By Email

COUNTIESPOWER

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Submissions
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Transmission Pricing Review: Consultation Paper

Counties Power welcomes the opportunity to provide feedback on the consultation paper 'Transmission pricing review' dated 23 July 2019 (the Paper). The Company has appreciated the EA's TPM consultation process of holding regional workshops and the Wellington technical workshop.

1. Summary

Counties Power is concerned about the changes to the transmission pricing methodology (TPM) Guidelines proposed by the Electricity Authority (EA), but does agree with the EA on the underlying goals for the TPM Guidelines: (1) Increasing efficiency of the transmission grid; (2) pricing durability; and (3) wrapping up the TPM review process. To this end, Counties Power notes that the EA has put forward a theoretical model for obtaining these goals that is heavily based on nodal pricing and how to best fully utilise the transmission grid.

This submission questions aspects of this theoretical model because it appears to miss two critical factors: (1) Electricity is an essential service where failure to deliver is not an option; and (2) tested industry practicalities of increasing transmission efficiency. Counties Power's submission covers these two areas and makes recommendations on how the proposal could be modified to deliver better outcomes for the sector.

2. Background on Counties Power

Counties Power is a consumer owned lines company operating in the rural South Auckland and northern Waikato regions. The Company is one of the fastest growing line companies in New Zealand, with growth coming from new residential and commercial subdivisions and large industrial consumers. At the same time, Counties Power has invested in new technology with one of the highest penetrations of smart meters, a smart meter cloud-based low voltage fault dispatch and visual OMS platform, a large grid scale battery and electric vehicle fast chargers.

3. Electricity is an essential service

Electricity is an essential service that is an integrated part of the lives of all New Zealand households and businesses. This is stated in Transpower's website page 'our commitments', with the second sentence being "A reliable electricity supply is essential to keep New Zealand's economy growing."[1] This is similarly reflected with the requirement of EDBs to supply electricity to all consumers and the power quality requirements in the Commerce Commission's price-quality paths.

As a consequence of electricity being an essential service, Transpower designs the transmission network so that congestion doesn't occur at an individual GXP because this could, and would likely, result in non-supply. Furthermore, it undertakes transmission design so that if there is a signal point of failure there is still redundancy of supply with sufficient capacity to meet peak demand, so again congestion doesn't occur. This is the case with Transpower's planned transmission upgrade affecting Counties Power at Transpower's Bombay substation as part of the Otahuhu-Wiri Constraint project. This grid investment is designed to ensure security of supply to Wiri in the event of a transmission grid fault supplying Wiri[2].

Consequently, nodal prices rarely reflect congestion because Transpower ensures that congestion does not occur, and so nodal pricing will not signal grid congestion. The EA's proposals would not, and should not, stop Transpower treating electricity as this essential service. Consequently, while, theoretically, nodal prices could send transmission price signals, in reality this would not occur and should not occur.

Where congestion has occurred in the past, and occurs now, is on the HVDC link where the North and South Island markets are sufficiently large to operate 'independently'. When congestion pricing does occur at a single GXP, it is a one-off event (e.g. Transpower planned transmission maintenance), and for Counties Power at its Bombay GXP supply, it has resulted in extremely high spot prices in the past because there is no alternative to supplying the GXP.

Because Transpower is not proposing to change its transmission design fundamentals under the proposal, future nodal prices will not signal transmission investments through nodal congestion prices because congestion will not occur. Therefore, Counties Power believes that the theoretical reasoning of relying on nodal congestion pricing will not work in practice.

4. Practicality of improving transmission efficiency

As the Paper alludes, the two drivers to improve efficient use of the grid are: (1) maximising the utilisation of the existing grid capacity; and (2) ensuring efficient investment outcomes for future grid investments. Counties Power believes that the EA's proposals are theoretical and will result in significantly highly transmission costs long-term.

[1] https://www.transpower.co.nz/about-us/corporate-social-responsibility/our-commitments

[2] The Wiri GXP supplies the Vector network; the transmission upgrade is planned to be undertaken at the Bombay GXP that supplies Counties Power.

4.1 Improve utilisation of exiting capacity

The Paper proposes to improve utilisation of the grid through sending price signals that encourage customers to fully use the capacity of the transmission grid. Counties Power would agree that theoretically this is the best utilisation of the grid, however, this is not practical. Furthermore, the EA's proposal would only address the 1% of the time that the coincidental peak demand is charged (or up to 2% given addition peak management to ensure coincidental peaks are managed).

This is because the proposal implies that customers through pricing signals would fully utilise the available capacity until it was congested, and then nodal congestion prices would reduce demand. Firstly, it is no accident that most peaks[3] occur on cold winter weekdays because this is when residential space heating coincides with commercial and industrial loads. There is no peak signalling to New Zealand households and businesses during this time, nor is there evidence that even if there was, industry or households would reduce electricity demand. In fact, international evidence has shown that long-term price signals do not work because electricity is an essential service and the cost of non-supply is significantly greater than existing pricing signals.

Where transmission pricing does work is in hot water load control, where the hot water cylinder acts as an energy storage system to enable peak shifting while the customer receives the same level of service (i.e. supply of hot water). This system has been in place throughout New Zealand for about 50 years and for Counties Power it enables a peak demand reduction of approximately[4] 20% while the customer obtains a 50% price reduction in line charges[5].

This hot water control illustrates how EDBs do manage transmission capacity. Under the proposal, nodal congestion pricing is expected to manage capacity with the retailers sending a price signal to consumers. In practice this would not work because retailers would be acting to obtain a competitive advantage so there would be no co-ordination and different retailers may or may not send a price signal. Furthermore, given the level of customer churn, retailers would be unlikely to invest in the long-term strategies needed to manage the future load.

This is important because of the impact of electrification of residential transport that will occur over the next thirty years. As this occurs, households will install 7kW electric vehicle (EV) chargers, with an average of 1.9 cars per house. This is a total of 13.3kW on average per household of additional load[6], where the existing coincidental peak demand is around 2.8kW. It is important that the industry is able, and is correctly incentivised, to manage this new peak demand. This will require regulatory changes, new load management technology investments and considerable time to develop and deploy to households.

Counties Power's position is that EDBs are best able to manage this future new load and the existing transmission capacity utilisation. This would be through peak shifting, which EDBs

[3] The exception being summer peaks being caused by irrigation in the South Island.

[4] As measured by the difference between the any-time maximum demand, which is not controlled, and the upper North Island co-incidental demand where Counties Power reduces the peak demand through load control.

[5] Its success lies in the service occurring without customers having to manage their electricity peaks.

[6] People will plug in their EVs when they arrive home, which is the same time that peak demand occurs on the transmission grid. In addition to residential EVs, there would be a similar demand from the electrification of commercial transport, which may be charged at the end of a working day.

have had 50 years of experience undertaking. The grid efficiency is then obtained over time through reducing the peaks and delaying future investments.

4.2 Improve grid investment decisions

Counties Power believes that there is a weak argument to implement a benefit-based charge. This said, where there is an issue with grid investments as a result of generators not paying for use of the HVAC grid. Given economic theory that economically efficient prices are between the marginal cost of supply and the standalone cost of supply, if generators and some industrial are not paying HVAC transmission charges[7] then they are being cross-subsidised. .

This creates a risk of uneconomic large-scale generation investments. Counties Power believes that this is already evident for thermal generators who face gas transmission charges but no electricity transmission charges. In New Zealand, Counties Power believes that this has resulted in Auckland's two major thermal generation plants either being dismantled or mothballed despite being based within New Zealand's largest area of demand, and thermal generation being located in Taranaki where there is little demand but where the thermal plants pay neither gas nor electricity transmission charges. To ensure that major industrials pay for at least the marginal grid transmission costs, generators should pay a benefit-based charge (similarly for major industrials where they can shift demand to avoid transmission peak charges).

Counties Power agrees with the EA that costs not recovered through a benefit-based charge should be recovered from a residual charge. This plus the fact that new transmission investments enable demand growth that would generate additional residual charge, Counties Power believes that EDBs should not be charged a benefit-based charge. If EDBs were charged a benefit-based charge and a residual charge, then they would be effectively double charged[8].

Consequently, the application of benefit-based charges to any historic investments should only be applied to generators and to industrial plants where the industrial plant pays less in residual charges than the benefit-based charge. This said, it is noted that the Paper states (page 116, B50) that there are no international examples of operators that have applied benefit-based charge to historic assets. Therefore, retrospective charging should probably only be applied to the HVDC assets, where there is an existing benefit-based charge in place.

In addition to the above, if the EA proceeds with a benefit-based charge, then it is important that agreement is reached with the beneficiaries before the investment is made so that the main beneficiaries of any investment decision have the right to veto the investment in conjunction with the Commerce Commission's decision on investments. This would avoid future disputes over the charges increasing the durability of the proposal.

[7] As noted above, Counties Power does not believe that nodal pricing will result in congestion charges and so they do not, and will not, send sufficient price signals to act as a proxy transmission charge.

[8] In the Paper there is no mention of the additional revenue earned by Transpower and this failure to take account of the additional revenue earned would result in EDBs paying twice for the same investment (increased residual payments and the additional benefit-based charge).

4.3 Incentives for uneconomic investments

Counties Power agrees with the EA's concerns that increasing Transpower peak transmission prices could result in uneconomic investments. Furthermore, Counties Power believes that such uneconomic investments have already occurred with existing peak generation investments. Furthermore, the EA has approved a large number of generators to be eligible for ACOT payments[9] in the upper North Island and upper South Island. Counties Power assumes that these ACOT payments were approved because the EA believes that they avoid future transmission investments. This appears to be in contradiction to the Paper that argues that spare capacity exists in the transmission network and the risk of uneconomic investments to avoid transmission costs.

Regarding these investments, consumer owned EDBs themselves are not making peak generation investments because there is no net benefit to their consumers because the ACOT payments simply replace the Transpower charges so there is no net saving for their customers. In terms of non-consumer owned line companies, Counties Power is not aware of any EDBs investing in peak generation plants.

We note that the Paper has mentioned the risk of grid scale batteries. For EDBs there is limited ability to use grid batteries because a battery would peak-flatten not remove the peak so the ability to avoid a residual charge is overstated. We also understand from the Wellington technical workshop that the EA CBA had over-estimated the returns from the use of grid scale batteries for energy arbitrage because the modelling had not considered that the electricity purchase price is significantly higher than the sale price[10]. Lastly, if grid scale batteries were to become economic for avoiding peak transmission charges, then electric vehicles would also be similarly significantly cheaper (as the battery is the highest component cost in an EV) and consequently there would be a significant increase in peak demand and a requirement for peak flattening.

5. Cost benefit analysis

The majority of the benefits calculated in the CBA appear to be derived on very loose assumptions around the consumer benefits of increased peak energy prices leading to future increased generation investments. Counties Power believes that these assumptions are flawed and ignores the following issues:

1. ACOT payments are an important source of revenue for peaking plants. Counties Power estimates that ACOT payments contribute probably around 40% of their total revenue (compared to generating during high nodal prices) and to more than twice a peaking plant's total profit[11]. Under the proposal the ACOT payments are going to be removed

[9] https://www.ea.govt.nz/development/work-programme/pricing-cost-allocation/acot-code-change-implementation/development/list-eligible-to-qualify-for-acot-in-uni-and-usi/

[10] The electricity price for purchasing electricity to charge a grid scale battery comprises the retail margin, energy nodal price and line charges. For the sale of the electricity back into the market the grid battery owner would only earn the energy nodal spot price.

[11] A higher percentage of the profit because the generators can earn both ACOT and electricity sales revenue when generating at the peak and the peaks are a short period of time.

making dedicated peaking plants less economic, and so there would be a reduction in peak generation investments.

2. New Zealand's high electricity prices are driven by hydro storage levels and gas supply constraints. Unlike overseas countries, New Zealand's electricity supply risk is not with supplying peak demand but instead is a total generation kWh supply. This is because there is enough hydro generation to supply at peak times but insufficient stored water to supply the country's total volume of power required even with all generation working[12]. This is evident with: (1) only minor daily changes in wholesale nodal prices despite significant cyclic changes in demand over a 24-hour period; and (2) high nodal prices over extended periods of time will lake levels are low.

3. Electricity transmission peaks occur for only 1% of the time and so under the proposal there would be no change in nodal prices for 99% of the time. Furthermore, as stated above, Transpower would continue to invest in transmission to avoid a risk of non-supply so congestion pricing would not occur to provide higher price signals.

Consequently, Counties Power believes that the benefits in the CBA have been significantly overstated. As a result, Counties Power believes that there is an obligation on the EA under its Consultation Charter to undertake 'Principle 9 – Risk Reporting' and assess the risks of making and not making the Code amendment[13].

6. Conclusion and suggested modifications

Counties Power seeks the following modifications to the EA TPM guideline proposals:

1. That peak demand pricing remains for the recovery of residual costs for EDBs, which will enable EDBs to have the certainty to undertake the investment required for the future management of electric vehicle charging and the electrification of the industrial load. Counties Power, in discussions with industrial customers and through its electric vehicle charging investments, is aware that there will be a significant increase in peak transmission demand as pressure builds to decarbonise the economy. If this is not managed it will drive unnecessary additional transmission investments, with the costs recovered from consumers;

2. Benefit-based charges be allocated to grid connected generators, to ensure that new generation is allocated as a minimum their marginal grid cost of supply. Reliance on nodal pricing will not send the correct price signals to generators, when the grid is designed to ensure that congestion does not occur;

3. Major industrials pay a minimum of a benefit-based charge to avoid major industrials avoiding transmission charges;

4. Where generators, or major industrials, are identifying as paying a significant proportion of a new grid investment through a benefit-based charge, then they should have the ability under the Code to modify or veto the investment. This would ensure that the

[12] A consequence of having 60% hydro generation but only six weeks hydro storage.

[13] Clause 2.5 of the Charter, as available at https://www.ea.govt.nz/about-us/strategic-planning-and-reporting/foundation-documents/

charges are durable if there has been a clear approval process from those that will benefit from the investment.

5. Any benefits-based cost recovery methodology should not be implemented without support by a Government Policy Statement to give essential guidance on inherently complex and especially contentious issues such as inter-temporal equity; and the treatment of competition, reliability, and safety benefits; and

6. Historical assets are excluded from retrospective charges except for the HVDC assets because HVDC assets are already allocated using a crude benefit-based charge. Furthermore, not charging for the HVDC assets would further increase the cross subsidisation of grid-connected generation from EDBs and major industrials.

Yours sincerely

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