

30 May 2016

Commerce Commission
Level 6, 44 The Terrace
PO Box 2351

By Email

Attention: Commissioner Sue Begg

Dear Sue

Possible implications for efficient distribution pricing of a decision to change the form of control for electricity distribution businesses

As part of our Distribution Pricing Review (DPR) project, late last year the Electricity Authority consulted on the implications of evolving technologies for the pricing of distribution services. Most submissions in response to the consultation paper recognised the problems that would result from distributors' continuing reliance on consumption-based (kWh) charges for residential customers and agreed that distributors should adopt more efficient pricing structures.

The Authority considers that more efficient distribution pricing structures would lead to better investment and consumption decisions. This in turn would result in net economic benefits for consumers in excess of \$1 billion over the next 25 years. However, submissions raised several issues that need to be addressed to achieve these benefits. One of these issues relates to the incentives on distributors to adopt efficient pricing. Many factors can affect these incentives. This is one of the key issues we are considering in the DPR project.

As part of the DPR project, we are considering how distributors' incentives would be affected if the Commission changes the form of control for electricity distributors from a weighted average price cap (WAPC) to a revenue cap, as signalled in your Emerging Views paper. The Authority Chair has discussed the Authority's initial views with you on this matter. As you have requested, this letter sets out our views in writing.

The Authority's preference in relation to distribution pricing is to rely on market facilitation measures to encourage efficiency. However, our work to date suggests that the introduction of a revenue cap might reduce distributors' incentives to adopt efficient distribution pricing structures. If a revenue cap was adopted, this would be one of the factors we would need to consider in deciding what further development to the existing distribution pricing arrangements would be appropriate.

The Authority would like to better understand the extent to which a revenue cap could affect distributors' incentives to adopt efficient prices. This will inform an assessment of the regulatory settings that will best promote the long-term benefit of consumers. To explore this question, this letter addresses three main issues:

1. efficient pricing incentives under a revenue cap
2. efficient pricing incentives under a WAPC
3. the nature of the quantity forecasting risk under a WAPC, including how it might be affected by distribution pricing structures.

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We have included a number of questions on each issue. We understand that the Commission would like stakeholders to address these questions in their submissions in response to its Draft Decision consultation paper.

Efficient pricing incentives under a revenue cap

Potential for weakened incentives for distributors to change pricing

The Authority would like to better understand the risk that a revenue cap could weaken the incentives on distributors to adopt efficient price structures. Under a WAPC, for example, the prospect of declining energy volumes due to increasing penetration of emerging technologies (such as solar panels) may provide a stimulus to distributors to change their pricing structures. Under a revenue cap, however, it appears that distributors may be insulated from the risk of revenue loss, at least in the short term. This is because revenue would not depend on energy volumes, as any revenue shortfalls would be recovered in the annual wash-up.

This incentive may apply more broadly. Whenever there is some uncertainty around the future quantum of sales, it appears that a business under a WAPC may be incentivised to set tariffs efficiently. Under a revenue cap, by contrast, the accuracy of forecasts or uncertainty of future sales levels appears unlikely to be a factor in the development of tariffs (because the business will recover its required revenue in any case).

As a result, it appears that a shift to a revenue cap could reduce intra-regulatory-period incentives for distributors to change their pricing structures to a more efficient structure, compared to incentives under a WAPC. That is, it could lead to inertia and encourage distributors to continue to rely on consumption-based pricing. The form of control is one of a number of factors that could influence distributors' incentives to adopt efficient prices. As you are aware, the Authority is concerned about the effects of inefficient distribution pricing on the long-term benefit of consumers, including potential distortions to consumers' investment in evolving technologies.

To what extent would a revenue cap affect the incentives on distributors to change to more efficient pricing structures, compared to a WAPC?

Potential for inefficient over-pricing of price-responsive services

We would also like to understand the risk, identified in the economics literature, that a revenue cap could provide incentives for distributors to set inefficiently high prices for price-responsive services and/or customers.¹ The risk appears to be that under a revenue cap, a business may have an incentive to set prices above the unrestricted monopoly level for price-responsive services in an effort to drive down costs.² This is because under a revenue cap any cost reduction flows directly through to profit (as revenue is set in advance while profits are not).

One possible risk is that a distributor could actively manage demand across a network circuit to inefficiently defer a network investment. This demand management strategy could be efficient up until the point when cost savings to consumers resulting from the investment would exceed

¹ Crew, M.A., Kleindorfer, P.R., 1996. Incentive regulation in the United Kingdom and the United States: some lessons. *Journal of Regulatory Economics* 9 (3), 211–225.

Lantz, B. (2008). Hybrid revenue caps and incentive regulation. *Energy Economics*, 30(3), 688-695.

² The distributor's incentive may be to increase the price of services with the highest price elasticity of demand and decrease the price of services with the lowest price elasticity of demand. This is the opposite of the inverse elasticity rule (Ramsey pricing), which is generally considered an efficient way to recover common costs from final consumers.

the cost of the investment.³ At that point, it would be efficient for the distributor to carry out the investment. However, under a revenue cap the distributor incurs the cost of the investment but receives no benefit from making it. So it appears that the distributor's incentive would be to continue to set peak charges at a level high enough to defer the investment beyond the efficient point. If the distributor can defer making the investment until a point later in the regulatory period than the forecast timing (or even until the end of the five-year regulatory period), it may be able to make a higher profit than forecast for the period (as its costs are lower than forecast, while revenue remains the same).

For example, a distributor might:

- forecast the requirement for a major upgrade on a circuit of its network (and so have that capex requirement built into its revenue for the five-year regulatory period)
- after the revenue cap has been determined for the five-year period, set a charge for use of the circuit at critical peak times when the circuit is likely to be near maximum capacity
- set the charge high enough to drive down use of the circuit sufficiently that the upgrade is no longer required
- continue to increase the charge such that demand never grows high enough during the five-year regulatory period to require the upgrade to be carried out.

This incentive to over-price and defer investment inefficiently does not appear to arise to the same extent for a distributor operating under a WAPC, because it receives more revenue from increased use of a circuit. For such a distributor, it would appear that it pays to defer the investment until it is efficient to invest. The distributor could then invest as soon as the financial benefits of increased use justify the cost of investment. The distributor has no such incentive to invest under a revenue cap, as it does not receive any benefit from increased use of the circuit.

Further, due to asymmetric information it seems unlikely that a regulator could readily identify the point when the pricing strategy described above becomes inefficient. So a distributor implementing this strategy might be able to present its actions as efficient—even if the resulting costs to consumers, including opportunity costs (such as the value of using the circuit foregone by consumers), exceed the cost of the upgrade. Under a WAPC, the regulator may not need to monitor and detect such inefficiencies to the same extent, as the incentives of the regulated business would be more closely aligned with the regulator's efficiency objectives.

We are not aware if this inefficient incentive effect has been proven to occur in practice. The extent to which this issue would arise under a revenue cap is likely to depend on the willingness and capability of distributors to respond to this incentive. It could arise if distributors were able to identify a service (or a customer) for which a price increase would discourage demand (and reduce cost as a result), such as the network circuit in the above example.

Strategies such as the one described above may be becoming more feasible with the increasing deployment of smarter network infrastructure which makes it possible to identify consumers using a particular piece of infrastructure at a specific time. Also, it appears likely that, as distributors in various jurisdictions introduce new pricing structures, this experience could contribute to a growing body of evidence on how consumers respond to different types of prices, and which services are most responsive to price.

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As a result of its proposed changes to the Transmission Pricing Methodology, the Authority expects that distributors would be incentivised to set charges for customers that would encourage them to reduce demand for electricity, and so defer charges for increased transmission capacity until they are prepared to pay for it. Although the investment is in transmission rather than distribution, the benefit from deferring investment until the efficient point is analogous.

The risk under discussion would be higher to the extent that distributors were motivated to price on a commercial basis. As noted above, privately-owned distributors are obliged to carry out a profit-maximising strategy. We would be interested to explore the extent to which distributors operating under a revenue cap (for example, Australian distributors) have been observed engaging in this type of pricing behaviour.

To be clear, the “over-pricing risk” identified under this heading is separate from the “inertia risk” considered under the previous heading. Hypothetically, distributors might respond to the adoption of a revenue cap in one of these two different ways:

- some distributors (perhaps small, trust-owned ones) might respond to the removal of the WAPC (and its pricing efficiency incentives) by making no change (or minimal change) to their pricing, so that it remains heavily reliant on consumption charges
- other distributors (perhaps large, privately-owned ones) might respond to the adoption of a revenue cap by setting inefficiently high prices on services that are most responsive to price in an effort to drive down costs and increase profits at the expense of consumers.

We would like to better understand the materiality of both of these risks to efficient pricing.

What is the likelihood that distributors under a revenue cap would set inefficiently high prices for certain services or customers?

Have any distributors operating under a revenue cap been observed engaging in this pricing behaviour?

The Authority's potential regulatory response to the introduction of a revenue cap

In comparing the options for the form of control for electricity distributors in the Emerging Views paper, the Commission stated that efficient pricing could be encouraged under a revenue cap by applying more prescriptive pricing principles, noting that this is within the Authority's remit.

The Authority's preference is to adopt an industry-led approach to the regulation of distribution pricing. We prefer to rely on markets wherever possible, as we consider that, in general, this is more likely to be effective in creating long-term benefits for consumers. This approach relies on the Authority forming the view that distributors have sufficient incentives to move towards more efficient pricing. In our DPR consultation paper, we stated our view that distributors have strong incentives to change to more efficient price structures.

We also said in our DPR paper that we would consider what further development, if any, to the existing distribution pricing arrangements is desirable after taking into account submissions on the paper and other relevant information. While we cannot prejudge the outcome, the introduction of a revenue cap would be an important factor for the Authority to consider in making that decision. As noted above, it appears that a revenue cap could weaken or remove intra-regulatory-period incentives on distributors to adopt more efficient price structures. So the Authority might need to reconsider its view that distributors have strong incentives to make changes of their own accord.

Also, it appears that the introduction of a revenue cap could make the Authority's optimal level of scrutiny of distributors' pricing proposals higher, to limit the extent to which proposed prices were inefficient. This is because of the risk that a revenue cap could adversely affect incentives for distributors to set efficient prices (eg, the risk that distributors might be encouraged to set inefficiently high prices for price-responsive services). Because of asymmetry of information, an

optimal level of scrutiny is unlikely to be as effective as well-aligned incentives at detecting and offsetting the impact of adverse incentives. It appears possible therefore, that there are three sources of increased inefficiency – less efficient prices, the (opportunity) cost of greater scrutiny by the Authority, and the (opportunity) cost to distributors of responding to that greater scrutiny.

Efficient pricing incentives under a WAPC

In its Emerging Views paper, the Commission notes that in principle, a WAPC provides distributors with incentives to price efficiently, however, for a number of reasons, efficient pricing may still not be seen in practice under the WAPC. We would like to explore this question.

Factors affecting distributors' pricing identified by the Australian Energy Regulator (AER)

In reaching its views on pricing incentives under a WAPC, the Commission notes a recent decision of the AER on the form of control applying to the New South Wales (NSW) electricity distributors. In that decision, the AER identified three factors that might influence whether efficient pricing would emerge in practice under a WAPC. These three factors relate to the extent to which:

- distributors act commercially when setting prices
- retailers take into account distribution price signals in setting prices for consumers
- information about price changes is available to consumers.

After considering these three factors, the AER found that efficient pricing was unlikely to emerge in practice under a WAPC for the NSW distributors.

The Authority does not consider that all three of these factors must hold fully in order for more efficient pricing to emerge under a WAPC. Also, New Zealand circumstances appear different from those in NSW. Each of the three factors is considered briefly below.

With regard to acting commercially, it may be relevant to note that the NSW distributors are state-owned. In New Zealand, some of the largest distributors are privately owned, well-resourced and obliged to preserve shareholder value and seek higher returns for shareholders. It seems likely that these major distributors at least would act commercially in setting prices (or at least more so than the NSW distributors). Indeed, the Authority Board undertakes a schedule of meetings with stakeholder boards and it has not seen anything during these meetings to support the view that the boards of distribution companies are unaware of their responsibilities as company directors.

Concerns about the relationship between distribution pricing and retail pricing have been raised by several submitters to the Authority's DPR consultation paper. In that paper the Authority expressed the view that if distributors adopt efficient pricing, over time retail competition will encourage retailers to take the new price signals into account in setting prices for consumers, to differentiate their product/service offerings from those of their competitors. This is due to retailers' incentives to reduce their own risk and respond to retail competition. Retailers would be likely to reflect distribution price signals in their retail prices to the extent that consumers find value in this. If a particular retailer did not, then customers who are paying prices greater than cost would have the incentive to switch to another retailer that based its pricing on cost. To the extent this happens, the first retailer would lose its most profitable customers and would eventually have to respond.

In this regard, we are seeing rapid customer growth for Flick Electric Co., which explicitly bases its prices on the costs it faces, and so any changes to the structure of distribution prices will flow

through directly to its customers. Another retailer—called Paua to the People—has recently entered the electricity market offering a similar approach. Over the last five years we have seen the number of new retail parent companies increase from 12 to over 20 and the number of retail brands increase from 17 to over 30. We are also aware of other parties preparing to enter the retail electricity market. On this basis, it appears unlikely the retail market would prevent efficient pricing from emerging under a WAPC.

Similarly, the availability of information about distribution price changes does not appear likely to present a barrier to efficient pricing, for a number of reasons:

- It is unlikely that improvements to efficiency would require perfect information about all price movements for all consumers. In accordance with a workably competitive market improvements in efficiency will be achieved if there are sufficient consumers who respond to prices to affect the incentives facing retailers. This appears to be the case in New Zealand.
- Some potential barriers to Australian consumers being informed about price changes do not exist in New Zealand. For example, barriers identified by the AER included regulated retail pricing and inclining block tariffs, which do not exist in New Zealand.
- The Authority has carried out a number of projects in recent years designed to improve consumer information.
- Through its DPR project, the Authority is encouraging distributors to keep consumers well informed about planned changes to their price structures.

Recent changes to factors preventing (or encouraging) change to pricing

One possible view is that because efficient pricing has not emerged to date under a WAPC, it is unlikely to emerge in future. That is, the lack of progress so far could be seen as evidence that there are insufficient incentives for efficient pricing under a WAPC. The AER appeared to take this view in its decision on the form of control applying to the New South Wales electricity distributors. In that decision, the AER observed that “across the distributors subject to WAPCs in the previous and current regulatory control periods there has not been an overall increase in pricing efficiency.”

It would be very premature to draw similar conclusions about distribution pricing in New Zealand. The Authority presented its initial views about efficient distribution pricing in November 2015 and its consultation on those views has closed only recently. Already two distributors have responded by altering their prices toward a more efficient structure. The Authority is aware that several distributors are giving the matter serious consideration.

In any case there appear to be three factors that may have previously inhibited distributors from altering their pricing structures which now appear to be changing. As a result of recent changes to these factors, it now appears more likely than it did previously that distributors will change their pricing structures in future under a WAPC.⁴

The first change relates to the increasing penetration of smart meters. In previous years, most households did not have smart meters, and this is likely to have been a significant barrier to distributors introducing more efficient pricing structures. For example, it would be difficult to accurately implement a maximum demand tariff for a consumer if their meter was not capable of

⁴ This assumes that the problems with the way the WAPC is currently administered can be solved, as discussed below, such that compliance barriers to reform of pricing are reduced.

measuring maximum demand. Now that the penetration of smart meters exceeds 60% and is still rising, it is becoming increasingly practicable for distributors to adopt more efficient pricing structures.

To what extent has the limited penetration of smart meters in the past acted as a barrier to the introduction of efficient distribution pricing?

The second change relates to the interpretation of the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 (LFC Regulations). The LFC Regulations require distributors to offer tariffs with fixed daily charges no greater than 15c/day and retailers to offer tariffs with fixed daily charges no greater than 30c/day. Around half of all residential consumers are on LFC tariffs. Up until very recently, most distributors appear to have held the view that the LFC Regulations prevent or inhibit change to more efficient pricing structures. For example, in its May 2015 discussion paper on distribution pricing, the Electricity Networks Association observed that the LFC Regulations created “challenge for distributors in achieving more cost reflective pricing, as distribution costs are more aligned with capacity (ie: meeting peak demand) than consumption.” Distributors commonly identify the LFC Regulations as a major reason (or the major reason) for their traditional reliance on consumption-based charging for distribution services to residential customers.

The Authority set out its interpretation of the LFC Regulations in its DPR consultation paper. The Authority stated that it considers demand and capacity charges to be variable charges for the purposes of the LFC Regulations. This means that the 15c/day limit imposed by the LFC Regulations applies only to fixed daily charges, not to demand and capacity charges. We intend to release guidance notes shortly, which will further explain this interpretation. The Authority is the enforcement body for the LFC Regulations. We think that publicising and further explaining our interpretation of the LFC Regulations may assist in removing a major perceived impediment to distributors’ changing to more efficient pricing structures.

To what extent have the LFC Regulations acted as a barrier to the introduction of efficient distribution pricing in the past (given the prevailing interpretation of the Regulations)?

The third change relates to the increasing penetration of emerging technologies including solar panels and batteries. Up until recently, the penetration of these technologies has been very minimal, so distributors may have seen no pressing need to respond through changes to pricing. The limited entry of emerging technologies until very recently may partly explain why more efficient distribution pricing has not emerged to date.

Residential penetration of solar panels is now growing rapidly, and the level of consumer and distributor interest in batteries and electric vehicles has increased greatly in the last twelve months. As a result, it appears that distributors are beginning to reassess and to consider making changes to their pricing in response to emerging technologies.

More efficient pricing structures are likely to involve recovering some common costs through charges for capacity and / or peak demand, and significantly lower consumption charges. A distributor that shifts to a price structure of this type could reduce impediments to the uptake of electric vehicles and batteries and significantly reduce the current artificial stimulus to investment in solar panels. In the face of these developments, distributor revenues are

becoming more sensitive to their price structures, which appears to increase distributors' incentives to change their pricing structures if the WAPC were to continue.

To what extent does the prospect of emerging technologies influence distributors' pricing decisions? How is this influence developing over time?

Potential disincentive to pursue tariff restructuring caused by compliance with the WAPC

In its Emerging Views paper, the Commission noted that the current WAPC regime, in combination with the tariff restructuring rules for the Default Price Path for distributors, may create a disincentive for distributors to restructure their tariffs. As the Commission explains, barriers to tariff restructuring under a WAPC are created because the Default Price Path requires the distributor to use lagged volumes and suppliers cannot account for customers' behavioural responses.

We would like to understand whether it is possible for this problem to be addressed by making changes to the way the WAPC and the Default Price Path are administered. As noted in the Emerging Views paper, Unison has identified a possible solution to this problem: developing a mechanism within the WAPC arrangements to allow distributors, in restructuring their tariffs, to take into account behavioural responses. The Commission's Emerging Views paper appears to accept that in principle there could be an alternative solution, which is identified as "Maintain the WAPC and introduce other mechanisms to improve how it works in practice". We would like to understand what mechanisms could be developed in this regard.

Could the WAPC be administered in such a way as to reduce barriers to changing price structures resulting from compliance requirements (eg, considering rules around use of lagged volumes / allowing distributors to take customer response into account)?

Are there any other impediments to the introduction of more efficient pricing under a WAPC? How could these impediments be addressed?

Quantity forecasting risk

In its Emerging Views paper, the Commission noted stakeholders' view that a key problem with the WAPC is that suppliers are exposed to the quantity forecasting risk, which they have said is unmanageable, particularly given there is uncertainty regarding the uptake of emerging technologies. Forecasting sales is a risk that nearly every business faces, and businesses seem able to thrive in spite of it. In part they cope by creating natural hedges against such risks. We would like to better understand whether quantity forecasting risk is unmanageable, or whether distributors can take steps to better manage this risk.

Quantity forecasting risk may arise because distributors' revenues are dependent on volumes. The volume of energy demanded by consumers may be difficult to predict. The average share of revenue recovered from volume or consumption charges is around 78%. Errors in quantity forecasts can have large effects on distributors' profits because this share is so high. Conversely, it appears likely that other measures, such as consumers' capacity requirements, would be more predictable than the volume of energy demanded. So errors in quantity forecasts might not have such a large effect on distributors' profits if their price structures were different.

Distributors determine their own price structures. As a result, the solution to the quantity forecasting risk may be within their own control. It appears possible that a distributor could

choose to reduce its quantity forecasting risk by making greater use of charges that are not linked to volume (eg, by introducing capacity charges).⁵ To the extent there are other risks or costs involved in changing price structures, distributors appear likely to be well placed to weigh these against the risks of retaining pricing structures based on volume.

To what extent could distributors reduce the quantity forecasting risk they are exposed to through their choice of pricing structure?

Finally, it may be in consumers' interests that suppliers are exposed to the quantity forecasting risk. As discussed above, the increasing penetration of emerging technologies could provide distributors with incentives to make their pricing structures more efficient, if the WAPC were to continue. This is because distributors may have incentives to mitigate the demand risk that they are exposed to under a WAPC by setting prices that reflect cost and promote efficiency. A distributor that faces a high degree of risk around forecast quantities under a WAPC may have a strong incentive to set prices more efficiently—to mitigate the risk that their forecasts are wrong. For example, they may choose to follow the inverse elasticity rule, and reduce the price for those services (or customers) that have high price elasticity, and increase the price for those services (or customers) that have low price elasticity. Such a change could reduce demand risk and also promote efficiency, which would benefit consumers.

We would like to understand whether the potential benefits of more efficient distribution pricing (such as the more efficient investment and consumption decisions identified in the DPR consultation paper) could outweigh the potential costs of having suppliers bear quantity forecasting risk.

What is the likelihood that bearing quantity forecasting risk could provide distributors with incentives to price more efficiently?

Conclusion

The Authority would like to better understand the materiality of the effects of a revenue cap form of control on distributors' incentives to adopt efficient prices. We think this is an important question, given that the net economic benefits of efficient distribution pricing will be very significant for consumers.

The Authority prefers an industry-led approach to the development of efficient distribution pricing structures. However, in determining its approach to the DPR project the Authority will need to form a view of distributors' incentives to set efficient prices. The potential introduction of a revenue cap is one of a number of factors that are likely to affect those incentives. Therefore, if a revenue cap is introduced, we will need to take that into account in deciding what further development, if any, to the existing distribution pricing arrangements would be appropriate.

Our common concern is to determine regulatory settings for electricity distributors that will best promote the long-term benefit of consumers. Given that the regulatory arrangements administered by each organisation are likely to influence the decisions of the other, we see benefit in working together to identify the best way forward. We would like to continue to discuss

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A shift away from a volume-based price structure would also reduce the significant inefficiencies such a structure creates, which the Authority identified in its DPR consultation paper.

with you how we might work through the areas of mutual interest in order to develop a joint view of the optimal regulatory settings to achieve the greatest benefit for consumers.

As discussed, we would be happy for you to publish this letter so that it can form part of your consultation process and assist in reaching a final view on the form of control. We will also publish the letter at the same time on the web-page for our DPR project.

If you wish to discuss our comments, please contact me or John Rampton at john.rampton@ea.govt.nz or 471 8630.

Yours sincerely



Carl Hansen
Chief Executive

cc: David Ruck
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