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A Review of the Consistency of Ausgrid's Network Tariffs with the Distribution Pricing Principles

Prepared for Ausgrid

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1. Introduction

The National Electricity Rules ('the Rules') have recently been amended to provide more stringent guidance to distributors as to the principles that should be satisfied when setting distribution network tariffs. In addition, distribution businesses are now required to prepare a Tariff Structure Statement (TSS), which describes the process by which a distribution business has set its tariffs, explains to customers the basis for their tariff structures, and demonstrates how those tariffs are consistent with the distribution pricing principles.

Ausgrid has prepared its inaugural TSS in compliance with the rule obligation. HoustonKemp has been engaged to review the consistency of the proposed tariff structures with the distribution pricing principles (ie, Rule 6.18.5). This report sets out our findings from this review.

The remainder of this report is structured as follows:

- Section 2 sets out and describes the distribution pricing principles, and the economic concepts that underpin them; and
- Section 3 sets out the results of our review as to the consistency of Ausgrid's network tariff structures with the distribution pricing principles.

2. Distribution Pricing Principles

Rule 6.18.5 sets out the distribution pricing principles to be applied to the development of distribution network tariffs. In summary, the distribution pricing principles provide that:

- tariffs must be based on the long run marginal cost (LRMC) of providing the service;
- the expected revenue recovered from customers within a tariff class must lie between stand alone and avoidable cost;
- the revenue recovered from individual tariffs must:
  - reflect total efficient costs;
  - permit the distributor to recover its revenue allowance; and
  - be recovered in such a way as to minimise distortions to signals for efficient usage of the network; and
- the distribution must consider the bill impact of tariff structure changes on customers, given the desirability of improving price signals for efficient use of the network.

In addition the rules place requirements on the constitution and definition of tariff classes, which is an important starting point for a review of proposed distribution tariffs.[1]

The remainder of this section describes thee four distribution pricing principle requirements, the requirements relating to tariff classes, and the economic concepts that underpin them.

2.1 Requirements for tariff classes

Rule 6.18.3 states that:

> (d) A *tariff class* must be constituted with regard to:
>
> (1) the need to group *retail customers* together on an economically efficient basis; and
>
> (2) the need to avoid unnecessary transaction costs.

In addition, Rule 6.18.4(a) states that:

> (1) *retail customers* should be assigned to tariff classes on the basis of the nature and extent of one or more of the following factors:
>
> (i) the nature and extent of their usage;
>
> (ii) the nature of their *connection* to the *network*;
>
> (iii) whether remotely-read interval metering or other similar metering technology has been installed at the *retail customer's* premises as a result of a regulatory obligation or requirement; …

These rules establish a clear concept – a distributor must construct, or define, its tariff classes on an economically efficient basis, and should assign customers to those tariff classes on the basis on a number of specific considerations.

[1] The requirements as to the constitution and definition of tariff classes are not explicitly referenced within the distribution pricing principles. In light of their significance, we have included them in our assessment.

2.2 Tariffs must be based on the LRMC of providing the service

Clause 6.18.5(e) of the NER states that:

> Each tariff must be based on the *long run marginal cost* of providing the service to which it relates to the *retail customers* assigned to that tariff …

To understand the purpose for this clause, we need to understand the economic concept of *long run marginal* cost, and be clear about the service to which it relates.

2.2.1 The concept of marginal cost

A necessary condition for economic efficiency is that the price of a service equals its *marginal cost*, ie, the change in total costs effected by a small increase in demand for a service.

Marginal cost is therefore a forward-looking concept – by definition it is the cost of the *next* unit, the unit that has *not yet been produced*. This is well described by Kahn, who states that:

> Marginal costs look to the future, not to the past: it is only future costs for which additional production can be causally responsible; it is only future costs that can be saved if that production is not undertaken.[2]

Marginal cost can be estimated either in the *short run or* the *long run.* The fundamental distinction between short run and long run marginal cost is the timeframe over which production processes can be adjusted so as to minimise cost. Specifically:

- short run marginal cost (or 'SRMC') is defined as the cost of an incremental change in demand, holding *at least one* factor of production constant; whereas
- long run marginal cost (or 'LRMC') relaxes the constraints of its short run equivalent, and so is the cost of an incremental change in demand assuming all factors of production can be varied.

2.2.2 Marginal cost of an electricity network service

The clause provides that each tariff therefore must relate to a (not necessarily distinct) network service provided to a customer. It is therefore essential that we define the service in question. Put simply, to estimate the cost of 'the next unit' as required for an estimate of LRMC, we must clearly define what that 'unit' is.

There is no hard-and-fast approach to defining the services provided by a distribution network. For the purpose of estimating LRMC so as to set tariffs, we have defined the fundamental service that a network provides to customers as an energised connection with a set of accompanying rights, which may include:

- the right to withdraw up to a specified amount of power from a defined connection point at any time;
- the right to inject up to a specified amount of power into a defined connection at any time; and
- the right to exercise the rights accompanying the energised connection with some expectation of reliability.

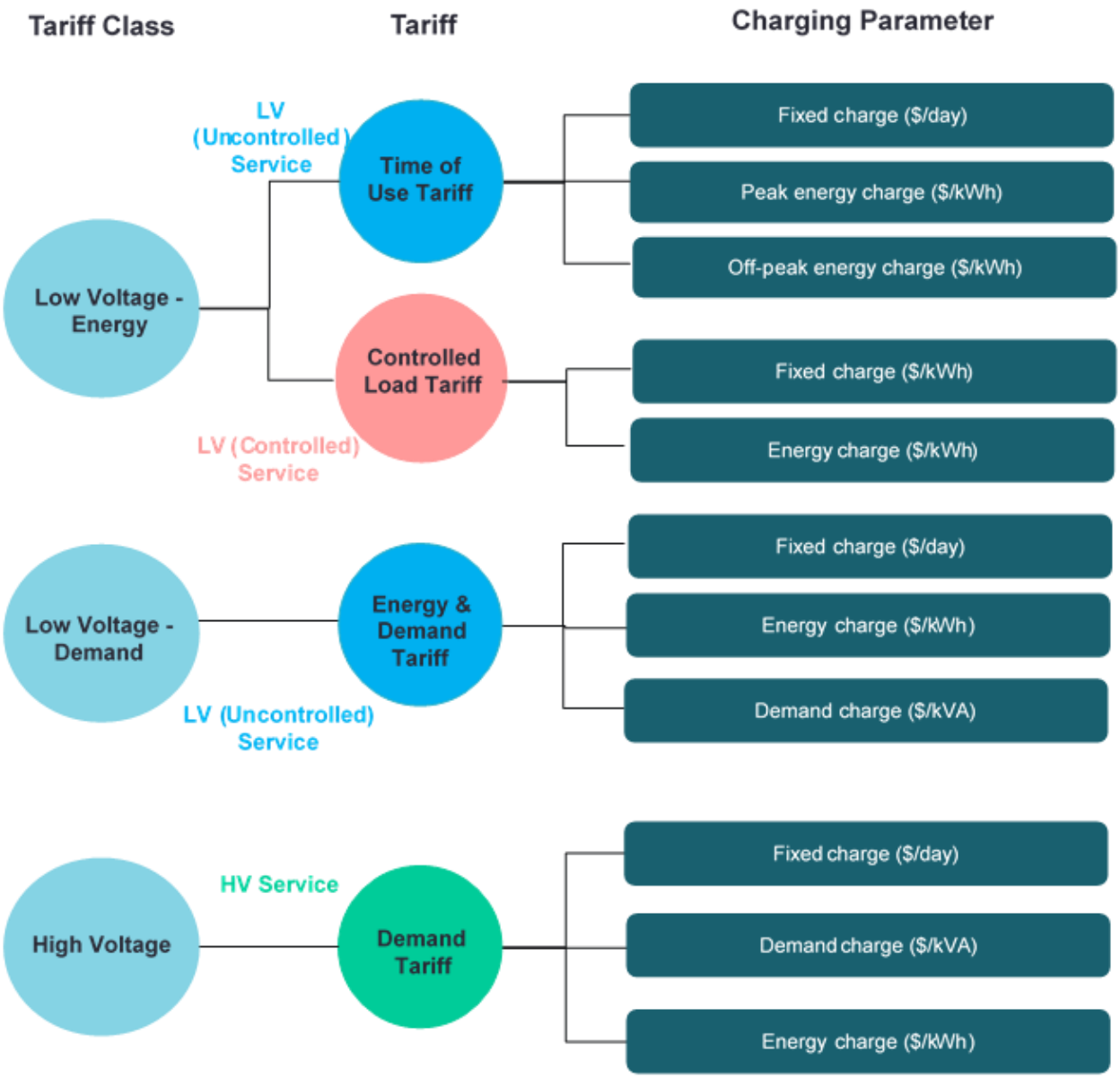
Each right gives rise to an obligation on the network, eg, a right to withdraw creates an obligation on the network to invest in sufficient capacity, so as to provide that service to the customer. Sometimes these obligations are onerous, and so are costly to fulfil; sometimes they are superfluous, and so result in no incremental cost.

Figure 1 overleaf illustrates the relationship between the network service and other critical concepts related to the distribution pricing principles, ie, tariff classes, tariffs, and charging parameters. This example is

[2] Alfred Kahn, 'The Economics of Regulation – Volume 1', pp 88.

illustrative – Ausgrid's network has many more tariff classes, tariffs, and services than this simplified example.

Figure 1 – Illustration: Relationship between services, tariff classes, tariffs, and charging parameters



We note the following:

- A service can be common to different tariff classes, eg, the LV (Uncontrolled Service) in this example is common to both the 'Low Voltage – Energy' and the 'Low Voltage – Demand' tariff classes.
- A network can supply more than one service to the customers within a tariff class, eg, the LV (Uncontrolled) and LV (Controlled) services are both provided to customers in the 'Low Voltage – Energy' tariff class.
- In some cases the definition of a tariff class will coincide with a definition of service, eg, customers on the HV tariff class only receive the HV service.

2.2.3 Drivers of forward-looking costs of providing an energised connection

Our definition of the fundamental service provided by an electricity network establishes a clear concept – a network provides an *energised connection service*. To estimate marginal costs, we need to determine the way in which increased provision of this service translates into increases in forward-looking network costs.

The principal determinant of costs for electricity network assets is the expected maximum (or 'system peak') demand. When maximum demand increases, the distributor must augment its network or else risk the prospect of not being able to supply its customers. The network's most important *obligation* therefore arises from customers' right to withdraw power during the system peak.

The marginal cost of an energised connection is therefore typically expressed in terms of the cost per kW (or cost per kVA) of maximum demand. Put another way, the 'cost of the next unit' is assumed to be the cost of supplying one more unit of demand during the system peak.

We emphasise that the marginal cost of a network service depends on the characteristics of that service, ie, on the rights that accompany the energised connection. For example, the marginal cost may be influenced by:

- the ability for the network to interrupt the customer's load (eg, controlled load); or
- the part of the network to which the customer connects (eg, low voltage or high voltage).

It is therefore misleading to refer to *the* marginal cost of network services – the characterisation implies that there is a unique value. In the extreme, we could define a distinct service at every point in time, and for each voltage level, and geographic part of the network. The economic principle of efficient pricing would then suggest that a different price should be charged for each of these services. However, such granular pricing is impractical, and so in practice network businesses use tariff classes or similar concepts to aggregate customers to whom they provide similar services.

2.3 Expected revenue must lie between stand alone and avoidable cost

Electricity network businesses are natural monopolies, and so they exhibit decreasing average total cost as demand for network services increases over time. It follows that pricing at LRMC will not allow a network business to recover its total costs. Put another way, there will be 'residual costs' that will not be recovered from setting prices equal to marginal cost.

The manner in which a network recovers its residual costs has implications for efficiency, and so the Rules establish limits on the residual costs that can be recovered from any one group of customers. In particular, clause 6.18.5(e) of the NER states that:

> For each *tariff class*, the revenue expected to be recovered must lie on or between:
>
> (1) an upper bound representing the stand alone cost of serving the *retail customers* who belong to that class; and
>
> (2) a lower bound representing the avoidable cost of not serving those *retail customers*.[3]

The rule introduces two terms that require definition: *stand alone cost* (hereafter written as 'stand-alone cost') and *avoidable cost*.

2.3.1 Stand alone cost

The *stand alone cost* of serving a group of customers is the total cost required to serve those customers alone, ie, were we to build the network anew, removing all other customers from the network.

[3] AEMC, National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014 No. 9, 6.18.5(e).

Clause 6.18.5 (e)(1) states that revenue recovered from a tariff must be less than '…the stand alone cost of not serving retail customers serving those retail customers', ie, the costs that the network would incur, were it *only* to supply those customers.

The upper bound established by the rule ensures customers on any given tariff class do not pay more *as a result of the provision of services to other customers*. In recovering its residual costs, a network business must have regard to this constraint.

2.3.2 Avoidable costs

Strictly speaking, the marginal cost refers to the additional cost of supplying a single, infinitesimally small additional unit of output. Marginal cost can equally be interpreted as the cost that would be avoided by producing one less such unit.[4]

The difficulties associated with measuring 'infinitesimally small' changes in production have given rise to two related economic concepts that serve as approximations for marginal cost, ie:

- *incremental cost* is the additional cost of supplying any (potentially large) increase in output; and
- *avoidable cost* is the reduction in cost from any (potentially large) decrease in output.

For example, an electricity network might assess the incremental cost of a new industrial customer connecting to the network. Similarly, the network might also assess the avoidable costs resulting from another industrial customer disconnecting from the network. It is worth noting that, like marginal costs, incremental and avoidable costs have both a short run and long run concept.

Clause 6.18.5 (e)(2) states that revenue recovered from a tariff class must exceed '…the avoidable cost of not serving' the retail customers belonging to that tariff class, ie, the costs that could be avoided were the network not to supply these customers.

The economic principle underpinning this lower bound is simple – customers must face a price no lower than the average cost that could be avoided by not supplying them.

2.4 Requirements on the recovery of revenue from a tariff

Rule 6.18.5(g) of the NER states that:

> The revenue expected to be recovered from each tariff must:
>
> (1) reflect the *Distribution Network Service Provider's* total efficient costs of serving the *retail customers* that are assigned to that tariff;
>
> (2) when summed with the revenue expected to be received from all other tariffs, permit the *Distribution Network Service Provider* to recover the expected revenue for the relevant services in accordance with the applicable distribution determination for the *Distribution Network Service Provider*; and
>
> (3) comply with sub-paragraphs (1) and (2) in a way that minimises distortions to the price signals for efficient usage of the network that comply with the pricing principles set out in paragraph (f).

From an economic perspective, we have interpreted the three sub-paragraphs as follows.

2.4.1 Subparagraph (1) – Revenue recovered must 'reflect … total efficient costs'

Subparagraph (1) states that:

[4] This predicates that the cost function is a continuous, and is differentiable at the current level of output.

> '… revenue expected to be recovered from each tariff must reflect … total efficient costs of serving the retail customers that are assigned to that tariff'.

The term 'cost reflective' is often used to mean 'efficient'. However, 'cost reflective' and its derivatives are neither economic terms of art, nor are they typically applied in a manner that is consistent with economic theory. Subparagraph (1) therefore does not have a clear, unambiguous economic meaning.

Similarly, the compound expression 'total efficient costs' is also unclear when referring to serving a specific group of customers. For the purposes of determining the costs to be recovered from each tariff, we have defined 'total efficient costs' as the costs necessary to provide the service to customers including allocated operating costs and a return on and of the regulated asset base as allocated to the provision of the service to those customers. The 'total efficient costs' are therefore determined at the discretion of the distributor so as to promote the pricing objective (ie, rule 6.18.5(a)) in a manner consistent with the National Electricity Objective.

2.4.2 Subparagraph (2) – Distributor must be permitted to recover its expected revenue

Subparagraph (2) states that the revenue that a distributor recovers across all of its tariffs should align with its revenue allowance. Put another way, this paragraph states that a distributor must be able to recover all of its residual costs from all of its tariffs.

2.4.3 Subparagraph (3) – Recovery of revenue must minimise distortions to price signals for efficient usage

From an economic perspective, paragraph (3) implies that a distributor must allocate its residual costs across tariffs so as to promote efficient use of the service, ie, in a manner which 'minimises distortions to price signals for efficient usage' that would result from tariffs based on the LRMC of the service. Importantly, efficient use of the service – an energised network connection – is to be distinguished from efficient use of electricity, which is not of matter of concern to a network business.

2.5 Requirements to consider customer impact

Clause 6.18.5 (h) of the Rules states that:

> A *Distribution Network Service Provider* must consider the impact on *retail* customers of changes in tariffs from the previous *regulatory year* and may vary tariffs from those that comply with paragraphs (e) to (g) to the extent that the *Distribution Network Service Provider* considers reasonably necessary having regard to:
>
> (1) the desirability for tariffs to comply with the pricing principles referred to in paragraphs (f) and (g) albeit after a reasonable period of transition (which may extend over more than one *regulatory control period*);
>
> (2) the extent to which *retail customers* can choose the tariff to which they are assigned; and
>
> (3) the extent to which retail customers are able to mitigate the impact of changes in tariffs through their usage decisions.

From an economic perspective, paragraph (h) creates a requirement on distributors to consider and limit customer impact, and allows them to deviate from efficient pricing to meet that requirement. The principle establishes:

- an objective of transitioning to more efficient tariff structures over time – sub-paragraph (1);
- the relevance of whether customers can change their tariff, and so lessen the impact of a transition to more efficient prices – sub-paragraph (2); and
- the relevance of whether customers are able to alter their consumption, and so lessen the impact of a transition to more efficient prices – sub-paragraph (3).

3. Compliance of Proposed Tariffs with the Distribution Pricing Principles

Having described the critical requirements established by the pricing principles, in this section we set out our assessment of whether Ausgrid's set of network tariffs comply with them.

3.1 Review of Ausgrid's tariff classes

Ausgrid has defined its tariff classes with respect to the four voltage levels at which customers connect, together with an additional class for unmetered supply.

3.1.1 Tariff classes derived from voltage level

Voltage level is a common basis for defining tariff classes, and satisfies section 6.18.4(a) in that customers are assigned to tariff classes on the basis of the 'nature of their connection' to the network. . The AEMC has made statements that support the grouping of customers on the basis of voltage level, ie:

> Tariff classes are used to group together network consumers with similar cost characteristics. The most typical categorisation occurs on the basis of the voltage of connection required.[5]

Customers connected at different voltage levels give rise to different network costs – a fact which follows from the hierarchical structure of a network. There is therefore a clear rationale in terms of economic efficiency for adopting this grouping of customers.

Grouping on the basis of voltage level also avoids unnecessary transaction costs arising from shifting customers between tariff classes. Although a customer's level of consumption may change over time, the voltage level at which they connect to the network remains unchanged.

3.1.2 Unmetered supply tariff class

Ausgrid also has an additional tariff class for 'unmetered' supply, which covers supply of connections for which there is no meter.

The creation of a tariff class for these customers, and the assignment of customers to this tariff class complies with section 6.18.4(a) of the Rules in that customers are assigned to the unmetered supply tariff class on the basis of the metering technology (or lack thereof) installed at the customer's connection point.

3.1.3 Conclusion as to compliance

We conclude that Ausgrid's tariff classes comply with the requirements set out in the NERs.

3.2 Tariffs must be based on the LRMC of providing the service

Ausgrid has estimated LRMC using an average incremental cost (AIC) approach. The results are set out below in Table 1.

[5] AEMC Rule Determination Rule 2014.p.126.

Table 1 – Ausgrid's estimates of the LRMC of the services it provides ($/kW)

Service	3 Year Period	10 Year Period	25 Year Period
Low Voltage	-75	-1529	152
High Voltage	-27	-493	49
Sub-transmission	-75	-76	7
Unmetered	-75	-1529	152

Source: Ausgrid. (2015). Ausgrid Tariff Structure Statement, p.51.

Ausgrid states that:

> It is clear from the table above that Ausgrid's model based on the AIC methodology is not producing LRMC estimates at the system-wide level over a reasonable forecasting horizon that are sufficiently robust to be able to be relied upon for the purpose of setting tariffs.[6]

Ausgrid then goes on to say:

> Ausgrid believes that the key driver of the shortcomings of our LRMC estimation process are our current economic circumstances, which in turn reflect historical investment decisions that have resulted in a level of peak network capacity being supplied that is in excess of the level demanded by our customers. This mismatch between demand and supply has complicated the LRMC estimation process, particularly under an AIC methodology.[7]

Put simply, Ausgrid has no forecast net demand growth across its network in the next 10 years and so the AIC approach cannot be applied to estimate the LRMC – a fact that is well established and not in contention. Given that the AIC approach is not applicable over the next 10 years, Ausgrid has stated that:

> ... it is reasonable to assume that the LRMC at a system-wide level is approximately zero if calculated on the basis of a reasonable forecasting horizon, say 10 years. Ausgrid also believes that it is reasonable to use our LRMC estimate at a system level based on a 25 year forecasting horizon as a proxy for the LRMC outcome under conditions that are more reflective of an equilibrium state. Ausgrid has used this estimate to calculate the level of the dynamic peak price charging parameter in our efficient tariff outcome.[8]

In summary, for the purpose of setting tariffs Ausgrid has assumed that LRMC is zero. In contrast, in calculating its 'efficient tariffs', Ausgrid has used estimates of LRMC over a 25 year time horizon, as set out in Table 1.

Ausgrid's TSS establishes that demand has been declining across its network for some time and that there is considerable excess capacity. It is therefore not difficult to see that marginal cost, as would be estimated, using a perturbation or similar approach, is likely to be very low, assuming that incremental decreases in demand do not create opportunities to resize capacity in parts of the network at the time for replacement of those assets.

Ausgrid's presentation of negative marginal cost is somewhat unhelpful in the context of considering how future electricity network costs might change as a consequence of incremental changes in use of the network. In our opinion it does not make sense to talk about a negative marginal cost in this context, nor is it surprising that this result emerges from the AIC approach in these circumstances. Notwithstanding, we agree with Ausgrid's conclusion – an estimate of LRMC across its network is most likely to be very low given the

[6] Ausgrid Tariff Structure Statement (2015), p.51.

[7] Ausgrid Tariff Structure Statement (2015), p.51.

[8] Ausgrid Tariff Structure Statement (2015), p.53.

amount of excess capacity that currently exists. In the absence of a detailed, more extensive study Ausgrid's assumption of LRMC being zero is not unreasonable.

Bearing in mind a business' need to recover residual costs, the rules require that the variable components of each tariff (ie, the block energy, time-of-use energy, or demand components) must be no less than the LRMC of the service so as to not promote inefficient over use of the network. Given that Ausgrid's estimate of LRMC is zero, all of its tariffs inherently satisfy this condition.

3.2.1 Conclusion

We conclude that Ausgrid has considered the LRMC for each tariff, and its tariffs satisfy the requirement to be 'based on LRMC' of providing the service.

3.3 Expected revenue lies between stand-alone and avoidable cost

Ausgrid has estimated the stand-alone and avoidable cost of serving the customers in each of its tariff classes. Table 2 sets out Ausgrid's estimates of avoidable cost, expected revenue, and stand-alone cost by tariff class for 2015-16. Consistent with clause 6.18.5(e) of the NER, Ausgrid's expected revenue from each tariff class lies between the estimated stand-alone and avoidable cost.

Table 2 – Estimates of avoidable cost, expected revenue and stand-alone cost (2016-17)

Tariff Class	Avoidable Cost	Expected Revenue	Stand-alone Cost
Low voltage	244.1	1339.1	1407.2
High voltage	5.8	38.2	471.2
Sub-transmission	3.1	29.1	456.0
Unmetered	0.3	9.1	443.7

Source: Ausgrid Tariff Structure Statement (2015), p.105.

3.3.1 Conclusion

We conclude that Ausgrid's proposed tariff classes satisfy the requirement set out in section 6.18.5(e) of the NER.

3.4 Requirements on recovery of revenue

We have explained that there are three requirements on the recovery of revenue arising from the Rules, ie:

- revenue recovered must 'reflect … total efficient costs' – subparagraph **6.18.5(g)(1)**;
- a distributor must be permitted to recover its expected revenue – subparagraph **6.18.5(g)(2)**; and
- recovery of revenue must minimise distortions to price signals – subparagraph **6.18.5(g)(3)**.

As to the first, having established that Ausgrid's tariffs are based on LRMC it follows that the revenue expected to be recovered 'reflects total efficient costs'. Put simply, given that the recovery of residual costs from each tariff is at the discretion of the distribution business, the only way that a distributor can fail to satisfy this requirement is to set tariffs below the level required to recover marginal cost.

Ausgrid has proposed a systematic, detailed, and transparent approach to the allocation of residual costs to tariff classes and tariffs. The mechanics of such an approach has no direct link to compliance – the allocation of residual costs to tariffs is at the discretion of the distribution business, unless that allocation contravenes some other principle.

We have explained that the second requirement permits a distributor to recover their expected revenue allowance – a requirement that is already established by other parts of the Rules, and that Ausgrid's regulatory proposal satisfies.

It is the third consideration that is critical, ie, whether the recovery of revenue minimises distortions to price signals for efficient usage of the network. Ausgrid recognises that to satisfy this principle residual costs would be recovered via the fixed charge, because its proposed 'efficient tariff' recovers all residual costs via the fixed charge. In particular, Ausgrid states that:

> The fixed charge [for the efficient tariff proposition] has been set to recover all of the residual cost allocated to each efficient tariff …[9]

However, Ausgrid considers that such an approach, as well as other dimensions of the shift to more efficient tariffs 'will result in unacceptable customer impacts as contemplated in 6.18.5(h)'.[10] As regards the recovery of residual costs via the fixed charge alone, Ausgrid states that:

> … the recovery of all of the residual costs through the fixed charge results in customers with relatively low network usage being exposed to substantial network bill increases that they are unable to mitigate by changing their network usage.[11]

Ausgrid provides a clear description of its approach to constraining increases in fixed charges for the declining block (or 'non-TOU') tariff. In simple terms, Ausgrid has recovered some of the residual costs from tariff components that display similar properties to fixed charges. Ausgrid recognises that it does not have empirical evidence on the price elasticity of demand by tariff component, and has therefore used volume variance as a proxy for elasticity.

The analysis of volume variance for the fixed charge suggests that the first consumption block in the declining block tariff has very low volume variability – lower even than for the fixed charge.[12] Such a finding would support Ausgrid's decision to allocate a larger share of residual costs to this charging parameter.

We understand from Ausgrid that they have used a similar approach to determine indicative prices for other tariffs, although Ausgrid's Tariff Structure Statement only provides information about the approach adopted for the declining block (or 'non-TOU') tariff.

Ausgrid's approach is reasonable given the limited information that it possesses. In the absence of a timely, rigorous assessment of the price elasticity of demand, volume variability is a reasonable, albeit crude, proxy of customers' likely responses to changes in price. However, we recommend that Ausgrid starts to develop better, more precise measurements of the price elasticity of demand to inform its tariff setting in the future.

We agree with Ausgrid's assessment that such an approach is reasonable. However, the declining block tariff itself (ie, the 'EA010' or 'non-TOU' tariff) warrants further examination. This tariff is important in terms of both revenue and customer numbers.

3.4.1 Ausgrid's declining block tariff

A **declining block tariff** comprises:

- a network access (or 'fixed') charge, which is incurred irrespective of a customer's consumption; and

[9] Ausgrid Tariff Structure Statement (2015), p.144.

[10] Ausgrid Tariff Structure Statement (2015), p.144.

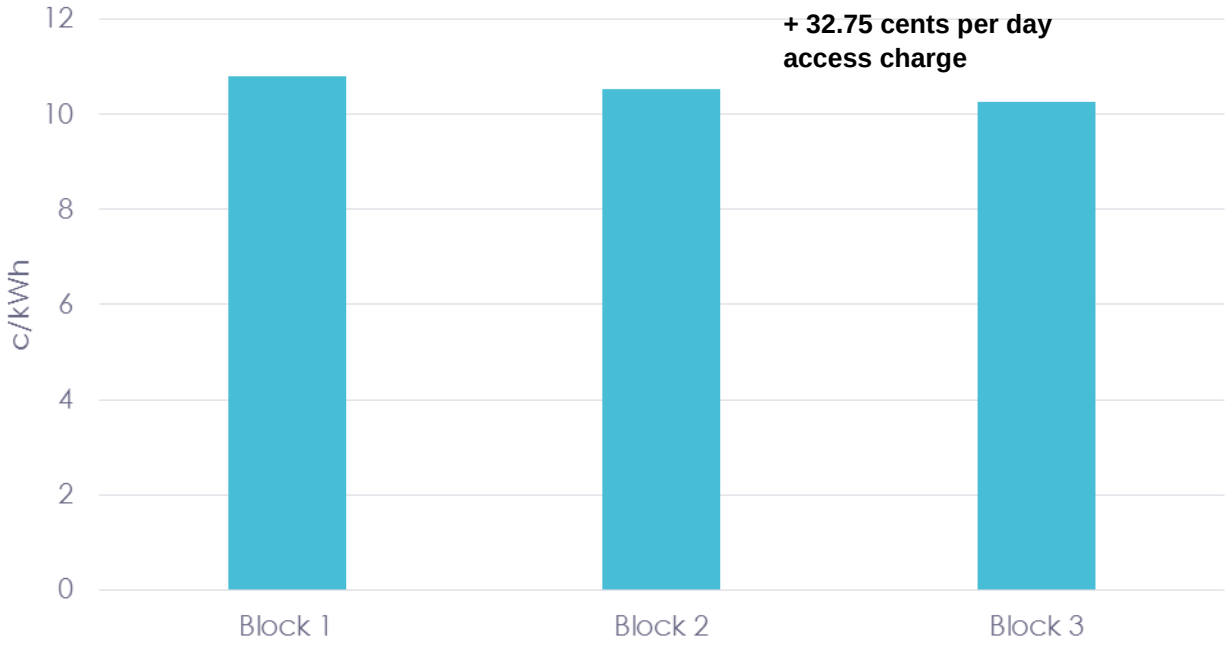
[11] Ausgrid Tariff Structure Statement (2015), p.145.

[12] We have note reviewed Ausgrid's analysis of volume variability in detail. We note that the finding that volume variance for the first block is lower than for fixed charges is somewhat surprising, although under certain circumstances such counter-intuitive outcomes are possible.

- a schedule of usage (ie, c/kWh) charges, which are defined with respect to 'blocks' of consumption, and which progressively **decrease** with greater levels of consumption.

Ausgrid has one declining block tariff (the 'EA010' tariff), although this single tariff accounts for 28 per cent of Ausgrid's revenue. The EA010 tariff has three blocks as illustrated in Figure 2 below. All three blocks are currently set at a level exceeding Ausgrid's estimate of LRMC of zero cents per kWh, and so the residual costs are currently recovered in part from all three blocks.

Figure 2 – Structure of NUOS charges for the EA010 tariff (2015-16)



We seek to determine whether the allocation of residual costs to each charging parameter minimises distortions to the price signals for efficient use of the network service.

Declining block tariff is a departure from the 'most efficient' level

Ausgrid's current declining block tariff does not provide the lowest possible distortions to price signals. A 'more efficient' tariff (hereafter 'LRMC only') structure is one that more closely aligns the charging metric with the network costs caused by an incremental change in network use – the structure that would result in no distortions to price signals would be where the levels of the tariff components were set equal to the LRMC, assuming that customers are somewhat responsive to changes in price.

We have explained that Ausgrid has departed from this 'more efficient' tariff structure to limit customer impact. The question then becomes how a declining block tariff structure provides Ausgrid with flexibility to manage bill impacts over the period of the tariff structures statement.

The declining block tariff provides flexibility to manage customer impact

The declining block tariff provides a different price signal according to the volume of usage over a defined period. In so doing, it is only a departure from the efficient tariff structure where customers are assumed to have different levels of responsiveness to changes in price depending on the total level of consumption.

In the absence of any direct information on price responsiveness of customers with different levels of consumption, implicit within a declining block tariff structure is an assumption that low consuming customers

are less price responsive than high consuming customers, all other things equal. Ausgrid shows[13] that year-on-year variation increases from the first block to the second block, and from the second block to the third block, which provides some evidence that the price elasticity may differ according to volume, albeit this evidence is not conclusive.

In terms of customer impact, by continuing to recover a portion of residual costs from the block usage charges, the distributor is able to manage the customer bill impact, particularly for low consuming customers. The blocks allow Ausgrid to reduce the usage charge for the third block towards its estimate of the LRMC, and in so doing provide an improved price signal for a segment of customers on the tariff, without necessarily impacting on the bills for all customers. Over time, we would expect Ausgrid to transition each of the blocks to be more closely aligned to its estimate of the LRMC, through incremental changes to each of the blocks.

This approach is in contrast to an approach whereby a flat tariff is set equal to the LRMC. In this case, low consuming customers would face potentially significant increases in their bills, as residual costs that might otherwise be recovered via mark-ups on the usage charge, are recovered through a higher fixed charge.

In summary, Ausgrid's declining block tariff is one approach to managing the competing goals of promoting efficient use of the network, while managing the bill impact to customers. Assuming that Ausgrid's assumptions about elasticity of different charging components are correct, in our opinion the declining block tariff satisfies the requirement of minimising distortions to price signals, subject to the limiting customer impact principle. However, we reiterate that Ausgrid should investigate its price elasticity assumptions, and strengthen its understanding thereof in the future.

3.5 Requirements to consider customer impact

We have described that Ausgrid has departed in some instances from setting tariffs that comply with some of the principles set out in rule 6.18.5(e) to (g), but has done so in a manner that ensures overall compliance of the proposed tariffs. Specifically, by making use of the exceptions to compliance with the principles as set out in Rule 6.18.5(h), and specifically by:

- indicating it has considered the impact on retail customers of changes in tariffs form the previous regulatory period;
- providing customers with tariff choices where those choices represent a tariff structure that provides an improved price signal for efficient use of the network; and
- promoting opportunities for customers to be able to mitigate the impact of changes in tariffs through their usage decisions.

Ausgrid's TSS contains an extensive assessment of customer impact for each of its proposed tariffs.[14] This analysis considers the change in network bills between 2015-16 and 2018-19 for customers on each of these tariffs, depending on that customer's consumption. The analysis shows that increases in bills for these tariffs are less than 8 per cent across the entire period for all customers. We suggest that in the future Ausgrid should work towards assessing the customer impact associated with a range of different tariff options *in light of the inherent trade-off* between customer impact and efficiency.

Nevertheless, Ausgrid's proposed network tariffs are consistent with the distribution pricing principles as set out in the NERs.

[13] Ausgrid Tariff Structure Statement (2015), p.148.

[14] See Ausgrid Tariff Structure Statement (2015), p. 114 to 117.

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