Corporate Office

Powerco Limited
Level 2
NPDC Civic Centre
84 Liardet Street
Private Bag 2061
New Plymouth 4342

0800 769 372
powerco.co.nz

19 February 2019

Submissions
Electricity Authority
PO Box 10041
WELLINGTON 6143
By email: submissions@ea.govt.nz

POWERCO – SUBMISSION ON MORE EFFICIENT DISTRIBUTION PRICES

Thank you for the opportunity to submit on the Electricity Authority's "More efficient distribution prices" consultation paper issued on 11 December 2018.

We fundamentally agree that existing distribution prices are not sending the right signals and that distribution pricing reform needs to be addressed

Powerco is taking this issue seriously and is advancing distribution pricing on our network. We think about this across the company and our network asset management team is focused on ensuring we make robust evidence-based and efficient investment decisions, now and for the uncertain future. Pricing and the efficient use of the infrastructure we build and maintain is debated across the company, and this is reflected in the breadth of internal input into this submission.

Making changes to the structures and levels of pricing impacts distributors, retailers, the grid owner and operator, and most importantly, customers. We operate our network with customers at the heart of every decision we make, and we are very aware of the often-competing needs and pressures across our 1.1 million customers (see Attachment A). Acting in customers' best interests is a challenge we rise to.

The Authority's paper seeks feedback on:

1. Amendments to the distribution pricing principles
2. An approach to monitoring the efficiency of distributors prices (and therefore progress)

Our feedback is directed at these two issues. We also make several general comments about the paper.

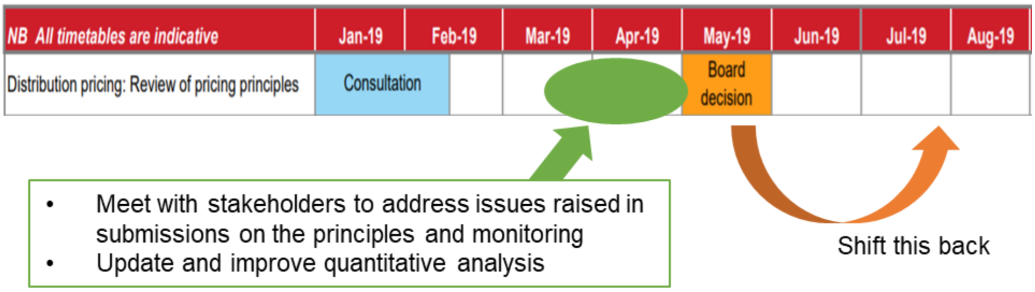
In short, we suggest the Authority:

- **Provide the confidence to stakeholders that the pace and costs of change are warranted**. A first step is to quantify and publish robust evidence to support assertions made in the paper that seem to underpin the "distributors should not wait" proposition from the Authority. We agree evolution needs to occur, but change for its own sake is not productive nor wise.
- **Continue engaging with industry** to ensure the Authority has clarity about the practicalities of developing pricing eg costs, meter data access and quality, systems & appetite for change (across the sector). If a monitoring regime is to be developed, we suggest the Authority work alongside industry and stakeholders to ensure it is meaningful, and therefore justifies the cost and drives the desired behaviours. Poorly designed monitoring can lead to perverse outcomes that could set the industry backward. Further discussion on the principles will be valuable too – doing this face-to-face will be efficient given the nuances around interpretations and implications of the proposed changes. Submissions will provide some useful input to the areas that require change, clarity, or guidance.

- **Measure inefficiency impacts directly attributable to distribution prices** if a monitoring regime is to be considered. A monitoring approach should link back to the Authority's objectives, so a starting point is to consider the *efficiency* impacts of distributing pricing in the context of end user prices. This needs to include transmission prices given their magnitude (roughly one third of Powerco's allowance).

Together, this may mean an adjustment to the Authority's plan for this project[1], as indicated below

EA work programme



We have also engaged HoustonKemp to provide their independent views on the lessons from and experience of distribution pricing reform in Australia (Attachment B). Why? We think it's worth drawing on the Australian experience of regulatory and distributor decision making given the high penetration rate of distributed generation. They have commented on four topics:

- A tariff reform process characterised by learning
- Evolving views on time of use energy and demand pricing
- The role of customer bill impacts and engaging with customers
- The allocation of residual costs

We have referenced their memo at relevant points in our submission. We hope their comments will be a useful contribution to the conversation on distribution pricing. Powerco supports the submission from the Electricity Network Association.

1. Proposed distribution pricing principles

Powerco supports a principle-based approach to regulation. Our views of the proposed principles (para 3.28) are:

Support…	• …inclusion of predictability and transparency (principles [c] and [e]).

[1] Latest version available here https://www.ea.govt.nz/development/work-programme/

Think more thought or clarity is needed on…	• …"time & location specific" (new principle [a3]). While we support the sentiment, we think this is a potential attribute of pricing rather than a principle. This is supported by the comment in A.11: "for prices to be efficient, they will **likely** vary by location and time" (emphasis added). Depending on the network's situation, and the reasonableness of costs to all parties, an alternative/simpler approach may be efficient too. A useful case study would involve assessing Transpower's, pricing approach against this principle (and all of them). • …the meaning of "unreasonable costs and requirements" in principle [d]. What is "unreasonable"? Further explanation from the Authority is needed on the scope of these costs, beyond what is considered in the discussion of "additional system costs" Appendix B. We look forward to stakeholders, including retailers and consumers views on this. The extent and predictability of costs for some distributors will be affected by the nature of how they are treated by the Commerce Commission's approach to economic regulation. • …principle [b(i)] and the terms "value" and "least distort network use". These may need some further thinking about the definition, implications and approach required from distributors. While framed around distribution network use, the prices include transmission prices. So the alignment of methodologies is needed. This appears to be the intent of the "benefits based" references in A

Don't support…	• …removal of "impact" in principle [c]. The removal has not been explained in A.5-A10. Para 7.1 suggests that distributors should manage consumer impact (in consultation with retailers) and notes the proposed a cap of 3.5% from the impact of transmission prices. The discussion in Appendix B suggests that the only relevant costs are those affecting the distributor eg billing systems. There is also an implicit assumption that the costs are allowed ("distributor costs would be incorporated in to higher prices and passed on to the retailer"). This appears to assume a positive cost/benefit outcome of the change and that the costs of systems can be recovered via revenue rules defined by the Commerce Commission.

Parts 2 and 4 in Attachment B provides comments on issues that relate to the principles. In particular

- **Australian EDB's must consider the impact on customers from price changes**. The distribution pricing principles in Australia include an explicit requirement that EDBs must consider the impact on customers of changes in tariffs from year to year and their ability to manage those impacts. The rules also permit an EDB to depart from the other efficiency-based pricing principles to the degree required to avoid unacceptable customer bill impacts
- **Should LRMC-based pricing be kept on the table?** The AER's 2014 rule change strengthened the requirement to set tariffs on the basis of the long run marginal cost (LRMC) of providing network

services ie EDBs must base network tariffs on LRMC. Sapere's report for Transpower on LRMC suggests that it is both attractive and feasible[2].

2. Comments on proposed monitoring approach

Powerco supports transparency where it's a proportionate and effective approach to addressing an issue.

We support the concept of monitoring once stakeholders are aligned about the nature and scale of the problem, and which aspects need fixing first.

The star-rating approach needs further thought. Price setting requires a trade-off between factors such as the number of customers affected by different prices, the network state, consumer demand profiles, and bill impacts. A distributor's network state may mean that simpler pricing options are appropriate and suitable – or there may be simpler bespoke options that are equally appropriate.

Price setting requires consideration of trade-offs between factors such as sending more efficient signals to some customers at the expense of less efficient signals for others, the particular challenges faced by the network, the location of avoidable network costs and the circumstances in those locations, diversity in load profiles between and amongst customer groups, customer preferences and bill impacts, transaction costs associated with major changes in network prices and expectations as to the future. Against this backdrop, it is generally not appropriate to label one price structure as necessarily superior to another – this will depend on the particular design of each price and the circumstances in which it will be applied.

We suggest the Authority further quantify the assumptions and assertions that underpin the unilateral comment that all distributors "should not wait" to progress pricing reform. Monitoring will naturally follow from this analysis and will align with the impact on the EA's objective (competition, efficiency, reliability). The Authority could also quantify how the proposed pricing structures directly address the issues raised in 2.9-2.18 (power quality and outages, congestion management). This could include assessment of the implementation costs and their treatment under the Commerce Commission's economic regulation of distributors. It all needs to translate to an end benefit for consumers both now and in the future. We are happy to help with that task.

We also support:

- Removal of the information disclosure guidelines (3.28)
- Authority engagement with distributors about their pricing roadmaps (5.13), although this should not be limited to situations when the Authority is unsatisfied. This should extend to discussions with retailers and metering providers to understand the interconnected factors affecting the progress of pricing reform eg data quality and access, appetite and ability to adapt to new pricing structures.

We don't support the proposed "time-bound" plans approach because implementation is contingent on collaboration with 3rd parties, including regulators. For example, imagine if progress on pricing reform was contingent on the Transmission Pricing Methodology, smart meter rollouts, high speed data connectivity, the Default Distribution Agreement, or the 7 yearly Input Methodologies review. While it may be appealing to expect distributors to plan in isolation on the assumption that change can be imposed on other market participants, that's not how we operate.

Parts 1 and 3 in Attachment B address issues relating to the implementation of pricing changes in the Australian context. Some key insights for New Zealand are that:

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[2] Issues to consider in designing an LRMC pricing regime, Sapere, 2017, https://www.transpower.co.nz/industry/transmission-pricing-methodology-tpm/sapere-lmrc-pricing-paper-february-2018.

- **Customer's should be at the centre of tariff reform.** There should be ongoing engagement with customers and the pace of reform should be guided by consideration of customer bill impacts and their ability to manage those impacts.
- **TOU might not be so bad after all**. The AER's suggests that there is "no clear cost reflective advantage of adopting demand tariffs over time of use tariffs". This is at odds with the star rating of these charges in the paper.
- **Confidence is key**. Significant reforms should be comprehensively researched, underpinned by extensive engagement with customers and reflect a high degree of confidence as to the underlying strategic direction of pricing reform.
- **Network tariff reform is a collective effort**. Network tariff reform requires the collective input of all industry participants and the combined consideration of economic theory, network planning practices and customer preferences, bill impacts and behavioural considerations.

3. General comments about the paper

Distribution prices do not solely cause solar overinvestment. The paper states that flat per-kWh prices "cause consumers to over-invest in technologies" (2.2). They may well *contribute* to a consumer's considerations, but they do not *singly* cause it. We agree with the Authority that the impact is a wealth transfer between customers, all other things equal. Defining prices is a balancing act where this is one factor to consider, along with the state of the network, bill impacts, the scale of the issue, and the cost to implement change for a subset of consumers/technologies.

What we do and what is seen are not the same. The Authority's discussion needs to address the inefficiency directly attributable to the structures and levels of distribution prices. They are one of several costs (wholesale and transmission prices) included in retail prices. For example, a retailer can repackage a distributor's ★★★★★ price structure to a ★ structure due to the impact of other costs & preferences. This can produce the same total lines charge for the consumer given their consumption pattern. We're not saying this is wrong nor are we advocating for pass-through. A gold-star 'efficient' distribution price may not correspond to the signal that consumers see, and potentially for good reason (consumer choice, risks around relative price levels, other innovative ideas). An example of this is on proposed principle [e] which states consumers should "know…the prices they will face". Distributors (and Transpower) are not in control of the prices that consumers will face[3].

How the Authority can help. Section 7 asks what the Authority can do to assist with reducing barriers to pricing reform.

- *Smart meter data*. In 3.9 the Authority suggests smart meters can collect "most, if not all" the data needed for developing pricing. We encourage the Authority to explore the realities of smart meter data quality and access now and going forward. What are the obligations on the parties involved and what is the least cost/efficient solution?
- *Support availability of ICP-level data for pricing*. There may be a role for the Authority to specify pricing reform as a function that legitimises access to customer consumption and other data. If we can't get the data, we can't do a good job of the pricing.
- *Confidence*. Earlier comments have suggested ideas about how the Authority can give stakeholders confidence that the costs and pace of change are legitimate. Quantify assumptions to make the case for change, look at total costs, and coordinate with other regulators and stakeholders. For example, the discussion in 3.11-3.13 would benefit from analysing the nature and scale of investments that are deferrable in practice (not theory).

[3] As an aside, a per-kWh charge would be an appropriate way to recover the large proportion of EA levies for distributors. They are largely based on the estimated total quantity of electricity to be conveyed by distributors during the financial year. Transpower's levies are solely a per-kWh charge. https://www.ea.govt.nz/about-us/what-we-do/how-were-funded/levy-rates/2018-2019/

- *Support clarity of interpretations around Low Fixed charge regulations*. The Orion submission provides a table illustrating the ambiguity about what is fixed and variable in the context of the Low Fixed Charge regulations. We suggest the Authority update its guidance paper (in tandem with MBIE) to capture the correspondence and interpretations between the Authority and Electricity Network Association about what is considered a variable or fixed charge.

If you have any questions on this submission, or would like to discuss these issues further, please contact Andrew Kerr (Andrew.Kerr@powerco.co.nz).

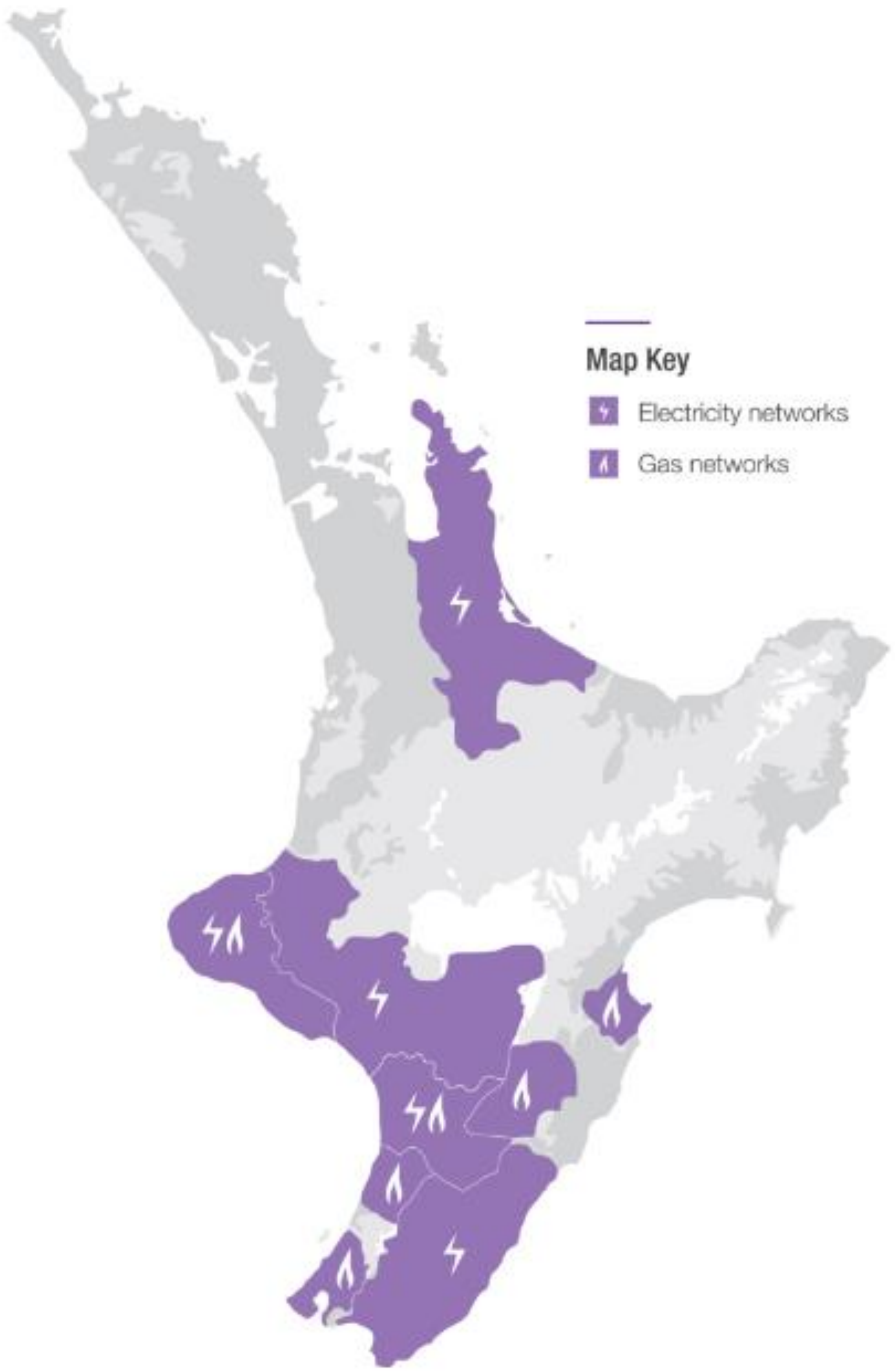
Yours sincerely

Stuart Marshall
General Manager – Regulation and Commercial

Attachment A: About Powerco

Powerco is a dual energy distributor with electricity lines and gas pipelines. Powerco is New Zealand's largest electricity distributor in terms of network length (28,000km) and has the second largest number of electricity connections (338,000). The company also has the second largest gas distribution network (6,000km) and the second largest number of gas connections (107,000).

- *Electricity distribution*. Powerco's electricity networks are in the Taranaki, Wanganui, Rangitikei, Manawatu, Wairarapa, Bay of Plenty, Coromandel and Waikato regions, including the urban centres of New Plymouth, Wanganui, Palmerston North, Masterton and Tauranga.
- *Gas distribution*. Powerco's gas networks are in the Taranaki, Manawatu, Hutt Valley, Porirua, Wellington City, Horowhenua and Hawke's Bay regions



Attachment B: Experience of distribution network pricing reform in Australia

The table below contains the summary from each of the sections of the HoustonKemp memo which follows.

Topic	Summary
1. A tariff reform process characterised by learning	The application of the distribution pricing rules amended in 2014 have contributed to a period characterised by an ever-evolving process of collective industry learning, where EDB and stakeholder views are constantly put forward, investigated, refined and addressed. Our experience of this process is that network tariff reform requires the collective input of all industry participants and combined consideration of economic principles, network planning practices and customer preferences, bill impacts and behavioural considerations. It is also important to retain a pragmatic focus on how best to elicit the efficient consumption and investment decisions that will promote the provision of those network services for which customers are willing to pay, at least cost.
2. Evolving views on time of use energy and demand pricing	There is a clear, albeit somewhat uncertain, role for demand-based price signals in the transition to more efficient network pricing. The key question relevant to a decision between a particular TOU energy and demand tariff at this stage of the reform process rests on which tariff is most likely to elicit efficient consumption and investment decisions by customers, bearing in mind the particular circumstances in which it will be applied. As the Electricity Authority notes, changes in price structures should be well-researched, signalled to customers in advance and transparent. Similarly, ongoing reforms – some of which may have significant effects on customers – and changes in strategic direction that could otherwise have been avoided risks disengaging customers with network pricing reform. Significant reforms should be comprehensively researched, underpinned by extensive engagement with customers and reflect a high degree of confidence as to the direction of the EDBs pricing strategy.

Topic	Summary
3. The role of customer bill impacts and engaging with customers	It is important that the industry engages on the need for a transition to more efficient network tariffs, the principles that should guide that transition and how those principles should be applied, eg, by considering what level of customer bill impact is deemed 'acceptable'. It may also be helpful to reflect in the pricing principles the likely role of customer bill impacts in governing the speed of transition to more efficient network prices. On a similar note, although the distribution pricing principles in the NER do not incorporate an explicit requirement on an EDB to consult with stakeholders, an EDB must demonstrate how it has taken stakeholders views into account in developing its tariff strategy. The resulting role of stakeholders in the tariff reform development process has significantly contributed to more customer-focused network tariff reform, as well as to the collective learning process underway in the industry. It may therefore also be relevant to consider the appropriateness of a pricing principle that lays the foundation for customers to contribute to the development of an EDBs network tariff strategy.
4. The allocation of residual costs	The potential for discretion in the allocation of residual costs and the broad range of efficiency and distributional outcomes that can arise from alternative approaches marks the need for industry engagement on the precise underlying principles, how they should be applied in different circumstances and the expected outcomes. If may therefore be helpful for the industry to engage on the principles underpinning a 'benefit-based allocation', the intended and likely outcomes, how benefits should be assessed and how to allocate costs if benefits cannot be reliably assessed.

HOUSTONKEMP
Economists

Memo

To	Andrew Kerr
From	Dale Yeats and Greg Houston
Subject	Experience of distribution network pricing reform in Australia
Date	19 February 2019

This note presents insights from our experience of distribution network pricing reform in Australia in response to questions put to us by Powerco Limited in relation to the Electricity Authority's December 2018 consultation paper on efficient distribution prices and pricing principles.[1]

1. A tariff reform process characterised by learning

In November 2014 the Australian Energy Market Commission (AEMC) amended the rules governing the pricing of distribution network services. The rule change established a pricing objective and new pricing principles to govern electricity distribution businesses (EDBs) pricing decisions, provided guidance on how each EDB is to assess trade-offs between the pricing principles and made changes to the network pricing process.

Key changes to the pricing principles included:

- strengthening the requirement to set tariffs on the basis of the long run marginal cost (LRMC) of providing network services, ie, EDBs *must* base network tariffs on LRMC;[2] and
- introducing a requirement that EDBs consider the impact on consumers of annual changes in network tariffs and permitting EDBs to depart from the efficiency-based requirements of the pricing principles if required to avoid unacceptable customer bill impacts.[3]

The rule change also amended the process through which the structure and level of distribution network prices are determined. The pricing process now comprises two stages, where an EDB:

- must develop a tariff structure statement (TSS) that, among other things, describes its approach to setting the structure and level of network prices for the subsequent five year regulatory period and demonstrates how that approach reflects stakeholder feedback; and
- in each year of that regulatory control period, must develop and submit to the Australian Energy Regulator (AER) an annual pricing proposal, which it assesses for compliance with the TSS.

The development of a TSS is an extensive, iterative process underpinned by ongoing stakeholder engagement and research, and is the subject of draft and final decisions by the AER. Almost all EDBs in the national electricity market (NEM) have been through the process of preparing a TSS at least once, and some are currently developing or awaiting approval of their second TSS.

This process has brought to bear on network pricing the differing perspectives and experiences of the AER, EDBs and their advisors, customers and their representatives, electricity retailers and government departments, as well as the multidisciplinary views of economists, network planning engineers, technology specialists and communications experts.

[1] Electricity Authority, *More efficient distribution prices – what do they look like?*, December 2018.

[2] NER, clause 6.18.5(f); and AEMC, *Final rule determination – National Electricity Amendment (Distribution network pricing arrangements) rule 2014*, 27 November 2014, p.19.

[3] NER, clause 6.18.5(h); and AEMC, *Final rule determination – National Electricity Amendment (Distribution network pricing arrangements) rule 2014*, 27 November 2014, p.23.

Unsurprisingly, this confluence of perspectives and experience has resulted in a collective process of learning for the industry. We briefly discuss relevant examples below.

Role of customers

The importance of customer engagement in the tariff reform process is perhaps most strongly reflected in the experience of the Victorian EDBs, which proposed to assign residential customers to demand-based tariffs. In response to concerns as to the resulting bill impacts and distributional implications, the Victorian Government announced that residential and small business customers could only be assigned to demand tariffs upon the customer's instruction to do so.[4] This requirement was subsequently extended to medium sized customers using between 40 and 160 MWh of electricity per annum.[5]

These requirements significantly, if not indefinitely, delayed the large-scale implementation of demand pricing in Victoria. This marks the importance of extensive customer engagement, comprehensively evaluating customer bill impacts and addressing any customer concerns.

The present focus of EDBs on putting customers at the centre of network pricing reform is one of the most notable consequences of the 2014 rule change and reflects the experience of EDBs not only in Victoria, but across multiple states.

Constantly developing methodologies

The widespread application of time of use (TOU) energy pricing has led to an increased focus on the definition of the peak period in the summer months.

Early in the reform process it was generally considered that a narrowly defined (short) peak period was necessarily preferential to a broader peak period. Although highly targeted peak periods are preferable in ideal circumstances, practical considerations such as the diversity of load profiles within customer groups can justify a departure from that principle.

By way of example, the AER prompted Ausgrid in its first TSS to narrow significantly the length of its peak period in the summer months. Ausgrid undertook analyses demonstrating the significant diversity in load profiles across its network and explained that:[6]

> …in these circumstances a DNSP must exercise its discretion and best judgement so as to strike a balance between:
>
> - broadening the peak period to account for diversity in load across its network; and
> - the cost and efficiency implications of a narrowly defined peak period exacerbating peak demand for some elements of its network

The AER subsequently accepted Ausgrid's definition of the peak period in the summer months. Endeavour Energy adopted the same lens of analysis in a subsequent TSS and built upon it by evaluating the diversity of load profiles through time and in different regions of its network, as well as:[7]

> …the timing of peak demand at distribution zone substations that are approaching capacity. Demand at these substations is expected to trigger the consideration of expenditure options…

[4] Victoria Government Gazette, No. G 15 Thursday 14 April 2016.

[5] Victoria Government Gazette, No. S 304 Tuesday 12 September 2017.

[6] Ausgrid, *Revised Tariff Structure Statement*, October 2016, p.34.

[7] Endeavour Energy, *Tariff Structure Explanatory Statement*, 2019-24, July 2017, p.47.

This evaluation by Endeavour Energy reflects a pragmatic focus on tariff design with an emphasis on avoiding upcoming, avoidable network costs. These developments also well-illustrate the ongoing evolution of best practice assessments in network pricing.

Importance of the network planning function

The AER recently prompted EDBs to consider including in their estimation of long run marginal cost (LRMC) all types of avoidable costs, namely replacement capital expenditure, which led to various EDBs investigating precisely the implications of changes in customer behaviour on the network planning process. Endeavour Energy and Evoenergy concluded that the relationship between demand and replacement expenditure was not linear because there is often not a large cost difference between different sized replacements and, Evoenergy, for example explained that:

> …downsizing an asset upon replacement must be evaluated against the risk that an unexpected increase in demand requires future augmentation costs that exceed the initial cost savings from downsizing.

Ultimately, the AER approved both Evoenergy and Endeavour Energy including no replacement costs in the estimates of LRMC from which prices are derived. On the other hand, it approved the inclusion of some replacement capital expenditure in Ausgrid's estimates of LRMC because Ausgrid's network planning approach reflected a different outcome and enabled the estimation of avoidable replacement expenditure.

These circumstances illustrate not only the evolving practices and accumulation of knowledge arising from the pricing reform process, but also the important role of an EDBs network planning function.

Summary

The application of the distribution pricing rules amended in 2014 have contributed to a period characterised by an ever-evolving process of collective industry learning, where EDB and stakeholder views are constantly put forward, investigated, refined and addressed.

Our experience of this process is that network tariff reform requires the collective input of all industry participants and combined consideration of economic principles, network planning practices and customer preferences, bill impacts and behavioural considerations. It is also important to retain a pragmatic focus on how best to elicit the efficient consumption and investment decisions that will promote the provision of those network services for which customers are willing to pay, at least cost.

2. Evolving views on time of use energy and demand pricing

The intuitive relationship between changes in location-specific demand and network costs contributed to a general view that the provision of an effective price signal necessitates a demand-based price.

By way of example, early in the tariff reform process the AER explained its view that:[8]

> Demand based tariffs are more cost reflective than time-of-use tariffs because peak demand is a principal driver of network investment.

A recent rule change to fast-track the roll-out of advanced metering technology has prompted the industry to revisit the relative merits of TOU energy and demand pricing. Most recently, the AER presented a significantly more moderate, neutral view on this subject, explaining in late 2018 that:[9]

[8] AER, *Final Decision – Tariff structure statements Ausgrid, Endeavour and Essential Energy*, February 2017, p.54.

[9] AER, *Final Decision – Evoenergy Distribution Determination 2019 to 2024 – Attachment 18 Tariff structure statement*, September 2018, p.64.

> …we consider that there is no clear cost reflective advantage of adopting demand tariffs over time of use tariffs.

Although there are many strongly held, contrasting views on this matter, there has been a renewed consideration of the merits of time of use pricing, as well as of the present uncertainty as to the optimal design of demand tariffs, their potential distributional implications and how they should be introduced.

The AER recently recognised the merits of TOU energy tariffs to include that:[10]

> Customers are familiar with distributors charging them based on how much electricity they consume. Distributors charge customers with accumulation meters based on their energy consumption, and time of use energy tariffs are well established. In general, we consider that customers will be able to understand time of use energy tariffs. We also note that time of use energy tariffs can be relatively efficient, in that peak consumption is correlated with user demand during coincidental peaks.

As the Electricity Authority correctly highlighted, it is important to remain cognisant that the merit of TOU energy tariffs depend on the particular design of the tariff in question – a principle applicable to all tariffs. Further, those merits also depend on the extent to which customers are likely to engage with and respond to ToU energy pricing, as well as the current and expected future challenges faced by the network.

By way of example, some negative sentiments towards TOU energy pricing in New South Wales reflected the relatively high non-peak charges applying during the middle of the day, when network marginal cost was low and solar PV output was high. This contributed to high levels of investment in solar PV installations by residential customers, who realised bill reductions that did not correspond to commensurate reductions in network costs.

A past statement by Ausgrid well-illustrated considerations relevant to a fundamental shift in tariff strategy from TOU energy to demand tariffs, ie, it explained to the AER that:

> We have signalled future avoidable costs to our customers using a peak energy price signal for a number of years… We therefore have a deep understanding of how our customers respond to peak energy price signals.
>
> On the other hand, the design and implementation of demand charges in Australia is in its relative infancy and our engagement with customers and stakeholders made clear that there are mixed, conflicting and strongly held views between customers, customer advocates, Ausgrid and pricing experts on:
>
> - the appropriate objective for demand pricing, i.e., whether demand pricing should be used to signal forward looking costs and/or in the recovery of residual costs;
> - how best to design a demand tariff to achieve the intended objective, given the myriad of design options; and
> - the optimal approach to introducing demand pricing for residential customers
>
> The effects of the large-scale implementation of demand pricing on network diversity are also uncertain. A demand charge that encourages customers to smooth their peak consumption may be intuitively appealing but, given diversity in the timing of customers' demand, it may be ineffective at reducing peak demand and so avoiding future costs.

Of course, this is the view of one EDB and at one point in the development of its long term pricing strategy.

[10] AER, *Final Decision – Evoenergy Distribution Determination 2019 to 2024 – Attachment 18 Tariff structure statement*, September 2018, p.65.

That said, it may be appropriate for some EDBs to undertake further research and trials of demand pricing before commencing a large-scale roll out. Although many EDBs in Australia have demand tariffs in place, there is significant variation in the design of those tariffs and relatively few customers are assigned to them.

It follows that the effects of wide-spread demand pricing on network diversity is an emerging consideration on which little work has been undertaken to date. Network costs would be much higher were it not for diversity in the timing of customer's demand. That said, a flattening of load profiles by large numbers of customers could significantly detract from network diversity, and potentially not lead to the intuitively expected reduction in demand and network costs. This could mean that the potential benefits so often assumed to flow from demand tariffs may not be as straight-forward to unlock as they appear. However, further research is required on this matter.

One potential consequence is that both a peak energy and peak demand based price signal may be required to give effect to both a flattening of peak demand and a shift in peak energy use to other periods, ie, because:

- a peak demand based price signal principally encourages the flattening of a customer's load profile; and
- a peak energy based price signal encourages customers to reduce and/or shift to other periods peak energy use.

Another potential area for further research concerns the relative merits of a monthly peak demand charge, as compared to a monthly peak energy charge, ie, a charge levied on a customer's highest daily peak energy use in a month. Evaluations of TOU and demand tariffs often compare a peak energy charge applying in many days of a month with a monthly peak demand charge, ie, that is levied on a customer's maximum peak demand each month. This inconsistent basis of comparison, and the potential for a monthly peak energy charge in conjunction with advanced metering technology, may warrant further investigation.

Despite these more technical considerations, it is important not to lose sight of the objective of tariff reform, which rests on eliciting efficient consumption and investment decisions by customers. A sound consideration of ToU and demand pricing needs to extend well beyond theoretical considerations so as to consider the broad set of relevant factors, including customer preferences and bill impacts.

Summary

There is a clear, albeit somewhat uncertain, role for demand-based price signals in the transition to more efficient network pricing. The key question relevant to a decision between a particular TOU energy and demand tariff at this stage of the reform process rests on which tariff is most likely to elicit efficient consumption and investment decisions by customers, bearing in mind the particular circumstances in which it will be applied.

As the Electricity Authority notes, changes in price structures should be well-researched, signalled to customers in advance and transparent. Similarly, ongoing reforms – some of which may have significant effects on customers – and changes in strategic direction that could otherwise have been avoided risks disengaging customers with network pricing reform. Significant reforms should be comprehensively researched, underpinned by extensive engagement with customers and reflect a high degree of confidence as to the direction of the EDBs pricing strategy.

3. The role of customer bill impacts and engaging with customers

The financial incentives arising from network price signals are the principal driver of efficient consumption and investment decisions by customers, and the appropriate level of customer bill impacts is a key factor guiding the rate of transition to more efficient tariffs in Australia.

The distribution pricing principles in Australia include an explicit requirement that EDBs *must* consider the impact on customers of changes in tariffs from year to year, as well as their ability to manage those impacts. The rules also permit an EDB to depart from efficiency-based pricing principles to the degree required to avoid unacceptable customer bill impacts.[11]

Upon introducing this requirement, often referred to as the 'customer impact principle', the AEMC explained that:

> The final rule introduces a specific consumer impact principle that places an obligation on DNSPs to set network tariffs that consumers can understand and to consider the impacts of network tariff changes on consumers when determining how to transition consumers to cost reflective tariffs. This principle will assist consumers to make efficient long term consumption and investment decisions and will help manage the transition to cost reflective network prices.
>
> DNSPs will be required to vary from network tariffs that meet the cost reflectivity principles only to the minimum extent necessary to meet the consumer impact principle. In practice, this is likely to require DNSPs to gradually transition to more cost reflective network tariffs over time if changes in network tariffs would result in significant impacts on consumers.

Reflecting its role as a key factor guiding the pace of network pricing reform, this principal is the subject of much attention in the pricing process. Our experience engaging with the AER, customers and their representatives, retailers and government departments on behalf of EDBs is that customer bill impacts are a critical factor governing stakeholder support for network pricing reforms.

Although it elsewhere discusses the importance of assessing customer bill impacts, it appears the Electricity Authority has restated the former 'stakeholder impact' principle (d) to restrict the consideration of impacts to those on retailers and other consumer agents only. The Electricity Authority explains that:[12]

> The phrase 'having regard to the impact on stakeholders' has been removed because it unnecessarily weakens the principle. The term 'stakeholders' is too broad in light of the Authority's statutory objective.

The Electricity's statutory objective is:[13]

> [t]o promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers

The efficiency of network tariffs and their long-term benefit to consumers rests, ultimately, on the degree to which they elicit efficient consumption and investment decisions by customers. This necessitates a strong focus on customers and a transition to more efficient tariffs guided by their implications for customers, including as to their preferences, bill impacts and ability to manage those bill impacts. The Victorian government intervention discussed in section 1 is a profound example of the important role customers play in the tariff reform process.

Summary

It is important that the industry engages on the need for a transition to more efficient network tariffs, the principles that should guide that transition and how those principles should be applied, eg, by considering what level of customer bill impact is deemed 'acceptable'. It may also be helpful to reflect in the pricing principles the likely role of customer bill impacts in governing the speed of transition to more efficient network prices.

[11] National Electricity Rules, clause 6.18.5(h).

[12] Electricity Authority, *More efficient distribution prices – what do they look like?*, December 2018, p.26.

[13] Electricity Industry Act 2010 (Act), section 15.

On a similar note, although the distribution pricing principles in the NER do not incorporate an explicit requirement on an EDB to consult with stakeholders, an EDB must demonstrate how it has taken stakeholders views into account in developing its tariff strategy. The resulting role of stakeholders in the tariff reform development process has significantly contributed to more customer-focused network tariff reform, as well as to the collective learning process underway in the industry.

It may therefore also be relevant to consider the appropriateness of a pricing principle that lays the foundation for customers to contribute to the development of an EDBs network tariff strategy.

4. The allocation of residual costs

It is well accepted that efficiency is promoted by minimising distortions to efficient, LRMC-based prices necessitated by the need to recover an EDB's efficient historical costs. To this end, the Electricity Authority's draft pricing principle (b)(i) provides that:[14]

> …where prices based on efficient incremental costs would under-recover allowed revenues, the shortfall should be made up by prices that least distort network use and reflect the value that users derive from the network;

It further explains that:[15]

> The objective of current principle (b) has been revised to clarify that the purpose of the principle is to minimise the extent to which fixed cost recovery affects how parties use the network, rather than 'having regard to consumers' responsiveness'. That is to minimise distortions in network use.
>
> The change in wording also reflects that prices should be benefit-based. It is more efficient for those who benefit most from an investment (and have the strongest incentive to lobby for it) to pay more towards its cost than those who receive less or no benefit.

Given the significant level of sunk costs necessitated by the provision of network services, the allocation of historical costs can have marked implications for efficiency and significant distributional consequences. It may therefore be helpful for the Electricity Authority and the industry to engage on the precise principles and considerations that should govern the allocation of historical costs and how those principles should be applied. The need for consideration is further marked by the level of discretion otherwise involved in developing a residual cost allocation methodology and the broad range of outcomes that can arise from different approaches.

For example, it might be helpful to further expand on the principles underpinning a 'benefit-based allocation', the intended and likely outcomes of such an allocation, how benefits should be assessed and how to allocate costs if benefits cannot be reliably assessed.

The level of discretion involved in allocating residual costs has made it an emerging area of focus in Australia, and the AER has recently been requesting significantly more detail from EDBs on how they allocate residual costs.

In Australia, EDBs are required to allocate residual costs in a manner than minimises distortions to LRMC-based rice signals. It is well-accepted in economics that the least distortionary approach to allocating residual costs involves an allocation in inverse proportion to consumers' responsiveness to changes in price, ie, in inverse proportion to their own price elasticity of demand. We understand the Electricity Authority proposes a broader interpretation

[14] Electricity Authority, *More efficient distribution prices – what do they look like?*, December 2018, p.23.

[15] Electricity Authority, *More efficient distribution prices – what do they look like?*, December 2018, p.25.

However, the role of estimates of the price elasticity of demand in informing network tariff reform has been limited to date. This is in part due to limitations in available data and challenges associated with developing and estimating a model that adequately reflects the decision-making framework of electricity customers.

This has contributed to significant divergence in the manner in which EDBs develop and apply their cost allocation methodologies, eg:

- Jemena allocates residual costs based on contributions to total revenue, because it considers its current allocation to be cost reflective;[16]
- Ergon explains that it balances the need to minimise distortions with its own criteria for affordability, as well as having regard to customer bill impacts and simplicity;[17]
- PowerWater allocates residual costs based on contribution to total costs;[18] and
- Ausgrid previously allocated residual costs based on relative forecast volume growth rate, but has since proposed an approach based on contribution to network costs.

Summary

The potential for discretion in the allocation of residual costs and the broad range of efficiency and distributional outcomes that can arise from alternative approaches marks the need for industry engagement on the precise underlying principles, how they should be applied in different circumstances and the expected outcomes.

If may therefore be helpful for the industry to engage on the principles underpinning a 'benefit-based allocation', the intended and likely outcomes, how benefits should be assessed and how to allocate costs if benefits cannot be reliably assessed.

[16] Jemena, *Tariff Structure Statement*, April 2016, p.44, E-9.

[17] Ergon, Revised Tariff Structure Statement 2017 to 2020, October 2016, p46.

[18] PowerWater Corporation, *Tariff Structure Statement* | *Explanatory Statement*, 29 November 2018, p.19.