Submission to the Electricity Authority

On

Implications of evolving technologies for pricing of distribution services

2 February 2016

Contents

Summary of Alpine's submission

1. We would like to thank the Electricity Authority, for the opportunity to submit on the implications of evolving technologies on distribution pricing. Our response to each of the Authority's 16 questions follows. We also endorse the submission put forward by the Electricity Networks Association on our behalf.

2. On the whole we agree with the Authority's views made in the consultation paper with respect to consumption charges and efficient investment in networks. In summary we are of the view that a consumption charge is necessary to signal time of use, when consumers do not have half hour metering. However, a distribution consumption charge can motivate a consumer to reduce consumption leading to an under recovery of distribution costs and potentially to the risk of asset stranding. Because distribution costs do not reduce when consumption is reduced, the reduction in consumption due to a distribution consumption charge is an unintended consequence of the charge.

3. We are also of the view that smart metering can enable us to replace the consumption charge with a demand charge in part or entirely. However there are other aspects which we should take into account before we can replace the consumption charge such as price shock for individual consumers as well as the overall reaction by consumers to a removal of distribution consumption charges. Because of these factors we are of the view that it would be helpful for the EA to open up the discussion to include the potential hierarchy of the pricing principles as well.

4. Finally we are encouraged by the Authority's views on what a 'variable charge' is under the Low user regulations. However we question how the regulations can be administered if distributors no longer have a consumption charge. Is there a need for distributors to be involved in the low user regulations at all?

Q1 Our views on the scope of the Authority's review

What are your views on the scope of the Authority's review? Please give reasons for your answer.

5. We submit that the scope of the EA review is useful and provides a platform for in depth discussion on efficiency aspects. However, the scope is limited in not discussing other aspects of pricing such as consumer equity, customer satisfaction particularly around consumption charging, as well as the impact of price shocks on consumers for example. We therefore agree with Castalia's comments in section B.6.7 on the lack of hierarchy between the Pricing Principles.

6. Although the Authority has not determined a hierarchy between pricing principles, a hierarchy can be deduced by the Authorities focus in the Consultation paper on efficiency gains. If this interpretation is correct it is then interesting to note research cited by the Brattle group on behalf of the Australian Energy Market Commission (AEMC) in this regard.

7. The Brattle Group (2014) cites Professor Bonbright's work as well as the findings from the Demand Response Research Centre (DRPC) published in 2007. The DRPC reviewed Bonbright's ten pricing principles and condensed them to four. The DRPC concluded that Efficiency is one of four considerations 'and not the only one or even the dominant one'.

8. Based on the Brattle groups research and our own findings, we would value the opportunity to be engage further with the Authority on the hierarchy of the pricing principles.

Q2 The effect of technology on network investment

What other technologies do consumers invest in or use that are likely to have a material effect on investment or operation of distribution networks? Please give reasons for your answer and an estimate of when you expect the technologies will have a material effect.

9. Technologies or practices which reduce consumption of electricity include:

- new building codes requiring insulation and double glazing
- modern electrical appliances that require less power than previous models
- sustainable energy focused design such as orientation of the building, thermal performance concrete, landscaping etc.
- alternative heating such as wet back fires, gas, solar water
- distributed generation (with or without batteries) including photo voltaic, wind, hydro, and natural gas
- smart technology which allows consumers to actively manage power requirements.

10. If we use a consumption charge to recover distribution costs, a reduction in consumer consumption will cause us to under recover our costs if we have not planned for the reduced consumption. Because our distribution costs are fixed in the short run, a reduction in consumption will not reduce our costs, but can cause us to under recover our costs if we use a consumption charge.

11. As the risk of not being able to recover costs increases, we will require larger capital contributions from investors. We will also be more risk adverse to upgrading and replacing aging network equipment if asset stranding becomes an issue.

12. We estimate that the costs of installing and maintaining photo voltaic (PV) panels will be on par with the costs of grid connection by 2025. This estimate is based on private ownership of the PV panels.

13. Please note, we are not against consumers adopting such practices or technologies and look to ensure that our pricing does not provide disincentives to do so.

Q3 Distribution price structures, cost recovery and durability

What do you think about the Authority's concerns that existing distribution pricing structures do not reflect the costs of the different distribution services provided and may not be durable?

14. We agree in part with the Authority that existing distribution charges do not reflect the costs of different distribution services. We use a consumption charge to signal peak demand periods when consumers do not have half hour metering. If we accurately plan the next year's consumption this charge should signal the costs of distribution services. If however consumption is more or less than planned the consumption charge will not recover our true costs.

15. We agree with the Authority that the costs of distribution services may not be durable, if distribution consumption charges are continued into the future. Consumers have an incentive to invest in new technologies to reduce their distribution consumption charges, which can lead to the under recovery future distribution costs potentially leading to under investment in distribution assets. The reduction in consumption could be so extreme that an electricity distribution business (EDB) is not able to recover costs in the long run leading to asset stranding.

Q4 Investment in solar panels

What is your view of the potential for a significant amount of inefficient investment in solar panels if distribution pricing structures continue to be based primarily on a consumption-based approach?

16. We agree that a distribution consumption charge could motivate consumers to over invest in solar panels in order to reduce this charge. If a distribution consumption charge was replaced by a demand charge then there would potentially be less investment in solar panels.

17. The intent of a distribution consumption charge is to signal peak demand periods when a demand charge is not feasible due to the limitations of consumer metering. The intent of a consumption charge is not to get consumers to reduce consumption. As a reduction in consumption does not reduce an EDBs costs.

Q5 The potential for inefficient investment in distribution networks

What is your view of the potential for inefficient investment in distribution networks if there is a high uptake of electric vehicles and distribution pricing structures continue to be based primarily on a consumption-based approach?

18. If there is a high uptake of EVs on our network and EV owners choose to charge EVs during peak network or local peak periods then we could have to invest in network upgrades to provide the necessary network capacity. Alternatively if we could signal to EV owners to charge at off peak periods then we could avoid future (inefficient) investment in capacity.

19. Presently we use day / night consumption charges, and demand charges (for ICPS with half hour metering) to provide signals to use power during off peak periods. The consumption charge is useful to signal the preferred time to use the network, but as stated previously it can lead to over or under recovery of distribution costs if future consumption differs from forecast consumption.

20. We are investigating the use of a demand charge to replace consumption charges for all consumers, once smart meters are rolled out. We are of the view that a demand charge should be more effective than a consumption charge to signal peak periods.

Q6 The potential for battery technology to defer investment

What is your view of the potential for battery technology to defer or avoid investment to augment distribution networks?

21. The uptake of battery technology can help to reduce long term network costs if consumers use battery power during peak periods instead of demanding power off the grid.

22. Reduced demand during peak periods will push back the need to augment the network.

Q7 The potential for alternative pricing structures to promote efficient investment in heat pumps and / or LEDs

What is your view of the potential for alternative distribution pricing structures to promote more efficient investment by consumers in heat pumps and / or LEDs?

23. Our view is that both a demand charge and a consumption charge can signal peak periods of network congestion. However the consumption charge can signal to consumers to reduce their consumption (or invest in technologies to reduce consumption) when this is not warranted. We are also of the view that a consumption charge sends a much weaker signal than a demand charge of when peak times occur.

24. If we use a demand charge and not a consumption charge to signal peak times we can accurately signal the cost to the consumer of using power at peak times and therefore the costs and benefits of using technologies at peak times. We also avoid sending signals to consumers to reduce consumption to avoid distribution charges.

Q8 Options for structuring pricing

What is your view of distributors' options for structuring their pricing?

25. We are of the view that with the roll out of smart meters we could replace the consumption charge with a peak demand charge (or similar) for recovering long run costs. A day/night consumption charge is presently needed to signal peak periods when consumers do not have half hour metering.

26. A demand charge set to peak demand is a good way of signally the long term cost of demanding power at critical peak periods. However, international research suggests that consumers are sceptical of the replacement of demand charges with consumption charges. It is therefore important to us to gauge local reaction to the replacement of consumption charges with demand charges, before we embark on this option.

27. Another factor to consider when assessing pricing options is the impact on individual consumers to a change in cost recovery. To determine the impact on each consumer is complex, and it is likely that a change in cost recovery will negatively affect some consumers more than others, that is Pareto optimality is not possible with the proposed change. In some cases the impact on an individual consumer cannot be justified, which creates complexity in how pricing structures should be altered if at all.

28. We are encouraged by the Authority's interpretation of the Low user fixed charges in relation to variable charges, and will conduct further investigation into the feasibility of using demand charges for low user consumers. However, this interpretation creates some interesting questions if the distributor only has demand and not consumption charges. If the distributor only has demand charges can retailers alone create a signal to consumers to reduce consumption, to qualify for low user status, without the need for similar distribution pricing structures?

Q9 Amending distribution pricing structures

What needs to occur for distributors to amend their distribution pricing structures to introduce more service-based pricing?

29. The roll out of smart meters will enable us to use a demand charge to signal long run costs to all consumers who presently have non half hour metering, and who have limited ability to reduce capacity. However before we institute a demand charge we will need to gauge consumer reaction to this charge (from consumption to a demand only charge) and to determine the impact on individual consumers. As stated in Q8 above, price shock is a concern and until further investigation is carried out as to the impact on individual consumers, we cannot definitively say that we will move to demand charges.

30. The impact of a price shock as well as the reaction of consumers to the removal of a consumption charge will prompt us to weigh the importance of pricing principles regarding efficiency over pricing principles regarding equity and the impact on stakeholders.

Q10 A change to the applicable rules

Would a change to the applicable rules encourage change to pricing structures?

31. The low user regulations still cause us concern; however we are encouraged by the Authorities interpretation of 'variable charges'.

32. Our interpretation of Low user fixed charge regulations presently means that we under recover costs from low users and have to recover the excess from other users

of the network. We also interpret the regulation to mean that we have to charge a consumption charge to low users which would prevent us from recovering costs through a demand charge even if smart meters were present.

33. However the Authority's interpretation of being able to use a demand charge is enlightening. Our concern though is that to replace the low user consumption charge with a demand charge will make the consumption of electricity and therefore the definition of a low user from a distribution point of view irrelevant. This issue should be resolved through discussions with retailers but we will conduct further research ourselves first before we commit to such a strategy.

Q11 Incentives to encourage change

What incentives could be introduced to encourage change?

34. To encourage change, the Authority could give more detail on their interpretation of 'variable charges' in the low user regulations. Particularly clarification on whether the retailer alone can incentivise consumers to reduce consumption and move into the low user group without the help of distributor consumption charges (if the distributor replaced consumption charges with demand). Potentially leaving the distributor out of the low user regulations?

35. As discussed previously we agree with Castalia's recommendation for clarity around the weightings of pricing principles, particularly if the principles were to become mandatory.

Q12 Options to ensure distribution pricing structures are service-based

What other options would ensure distribution pricing structures are service-based?

36. No comments to add beyond discussions in Q10 and 11.

Q13 Suggested improvements to the distribution pricing principles in Appendix B

Do you have any suggested improvements to the distribution pricing principles in Appendix B? What are your views on the recommendations made by Castalia noted above and in Appendix B?

37. As discussed previously we agree with Castalia's recommendation for clarity around the weightings of pricing principles, particularly if the principles were to become mandatory.

38. The replacement of consumption charges with a demand charge may not be palatable to some consumers and may also produce a price shock to individual consumers. If the principles became mandatory discussion around efficiency / equity questions would be helpful. The use of the economic framework suggests that economic / dynamic efficiency considerations including Ramsey based allocations are most important if these can be negotiated. In which case principles a to c would

trump principles d and e…?

Q14 Suggested improvements to the distribution pricing information disclosure requirements in Appendix B

Do you have any suggested improvements to the distribution pricing information disclosure requirements in Appendix B?

39. We agree that a capital contribution methodology which asks for a description on how capital contributions and remaining costs are determined is useful.

40. However, each large investment made to our network incorporates different levels of risk. The level of risk an investment has will determine the capital contribution we require upfront. We therefore prefer to continue to assess the risk and therefore the capital contribution an investor may pay us on a case by case basis. We would not endorse a methodology that restricts our ability to do this.

41. We have no problem with a methodology that asks us to provide in high level terms how we recover the remaining costs of an investment after capital contributions have been paid. However each investment in our network differs in terms of new assets required and the existing network involved which makes a granular explanation problematic.

Q15 Other issues with the current distribution pricing arrangements

What other issues with the current distribution pricing arrangements should the Authority address?

42. No further suggestions.

Q16 Influences from evolving technologies on New Zealand

How will New Zealand-specific circumstances influence the effects of evolving technologies in this country?

43. We are of the view that the following factors are influential on the market for evolving technologies in New Zealand.

- Hydro generation is low carbon emitting but can be damaging to river based eco systems. There is pressure to find non hydro low carbon emitting forms of generation.
- There is an increasing proportion of people renting properties and a decreasing portion of the population owning houses1. This means that a

[1] Statistics New Zealand (2016) refer to http://www.stats.govt.nz/browse_for_stats/people_and_communities/Households/housing-profiles-

growing portion of the population has less influence over how houses are insulated, heated or connected to alternative energy sources.

- New Zealand's small DG market could easily be captured by off shore multi nationals potentially decreasing market competitiveness. However off shore investment will likely speed up the uptake of evolving technologies through lower prices from economies of scale.
- The remoteness of many rural connections encourages the use of demand based pricing and remote area power supplies.
- The heavy concentration of New Zealand's population in major urban areas away from the sources of electrical generation causes issues in the recovery of transmission prices and incentivises local generation.

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Concluding remarks

Thank you once again for the opportunity to submit on this consultation. For further information on this submission please contact:

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