that network charges are too weak a signal to drive the very location specific responses that they need and hence they are looking at models closer to that of ancillary services to encourage demand side response. This needs to play into the big picture of the future for network charging.

The issues around the residual are difficult – especially if they might involve a major shift in the structure of charges and Ofgem is right to kick off the debate – but it must also look at the bigger picture (at least at a high level) to put those decisions in context.

There is no right answer for the residual – it can be used to deliver policy goals or for reinforcing signals about the wider system costs

As is implicit from the consultation there is no technical "right answer" for how to deal with the residual and hence the sort of principals that Ofgem is exploring cover broader issues such as fairness and what are good / bad distortions. Although Ofgem is not explicit about it, the residual charges could be used more actively to support particular policy goals. Ofgem may well argue that is outside its remit and counter to the code objectives (which it is of course at liberty to change). But BEIS could legitimately take a view on such matters hence, as I have said elsewhere, I would have expected BEIS to be closely involved in this strand of work (but not in the cost reflective part).

In their paper[1] for the CDCM review Professor David Newbery and others argued for a principal of minimising distortions "unless Ofgem wants to send signals to encourage energy efficiency" –

[1] http://www.eprg.group.cam.ac.uk/wp-content/uploads/2014/01/eprg0507.pdf

highlighting that the residual can be used for wider policy goals. With current priorities around flexibility this might be recast as encouraging demand side response (though as noted below Ofgem has consciously gone in the opposite direction on that one). More radically the fact that there is no cost reflective rationale for allocation of these costs means that the structure could actively be used to support those in fuel poverty (ie taking account of ability to pay and using, for example, council tax bands to determine charges as MIT suggest for other reasons). Ofgem may not want to go down this path but it should make clear that theoretically this is an option.

Ofgem talks about the "forward looking" costs reflecting the wider system costs (and hence says that it will be looking at these as part of its joint work with BEIS). However, this is not what the "forward looking" cost-reflective element should be doing. The cost reflective element of network charges should purely be looking at the network costs. If there are wider system costs that cannot readily be reflected through other system charges then the residual charges could be used to provide that signal. The network cost-reflective charges should focus on network impacts.

For example, historically Triad has been hailed as one of the strongest programmes for encouraging DSR given the very significant cost savings that can be achieved by avoiding Triad periods. Despite the practical challenges (noted below) it has led to significant flattening of the peak. Supporters of Triad will argue how this has helped with security of supply and how much tighter the capacity margin would have been without Triad. But that is not what network charges are meant to be signalling – from a cost reflective viewpoint they should only be about the impacts on network costs not wider system security. Of course if, for policy reasons, Ofgem is happy to strengthen the signals for reducing peak demand to help with security of supply (which may well have made sense when there was no capacity market) by using Triad as the basis for recovering residual charges then it can do so – but that is not "minimising distortions" that is Ofgem pursuing a (valid) policy goal.

As another example, the decision that Ofgem took last year on DCP228 has dramatically weakened the price signals in support of flexibility. Given that this decision was all about the allocation of the residual on DUOS it is amazing that it isn't referenced in the consultation (and it is clear from GEMA minutes that it was not debated at that level either despite its major impact). The decision effectively changed the allocation of the residual across the red/amber/green DUOS time periods from a proportionate mark up to a flat mark up on the basis that this reduced the distortion in the underlying cost signals. For WPD for example this led to a reduction in the peak DUOS from 18p/kwh to 6p/kwh – and in the process wiped out a large element of the business case for flexibility providers. Given the emphasis that is now being placed on flexibility it would surely have been open to Ofgem to take a broader view of the consumer interest in this case.

A focus on minimising distortions makes sense if the rest of the system is perfectly cost reflective and rational – but we all know it isn't

The principal of "no distortion" assumes that the rest of the system is perfectly cost reflective and that consumers are rational. In practice policy costs swamp the network charge price signals and some important elements of costs (such as distribution losses) are not taken account of in the current charging structure. Any price signal through network charging may or may not be passed on by suppliers. And end customers are not engaged in the market and are unfamiliar with the idea of demand side response, with limited opportunities as yet for automation to support DSR. Against that

imperfect backdrop it is not clear that Ofgem should be prioritising "minimising distortions" and a more pragmatic, less idealistic approach to charging is needed.

One of the targets of Ofgem's concerns would appear to be the fact that those customers who are able to avoid network charges by self-generating are typically better off and that this creates issues of fairness. That is a very real concern but its roots are in government policy around FiTs. The level of FiT was set to deliver a certain return on investment for customers considering installing microgeneration. Part of that RoI calculation would have been the saving on their energy bill from self-consumption. If Ofgem were to move to recover more of the network charges costs from these customers (eg charging on gross consumption) then – assuming that it wanted to maintain the ROI to deliver on its policy goals - the government would need to increase the FiT and hence overall policy costs and customers without FiT would be no better off. Of course government objectives may change and Ofgem can claim that this is not its problem, but the point here is to demonstrate that trying to level a playing field which government wants tilted is a rather pointless exercise.

More generally the policy cost element of electricity bills is now around half the size of the network cost element, and projected to rise. That means the residual element and policy costs are a similar magnitude. Even if Ofgem could remove distortions from the network costs significant distortions would remain. Ofgem needs to do the sums to understand whether this makes its efforts moot (ie customers still have an incentive to move generation behind the meter) or not. Ofgem should also be pressing government to look at how the recovery of policy costs distorts price signals and continuing to argue for the recovery of these costs through taxation not bills on grounds both of fairness and economic efficiency.

Turning to costs – Ofgem should only be worried about minimising distortions if it is confident that the cost signals it wants to see passed through are robust. This comes down to a question of whether the current underlying "forward looking" costs accurately capture all the drivers of cost, and is another reason for taking a more holistic view. Going back again to the academic papers feeding into CDCM it is clear that losses is an important element of costs on the distribution network which has a strong locational driver but which it has proved very difficult to accurately measure and model. As a result there is no locational element in distribution network charges. Taking a purist "no distortions" approach would maintain that lack of a locational signal into the residual charge. Taking a pragmatic approach Ofgem could recognise the weakness in the current cost modelling and allow some discount for local energy schemes in the way it apportions the residual recognising that local energy balancing will help reduce losses.

Finally, there is the consumer angle. The whole concept behind the "no distortions" principal is that the true marginal cost signal should be passed on to the system user who will then take a decision based on its own marginal costs resulting in decisions that are economically efficient for the system as a whole. This rational model arguably works for industry participants such as generation (though they face some limitations such an inability to instantly relocate). But for demand there are questions not mentioned in the consultation of whether suppliers will pass these signals on. Moreover it is well established that there are major challenges more broadly with consumer engagement and hence the idea that they will respond in a rational way to the signals from network charges is wishful thinking. At first blush this might suggest one should not worry about these signals. However, going forwards encouraging such behaviour is at the heart of a smarter more flexible system and hence using the residual to actively reinforce some of these cost signals (to try to

address the market failure resulting from the inertia) would make sense at this stage in the market development.

The challenge for Ofgem isn't identifying the right principals but how to make the trade-off between them – which requires evidence of the impacts on the ground

The most obvious issue is in relation to the "forward looking" element where there is a difficult tradeoff between the granularity of cost drivers(supporting cost reflectivity) and the need for simplicity. However as indicated above there are also major tradeoffs around the residual in terms of maintaining cost signals through non-distortion versus achieving other policy goals including fairness and how practical design considerations might influence the extent to which customers respond to price signals.

In all cases it feels as if more "real world" evidence is needed. What distortions are Ofgem concerned about and when you look at these decisions through the eyes of decision makers how big a part of the overall decision is that distortion and where do other more practical issues play in? How might the world change and over what timeframe and how does that affect the relative priority of the principals?

Encouraging a broad debate

Network charging is an arcane topic but it is clear that the decisions being taken here have the potential to impact directly on the level and structure of charges faced by individual consumers to a much greater degree than a price control with significant winners and losers (even if the overall pot remains the same). Without a real effort by Ofgem to ensure that these issues get a broad public airing and the consumer impacts are worked through there is a risk of a significant backlash downstream.

Ofgem makes multiple (welcome) references to taking account of customers in vulnerable circumstances but its proposal for a Code Co-ordination Group does not seem designed to engage with the representatives of these customers. Ofgem needs a clear plan for how it will secure that wider stakeholder input throughout this process given the technical nature of the topic. Something akin to the Consumer Challenge Group used on price controls would be one option.

And of course I would be happy to continue to contribute to thinking in this area where I can.
Yours sincerely,

Maxine Frerk
Director Grid Edge Policy

Annex: Responses to questions

Question 1/Question 2:
This is an important issue but as set out in my cover letter it is not clear that tackling residual charging will solve the problem (which also links to wider government policy). Given that any impact through changing charging will be muted it is not clear that there is an urgent need for a review for these reasons.

However this does point to a need to think about options for enabling local energy schemes to benefit from lower network charges. Local energy schemes are a way to enable a wider cros section of society to participate in the benefits of renewable generation and hence ensuring that such schemes can benefit in the same way behind the meter projects is one way of redressing that unfairness. I expand on this point in my response on behalf of Veitch Cooper.

Question 3
The significant code review should take a wider view of network charging and cost recovery including the principals behind the "forward looking" element and connection charging. This may point to the need for some elements of the review of residual charging to taken forward more urgently.

Chapter 3 – comments
Ofgem has rightly made a link a link between its work on future thinking and this review. In chapter 3 of the consultation Ofgem highlights developments around private wire solutions and behind the meter storage including electric vehicles – but looks at them largely through the lens of residual network charging and purports to be neutral as to their wider impact. What is missing is any sense of the impacts that these developments could have on the network (or the wider system) and whether these impacts are adequately picked up through the cost reflective charges

In talking about private wire solutions, the assumption seems to be that these are driven entirely by a desire to avoid residual charges. There is a strong interest internationally in the role that microgrids can play in increasing system resilience in particular where they have the capacity for islanding. As the paper acknowledges, if the private wire network is willing to accept a lower capacity connection on the basis that it will be self-balancing then it is taking some risk off the overall system. The structure of residual charging could be used to encourage microgrids to play a role in this way, looking to future system needs.

At a domestic level the introduction of electric vehicles will create challenges and potential opportunities for distribution networks. Smart charging is likely to be critical to avoid overload on the system. Even if the full impacts of this have not yet been worked through there are benefits in sending a strong signal early to EV users that charging at peak times has a real cost. It is easier if EV users get used to this from the beginning than introducing constraints on them later.

Chapter 4 – comments
The consultation doesn't make it as clear as it might that many of the international examples are focussed not on the residual element of network charging but either on total network charges or even end retail prices.

It is also helpful to reflect on reasons why the challenges in other countries may be different. Certainly the risk of customers going off grid using solar / storage will be greater in other countries which have more hours of sunshine (or less variation in seasonal demand), which use net metering (which creates a stronger incentive for self-consumption than our generation / export tariff arrangement), where network costs represent a higher proportion of the bill (as they do in Australia).

Question 6

Ofgem starts with the idea that it has to take decisions in line with its duties and code objectives. While it cannot change its duties, a fundamental part of a major review of charging such as this should be to test whether the charging code objectives are appropriate for the future energy system. Ofgem can and has changed code objectives in the past.

Rather than relying on the concept that some distortions are better than others Ofgem could include a principal of encouraging low carbon generation (consistent with its duties to reduce greenhouse gases) and of encouraging flexibility (which has been shown to be key for the future energy system). I can anticipate that Ofgem will not want to go down that path but it should make it clear that there is no barrier in principal to the residual charge being used to support wider policy goals, but recognising that such policy direction may need to come from government.

Compared to other sets of principles in the academic and other literature Ofgem has bundled together a number of factors under a broad "practicality" heading. It does then list most of the relevant factors but it is important that the weighting attached to them is not reduced by being grouped together in this way.

One specific point is that "predictability" has a number of dimensions that are conflated here. One is the ability to know in advance what the charges will be (where eg Triad falls down as you don't know until the end of the year which the 3 peak periods were so you have to guess which ones to avoid leading to the popular party game of Triad chasing). Another is about having enough notice of the level of charges so that as a supplier you can reflect them in your tariffs (as now applies for DUOS). And the third is about stability which means avoiding frequent swings in charges which can happen either as a result of frequent policy reviews (which can impact on the investment case for users of the system) or of changes in the behaviour of other parties which lead to big shifts in the charges faced by other parties.

Question 9 / 10

While the 5 options presented broadly cover the ground there are a lot of variations of each that will have very different ramifications and where it is therefore worth unpacking the options further:

- Per KWh charges can be flat or by TOU (and TOU can be at varying degrees of granularity, including a seasonal element which some other countries have);
- Capacity charges can be based on coincident peak capacity (ie system peak) or the users own peak (which is more like "fuse size" or contracted capacity). The user peak is potentially easier to implement but may lead to some customers (who have a non-standard profile) shifting load to the system peak. System peak capacity charges may better reflect the cost structure (and hence end up as the basis for "forward looking" costs) but if the system peak period isn't known until after the event it faces the same practical challenges as Triad and would certainly be unworkable for domestic customers for that reason. (It's not clear from

the description how the current Triad arrangements would be classified in terms of the options set out).
- For customers with on-site generation any capacity charge could be set separately for the maximum import and maximum export.
- Standing charges could be completely flat or linked, as MIT suggest, to some measure of property value. It's worth noting that the idea around linking to council tax bands has been explored in water in the pas[2]t.

Gross charging is likely to be strongly resisted as undermining the commitments and principal behind FiTs as well as having practical challenges.

A standing charge based on council tax bands for domestic customers would be a very positive step to support customers in vulnerable situations. Ofgem should explore the practicality of such an approach.

A capacity charge (based on contracted capacity) has the benefit of being clear that what is being bought is the right to use a certain level of capacity. For prosumers this could be seen either as "insurance" if their generation fails or as providing them the option to export. If customers were able to opt for lower capacity connections, taking some of the risk on themselves, this would ultimately have system benefits which should be rewarded.

Ultimately a hybrid solution is likely to be the right answer but it is important not to allow the arrangements to become too complex.

Question 20-22
As set out in my cover letter it is vital that a holistic approach is taken which includes the "forward looking" elements as well as connection charging.

Some of the ideas being worked through could have major implications for individual domestic consumers. Network charging is generally seen as a very technical issue and there is little or no consumer input to the debates. In other sectors such as water the whole emphasis on stakeholder engagement in the price control also extends to the structure of charges. Ofgem should consider carefully how to bring that wider stakeholder perspective into this debate. The Charging Co-ordination Group looks likely to consist of industry specialists. A separate forum is likely to be needed to ensure that wider voices are heard and the distributional and other implications for vulnerable customers are worked through.

[2] http://www.npi.org.uk/publications/services/water-charging-and-social-justice-why-politicians-must-act/