

RESPONSE TO CONSULTATION ON MINDED-TO DECISION AND DRAFT IMPACT ASSESSMENT OF PROPOSALS TO CHANGE THE TRANSMISSION CHARGING ARRANGEMENTS FOR EMBEDDED GENERATION (CMP264 AND CMP265)

Response on behalf of LWS (CHP) Limited

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Introduction

This document is a response to the consultation published by Ofgem on 1st March 2017 dealing with the minded-to decision with respect to transmission charging for embedded generation (the Consultation). The response is made on behalf of LWS (CHP) Limited, a developer of small scale generation within the GB market.

The value of Triad payments has increased significantly in recent years and it seems unlikely that the forecast levels of the payment are matched by cost savings to the National Grid. We would agree that this is an issue that needs to be addressed. As you rightly note it is necessary to create a level playing field.

The targeting of embedded generation will not address the more fundamental problems with transmission charging and cannot create a level playing field. If the current level of embedded benefits is too large, it is because the charge to consumers for their peak demand is too high and not cost reflective. Therefore, it is self-evident that the CUSC modification WACM4 cannot address the real problem. The modification creates further distortions and discriminates against embedded generation. It does not create a level playing field. Ofgem should address the fundamental problems with transmission charging rather than creating further distortions by removing embedded benefits from some or all embedded generation.

Ofgem has indicated that it will undertake a fundamental review of transmission charging, but also that it will implement WACM4 while this work is ongoing. Since Ofgem does not have the information to determine the correct level of embedded benefits it runs the risk of destroying arbitrarily the businesses of many small companies that have invested in embedded generation in good faith.

Ofgem and National Grid have reviewed embedded benefits many times and on each occasion concluded that major change is not required. The most recent review was the consultation on exporting GSPs in 2015. The resulting conclusion indicated no significant change to TNUoS charging unless GSPs were exporting. In late 2015 Ofgem should have been aware of the forecast growth in the residual transmission demand charge. Nothing has changed fundamentally since the end of 2015. The significant change of policy indicated by directing that WACM4 is made suggests that Ofgem is responding to political pressure rather than acting as an unbiased economic regulator.

Key points

The conclusions set out in the Consultation are based upon a number of fundamental misconceptions.

Transmission charging

Short Run Verses Long Run Marginal Costs

In order to give the correct investment signals and be consistent with CUSC applicable objective (a), transmission charging needs to reflect long term costs.

It has long been a tenet of the regulation of transmission charging that the prices should be reflective of long run marginal cost (LRMC). Transmission assets have very long lives and to send the correct signals to existing and potential transmission users it is necessary to indicate the costs of those assets over their working life. This includes amortised capital and also operating costs. This concept measures the cost of marginal changes to the current grid configuration. As long as the grid in its current form is expected to continue to exist, and grid supplied electricity demand is expected to grow, this form of pricing is a sensible compromise for signalling costs to grid users. Although described as being long term, it starts from a fixed base and is more properly described as a medium term marginal cost. It is not the long run marginal cost of running an economically efficient grid.

The current system of charging customers for transmission costs using demand measured at the Grid Supply Point (GSP) at times of system peak has been established for many decades. The explicit rationale for this formulation is that the size and cost of the transmission system is driven by the level of peak demand. This is based upon the engineering judgement that, with minor constraints, a transmission grid that is capable of accommodating peak flows will also accommodate the flows during the rest of the year. Therefore, the long term costs are driven by forecasts of peak demand. However, in its analysis Ofgem implicitly assumes that the grid in much its current form must exist, and that most of the costs are sunk and fixed. As a consequence, when looking at the cost to the consumer of embedded plant, Ofgem assumes that a saving made by one consumer must be reflected by an increased cost for another consumer. In essence it is looking only at short run marginal costs (SRMC) in a system that is too large, and consequently at marginal costs that are close to zero. This sends the wrong signal for investment in embedded generation and also for long term investment in and replacement of grid assets.

Perhaps most importantly for the decision to implement WACM4, Ofgem has accepted that the only element that is variable is that which relates to the GSP itself. This self-evidently cannot be true. Ofgem has also accepted National Grid's estimate of the avoided costs at a GSP. This estimate looks at the cost of reinforcement at a GSP and excludes the cost of the supergrid transformer (see paragraph 3.21). Thus, these estimates assume implicitly the existence of a grid in its current form and with the current level of fixed costs. It does not reflect the long term costs of serving demand at that location.

Locational Charging and avoided cost

Ofgem's analysis appears to assume that the locational charging element of Transmission Use of System (TNUoS) charging reflects the cost of having generation at a particular node. This is not correct. The locational charge reflects the difference in the LRMC of the system of having generation or demand at different locations. It is not the total cost of having additional generation or demand at that location, but the difference in cost of building at different points on the existing system. It is expressed as a range from negative to positive in order to be revenue neutral, but could equally be expressed as a positive range starting at zero and measured from the least cost node.

Level playing field

Ofgem has defined the creation of a level playing field solely as a comparison between small embedded generation and grid connected generation. This is drawn too narrowly. There are two aspects.

First in paragraph 4.54 Ofgem explicitly acknowledge that a unit of demand reduction should have the same effect as a unit of distributed generation, and yet the whole approach to these modifications is to treat demand and generation differently.

The CUSC applicable objective (a) requires the facilitation of effective competition in all aspects of generation and supply. There are many ways in which WACM4 fails to enhance competition or makes the competitive situation worse.

1. It creates an advantageous position for generation behind the meter compared to other embedded generation.
2. It creates a bias to reduce or shift consumption away from Triad periods rather than operate embedded generation. This increases the existing bias that is created by the ability to avoid policy costs, such as the costs of renewable support or the future costs of the Capacity Mechanism.
3. It creates a bias in favour of investment in energy storage.
4. Offshore wind is heavily subsidised through transmission charging. Ofgem's own assessment is that in 2021 this hidden subsidy will add approximately £22/kW to the Triad value. WACM4 makes even worse the competitive position of onshore wind compared to offshore wind.
5. It further enhances the competitive position of energy imported over interconnectors, which already avoids transmission charges and the carbon floor price.

Secondly, it ignores the differences in the costs created by small embedded plant and large grid connected and also the levels of income available to them. For example, National Grid must hold reserve related to the size of the largest expected loss. These costs are not paid by the grid connected generators that create them. Further, smaller plant does not have full access to the wholesale markets and must usually contract with an aggregator. This increases costs and reduces revenue.

There should not be an expectation that grid connected and embedded generators have the same flows of income and cost. There are cost differences that should be reflected. Ultimately, if all demand was balanced by embedded generation within distribution systems there would be no need for the high voltage grid! These potential cost saving should be available to embedded generation.

Consumer Costs

In looking at consumer costs, Ofgem assumes that a saving made by one consumer must be reflected by an increased cost for another consumer. In essence it is looking only at very short run marginal costs. In a charging system where National Grid is guaranteed a level of income irrespective of consumer demand, a saving made by one consumer will result in an increased cost for another consumer in that year. This is a necessary precondition of cost saving innovation. Ultimately, the grid needs to be designed and sized around the requirements of modern consumers. Preventing cost saving innovation, such as embedded generation, is not consistent with CUSC objectives (a) or (c).

It has not proved possible to review the modelling of consumer costs commissioned by Ofgem. However, it should be clear that the costs saved by consumers through the effect of embedded plant on Capacity Mechanism prices have so far, outweighed potential additional costs through embedded benefits. Ofgem appear to take the opposite view in paragraph 4.80. While we can accept that this could be the case in a market where there is little existing capacity, it is difficult to see how this could in practice be correct given the deadweight of large existing plant that does not need higher capacity market clearing prices in order to continue generating

In an industry like electricity generation with long asset lives and high capital costs, it is always possible to reduce costs to consumers in the short term by introducing rules, such as WACM4, that expropriate capital from existing assets. Regulators in the UK have previously taken the view that such expropriation is not in the long term interest of consumers.

Introducing new rules that will, within a few years, effectively destroy the value of equity in recently constructed embedded generators which do not have access to a government sponsored CFD or ROCs, is bound to have an impact on the cost of capital and increase costs to consumers.

Grandfathering

In Table 7 (paragraph 4.27) of the document Ofgem conclude that grandfathering is worse than the status quo. It is difficult to understand Ofgem's conclusion or to envisage that grandfathering could be worse than the status quo. Any excess payments associated with the current arrangements would be limited to the existing generation capacity and not available to any new plant.

Ofgem accepts the need for a fundamental review of transmission charging. The problem with the current arrangement is that consumers are paying the costs of hidden subsidies and also historic sunk costs through an avoidable charge on peak demand. The rationale for charging based upon Triads is that the system is sized for peak demand, but loading large policy costs/subsidies and large historic costs into these charges causes an inefficient signal to the consumer and also the embedded generator. In practice, Triad charging has become problematic because of the falling costs of alternatives to grid connected generation and a rapid increase in hidden subsidies recovered through this mechanism.

A thorough review of transmission charges will result in a level of Triad payments significantly lower than today, but also significantly higher than the costs of GSP reinforcement estimated by Grid and used as the basis for WACM4. The fact that Ofgem accepts the need for a Fundamental Code Review indicates strongly that it does not know the real value of embedded generation. Grandfathering would be appropriate as the minimum regret option at least until the time that Ofgem has completed the fundamental review of transmission charging.

Contractual rights to embedded benefits

Investors must take their own view on future changes in the market, and no embedded generator has a contractual right to embedded benefits in its current form. However, investors have a right to expect proportional and consistent regulation. This has been the bedrock of the GB electricity system since privatisation. The income from embedded benefits cannot be replaced in any meaningful way, and the decision on WACM4 is an existential threat to both existing and planned embedded generation.

Ofgem and National Grid have reviewed embedded benefits many times and on each occasion concluded that major change is not required. The most recent review was the consultation on exporting GSPs in 2015. The resulting conclusion indicated no significant change to TNUoS charging unless GSPs were exporting. In late 2015 Ofgem should have been aware of the forecast growth in the residual transmission demand charge. Nothing has changed fundamentally since the end of 2015. The significant change indicated by the proposal to implement WACM4 suggests that Ofgem is now responding to political pressure.

The alternative conclusion is that Ofgem created a false market in 2015 on the basis of which many people have invested in embedded generation, storage and demand reduction. This has had a significant direct impact upon pricing in the capacity market and has had an indirect effect in reducing

significantly the cost of flexibility services required by National Grid. If in 2015 Ofgem had believed that more fundamental reform of transmission charging was required it should have stated so rather than accepting the conclusion of National Grid.

Consultation Questions

CHAPTER 2

Questions 1 and 2

The value of Triad payments has increased significantly in recent years and it seems unlikely that the forecast levels of the payment are matched by cost savings to the National Grid. We would agree that this is an issue that needs to be addressed. However, the problem that needs to be addressed is not embedded generation but the structure of TNUoS. As such CUSC modification WACM4 does not address the real problem. The modification creates further distortions and discriminates against embedded generation. It does not create a level playing field.

We do not agree that increasing TNUoS Demand Residual (TDR) payments to smaller embedded generation is a problem that needs to be addressed. What needs to be addressed is the structure of TNUoS payments and the recovery of large sums related to hidden subsidies and historic costs through an avoidable charge. If the current level of embedded benefits is too large, Ofgem should address the fundamental problems with transmission charging rather than creating further distortions by removing embedded benefits from some or all embedded generation. It should signal its intent to resolve these issues and then undertake the necessary work in a reasonable timescale. Lack of resource within Ofgem is no excuse for destroying the businesses of many small companies that have invested in embedded generation in good faith.

CHAPTER 4

Question 3

It is difficult to determine the interpretation of the CUSC objectives from the Consultation. The decision framework sets out certain features of the proposed modifications and alternative modifications that would be assessed, but says little about how the CUSC objectives are being interpreted. One needs to try to imply an interpretation from the conclusions drawn.

One thing that is clear from paragraph 4.7 is that Ofgem start from the presumption that smaller embedded generation should not have access to income streams that are not available to grid connected generation. This assumption is unwarranted since the payments relate to avoiding the use of the transmission grid. While it is accepted that Ofgem has allowed TNUoS charges to develop in a way that is not costs reflective, Ofgem should not assume that the way to improve competition is to arbitrarily remove benefits that would be cost reflective were Ofgem to set TNUoS charges at the correct level.

Further, table 13 indicates a presumption that a larger reduction in embedded benefits is better than a smaller reduction. The statutory duties are best satisfied by the embedded benefits being at the correct level rather than the lowest level.

Questions 4, 5, 7, 10

As Ofgem rightly notes it is necessary to create a level playing field. Targeting embedded generation is not addressing the more fundamental problems with transmission charging and does not create a level playing field. If the current level of embedded benefits is too large, Ofgem should address the

fundamental problems with transmission charging rather than creating further distortions by removing embedded benefits from some or all embedded generation. It should signal its intent to resolve these issues and then undertake the necessary work in a reasonable timescale. Lack of resource within Ofgem is no excuse for destroying the businesses of many small companies that have invested in embedded generation in good faith.

The potential for demand reduction during Triad periods includes investment in energy efficiency, investment in storage and other forms of demand shifting, and demand elasticity. The potential for demand reduction is large. National Grid estimates that some 2.5GW of demand reduction occurred last winter over peak periods. Demand reduction should be expected to increase since it is being actively promoted by government, and part of the Capacity Market is reserved for demand reduction services. With the wide-scale introduction of smart meters, commercial demand aggregation services, and the commercial availability of storage technologies at the domestic and MW scale, there is the potential for further significant increases in demand reduction or demand shifting.

If Ofgem considers that it is important to reduce the embedded benefits for distribution connected generation, then it must consider that it is much more important to reduce the impact of Triad charging on demand reduction or demand shifting.

The assessment against the applicable CUSC objectives and statutory duties appears to be based upon a number of fundamental misconceptions.

WACM4 proposes that the benefits to be received by smaller embedded generation should be limited to a calculation of marginal reinforcement costs at GSPs. This effectively assumes the existence of a grid system in its current form and with excess capacity. It is a very short term measure (see “Key Points”) and gives the incorrect signal for investment in embedded generation. The correct investment signal would include:

- (a) The long term costs at a particular GSP including the supergrid transformer;
- (b) The value of location (always positive see below); and
- (c) A part of the current residual reflecting the long term costs of an efficient grid system.

By failing to give the correct investment signal, WACM4 is inconsistent with applicable CUSC objective (a). Further, since the payment proposed in WACM4 is dependent upon the assumed existence of the current transmission system and does not look at how the transmission system should be expected to evolve given the economics of distributed generation, storage, and future smart consumer technology, it is not consistent with applicable CUSC objective (c).

CUSC applicable objective (a) requires facilitation of effective competition in all aspects of generation and supply. In addition to reducing the payment to small embedded generators below the level of long term costs saving, there are many other ways in which WACM4 fails to enhance competition or makes the competitive situation worse.

1. It creates an advantageous position for generation behind the meter compared to other embedded generation.
2. It creates a bias to reduce or shift consumption away from Triad periods rather than operate embedded generation. This increases the existing major bias that is created by the ability of customers to avoid policy costs, such as the costs of renewable support or the future costs of the Capacity Mechanism through demand reduction at particular times.
3. It creates a bias in favour of investment in small scale energy storage.

4. Offshore wind is heavily subsidised through transmission charging. Ofgem's own assessment is that in 2021 this hidden subsidy will add approximately £22/kW to the Triad value. WACM4 makes even worse the competitive position of onshore wind compared to offshore wind.
5. It further enhances the competitive position of energy imported over interconnectors, which already avoids transmission charges and the carbon floor price.

WACM4 does not recognise the locational value of embedded generation. Although the locational element of TNUoS charges has been set to be revenue neutral, and thus as a range of negative and positive values, the value of location is always zero or positive (see "Key Points") and should be available to embedded generation. Ofgem considered that if a locational element were to be included it should not have the effect of discouraging generation at peak times. Ofgem's concern at discouraging embedded generation at peak times reinforces the fact that, logically, the locational effect cannot be negative, and that the current charge levels are designed as a differential rather than an absolute cost.

Question 6

We do not agree with the assessment that Grandfathering would be unlikely to facilitate the CUSC applicable objectives.

It is widely recognised that the current level of residual payments in TNUoS are not cost reflective. Ofgem recognise the need for a fundamental review of transmission charging is required, but may feel that early action is required to prevent excess investment in embedded generation; even though this is clearly a partial solution. Although not ideal, one method is to temporarily apply a constraint on embedded generation while the fundamental review is completed. In these circumstances grandfathering is entirely appropriate and consistent with the applicable objectives.

In Table 7 (paragraph 4.27) of the Consultation Ofgem conclude that grandfathering is worse than the status quo. It is difficult to understand Ofgem's conclusion or to envisage that grandfathering could be worse than the status quo. Any excess payments associated with the current arrangements would be limited to the existing generation capacity and not available to any new plant.

The problem with the current TNUoS charging arrangement is that consumers are paying the costs of hidden subsidies and also historic sunk costs through an avoidable charge on peak demand. The rationale for charging based upon Triads is that the system is sized for peak demand, but loading large policy costs/subsidies and large historic costs into these charges causes an inefficient signal to the consumer and also to the embedded generator. In practice, Triad charging has become problematic because of the falling costs of alternatives to grid connected generation, falling demand driven by new technology, and a rapid increase in hidden subsidies recovered through this mechanism.

A thorough review of transmission charges will almost certainly result in a level of Triad payments significantly lower than today, but also almost certainly significantly higher than the costs of GSP reinforcement estimated by Grid and used as the basis for WACM4. The fact that Ofgem accepts the need for a Fundamental Code Review indicates strongly that it does not know the real value of embedded generation. Grandfathering would be appropriate as the minimum regret option at least until the time that Ofgem has completed and implemented the fundamental review of transmission charging.

Question 8

We do not agree with the assessment of the impact on security of supply.

Although in theory there are other income streams available to embedded generation, these are very short term and unpredictable. Many ancillary services contracts are now operated through monthly tenders and the markets are over supplied. Although there is some value currently in STOR for the winter period, this value would in future be reduced almost to zero, since embedded plant may no longer withdraw from this market in order to generate during Triads. STOR tenders for other periods already clear at very low prices. We note further that other CUSC amendments currently being considered would reduce the value of STOR contracts to embedded generation.

Although existing small embedded generation, operated efficiently within a large portfolio and with the benefit of a long term capacity mechanism contract, has the potential under WACM4 to cover its operating costs and possibly make a small operating profit, it would be unable to service any debt. Lenders would have the option to seek a buyer at a much reduced value or to sell the assets in the second hand market. Packaged generators are saleable and easily transported. It is unclear which route individual lenders would follow.

Embedded generation projects, which have taken capacity mechanism contracts but not yet been built, would be unlikely to be constructed as there would be little or no potential for a return on capital.

Question 9

The split between licensed and unlicensed generation at 100MW has no logical justification. Embedded benefits should be available to all generation on the distribution system irrespective of size provided that it does not export on to the transmission grid. The split at 100MW is an artificial constraint, but it is no justification for implementing WACM4.

That said, there are practical constraints on the amount of generation that can be absorbed within the distribution system, particularly in the absence of storage. Further, larger embedded generators may increase distribution losses rather than decreasing them, and it may be difficult to find transformers with sufficient spare capacity to accommodate a larger project. There are also planning reasons why smaller projects may be more attractive, since the time taken to obtain permits is reduced significantly, smaller projects are more likely to be accepted by local communities, there are many small sites available, and there are fewer problems created by local emission levels or visual intrusion. Fast response small generation units are ideally suited to the ancillary services markets and better able to provide the standby capacity that should be targeted by the capacity mechanism. They are cheap capacity of precisely the type that should be built to provide peak generation that is run for a very limited number of hours.

Question 11

Investors must take their own view on future changes in the market, and no embedded generator has a contractual right to embedded benefits in its current form. However, investors have a legitimate expectation that there would be a continuation of embedded benefits based upon Triad payments. There would be no guarantee of the level of these payments, which would be variable and depend upon grid costs.

Investors in and developers of small generation have tended to be smaller independent companies and individuals. The larger generators have not been part of this business because corporate overheads make it almost impossible for them to operate efficiently at this scale. The political pressure to

remove embedded generation has come from a realisation by the government that the capacity market has not produced the type of capacity that their modelling suggested, and also a major and coordinated lobbying effort aimed at killing the sector on behalf of the large generators, who have realised that embedded generation has the potential to be a significant business and that it is one in which they are incapable of competing effectively. These are the very same companies that are happy to accept the large hidden subsidies built into the current TNUoS structure and that in turn are pushing up Triad payments rapidly. Small companies have been unable to compete with the lobbying capability of the large generators.

Investors have a right to expect proportional and consistent regulation. This has been the bedrock of the GB electricity system since privatisation. The income from embedded benefits cannot be replaced in any meaningful way, and the decision on WACM4 is an existential threat to both existing and planned embedded generation. It would appear that the decision on WACM4 is being made in a panic and without a sound basis in evidence. The modelling appears to use the same or a similar model to that which produced such erroneous forecasts of the type of plant that would win contracts in the capacity mechanism.

Ofgem and National Grid have reviewed embedded benefits many times and on each occasion concluded that major change is not required. The most recent review was the consultation on exporting GSPs in 2015. The resulting conclusion indicated no significant change to TNUoS charging unless GSPs were exporting. In late 2015 Ofgem should have been aware of the forecast growth in the residual transmission demand charge. Nothing has changed fundamentally since the end of 2015. The significant change indicated by the proposal to implement WACM4 suggests that Ofgem is now responding to political pressure.

The alternative conclusion is that Ofgem negligently created a false market in 2015, on the basis of which many people have invested in embedded generation, storage and demand reduction. The signal that there was no need for major changes to the TNUoS arrangements has had a significant direct impact upon pricing in the capacity market and has had an indirect effect in reducing significantly the cost of flexibility services required by National Grid. If, in 2015, Ofgem had believed that more fundamental reform of transmission charging was required, it should have stated so rather than accepting the conclusion of National Grid.

Ofgem has indicated that it will undertake a fundamental review of transmission charging, but also that it will implement WACM4 while this work is ongoing. Since Ofgem does not have the information to determine the correct level of embedded benefits it runs the risk of destroying arbitrarily the businesses of many small companies that have invested in embedded generation in good faith.

CHAPTER 5

Questions 12 and 13

We cannot comment in detail on the impact on all generators types or consumers. However, we would note the following:

1. Paragraph 5.2 suggests that the increase in the size of the charging base would reduce the rate of Triad charges by 10.5% in 2017/18. We cannot comment in detail on this calculation but we would note that National Grid's estimate of 7.5GW of embedded plant does not distinguish that which is behind the meter and which consequently will be unaffected by

WACM4. Further, observations of the rate of change of grid demand approaching peak times suggests a very much lower amount of embedded generation and demand reduction being implemented to avoid the Triad charge. Whatever the value of the change in the Triad charging base, in a system where total charges are fixed, some short term effects on the level of the rate of the charge would always be observed by removing a means of avoiding that charge. There could be a similar short term effect from forcing consumers to pay grid charges irrespective of whether they consumed power, but the effect observed would ignore completely the longer term cost increase faced by consumers because cost saving innovation has been stifled. We note that there are explicit government and European policies to encourage both demand reduction and embedded renewables.

2. Paragraph 5.15 states “We consider that when considered in the round, the impacts are not disproportionate and are justified by the benefits that they provide.” Table 21 indicates that for a “Type C” generator in London, embedded benefits are reduced from £35.49 to £0.08. We find it difficult to see how that could not be considered disproportionate. Destroying the business of a small company with policies that are based on insufficient and defective evidence will always be disproportionate. See also the answer to Question 11.
3. It is also difficult to see how forcing consumers to purchase grid services at prices much higher than warranted by the benefits to them could be considered proportionate or a social benefit.

CHAPTER 6

Questions 14, 15 and 16

We have been unable to review the modelling in any detail. We note that the model used has been proven to be defective when used previously.

CHAPTER 7

Question 17

We do not agree that WACM4 is the best of the options available. Ofgem is currently constrained in the choice of options by the existing TNUoS structure, so that there is no really cost reflective option on the table. However, it is clear that WACM4 significantly under-values embedded generation, creates further distortions, and creates the very real potential to destroy unnecessarily the businesses of many small companies. There are other options that set much higher arbitrary values for the embedded benefit, and also options with grandfathering, that at least offer some protection for existing small generators until the fundamental problems with the TNUoS structure are addressed in a Fundamental Code Review, and the true level of embedded benefits has been reliably identified. That true level would probably be lower than the current level, but also should be a stable basis for businesses to plan into the future.

Question 18

An early implementation of a CUSC modification would be appropriate had the correct modification been identified. However, the early implementation of WACM4 is clearly not appropriate.