



**Submission to the Electricity Authority on TPM Review:  
ACOT payments for distributed generation**

**31 January 2014**

## **CONTENTS**

CONTENTS	2
EXECUTIVE SUMMARY	3
INTRODUCTION AND OPENING COMMENTS	4
VECTOR SUPPORTS REVIEW OF DG PRICING PRINCIPLES	6
CONCLUDING REMARKS	8
APPENDIX: ANALYSIS IN THE TPM ISSUES PAPER	10

## EXECUTIVE SUMMARY

1. Vector supports review of Schedule 6.4 "Pricing principles" of the Electricity Industry Participation Code 2010.
2. Any such review of distributed generation pricing should not be limited to avoided cost of transmission (ACOT) payments. It should include all aspects of the distributed generation pricing principles, notably the treatment of fixed and common costs.
3. Given the Authority considers its decision-making and economic framework to be appropriate for transmission pricing, distribution pricing, transmission pricing exemption decisions and industry levy-funding, and given that recovery of the costs of connecting distributed generation to the distribution network is a subset of distribution pricing, it is somewhat surprising the ACOT Working Paper does not consider distributed generation pricing in the context of this framework.
4. The issues the Authority has raised with ACOT payments provide a valid prima facie basis for a review of distributed generation arrangements.
5. A particular concern Vector has is that, regardless of whether a particular distributed generation investment is efficient, consumers receive no benefits from distributed generation. Worst still consumers could actually incur dis-benefits. It is the distributed generator who receives the full benefit (or more) of any avoided transmission and distribution cost. Vector considers this to be contrary to the statutory objective of promoting the long-term benefit of consumers.
6. The Authority should aim to ensure the distributed generators only invest in efficient distributed generation, from which consumers receive actual benefits.
7. It should be borne in mind that the ACOT payments essentially require electricity distribution businesses to pass on the pricing signals from the TPM. Normally, market participants responding to pricing signals leads to more efficient outcomes. If the ACOT payments are not sending efficient signals to distributed generators, the Authority should consider the extent to which this is a problem with Schedule 6.4 or the TPM. If the latter, it may mean other parties are also receiving 'incorrect' pricing signals e.g. electricity distributors investing in load control.
8. It may be that refinement of the TPM may be needed in addition to changes to Schedule 6.4 i.e. changes to make the TPM less avoidable/more fixed to address the static efficiency concerns the Authority has identified in the ACOT Working Paper. If it is the case that changes to the TPM are warranted, Vector would expect these to be incremental refinements, and not major change to the TPM.
9. For the avoidance of doubt, Vector is of the view that the efficiency impact of the issues with distributed generation raised in the ACOT Working Paper are minor relative to the adverse static and dynamic efficiency impacts the Authority's initial TPM Proposal, and the beneficiaries-pay options contained in the Authority's Beneficiaries-pay Working Paper, would have. (The GIT + SPD and SPD + GIT options could actually exacerbate inefficient pricing signals for distributed generation; particularly in Auckland and Northland.)
10. The Authority consequently should not attempt to use arguments about distributed generation as a justification for major reform to the TPM, or for the proposals in its original TPM Issues Paper and the subsequent SPD options contained in the Beneficiaries-pay Working Paper.

## INTRODUCTION AND OPENING COMMENTS

11. Vector welcomes the opportunity to respond to the Electricity Authority's (Authority) working paper "Transmission pricing methodology: Avoided cost of transmission (ACOT) payments for distributed generation" (ACOT Working Paper), dated 19 November 2013.
12. Please also find attached a report from CEG "Avoided Cost of Transmission Payments", January 2014.
13. No part of this submission, or the accompanying CEG report, is confidential and Vector is happy for them to be made publicly available.
14. Vector's contact person for this submission is:  
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15. The ACOT Working Paper provides analysis which suggests the ACOT payments to distributed generation do not provide positive benefits through deferral/avoidance of the need for future investment in electricity transmission (or at least the Authority could not identify any evidence of deferral/avoidance of investment).
16. Vector's reading of Appendix D of the original Transmission Pricing Methodology (TPM) Issues Paper, released in October 2012, is that the Authority considers the RCPD (12 regional peaks) charges in UNI and USI provide efficient signals to reduce peak transmission demand (through demand reduction, distributed generation etc) which will defer transmission investment, but the RCPD (100 regional peaks) charges in the LNI and LSI are intended to act as a fixed/unavoidable charge that is not responded to. Any response would result in wealth transfers/static inefficiency though "the inefficiency is probably relatively small".
17. What wasn't clear from the ACOT Working Paper was how its analysis aligns with the analysis of the impact of the current RCPD charges outlined in Appendix D of the Authority's TPM Issues Paper?<sup>1</sup> The analysis in the two documents appears to contradict each other. This point is discussed in more detail in the Appendix to this submission.
18. One of the questions the ACOT Working Paper's analysis also begs is whether the distributed generation issues identified are an issue with the Schedule 6.4 pricing principles/ACOT payment per se, the TPM or both.
19. Normally, market participants responding to pricing signals lead to more efficient market outcomes. The ACOT Working Paper suggests that market participants responding to the TPM (in particular, RCPD charges) by investing in distributed generation could result in static inefficiency. If this concern is valid, it may suggest the TPM charges are not sufficiently 'unavoidable' and it may be desirable to refine the TPM to ensure it is sending efficient signals.
20. If the problem is that the TPM is sending inefficient pricing signals, then problems with inefficient response to those signals won't necessarily be limited to distributed generation. It may be that other parties are responding to those signals as well e.g. electricity distributors applying load control.

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<sup>1</sup> Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

21. Likewise, the ACOT Working Paper examines whether distributed generation investments influence Transpower's investment decisions or "provide an effective locational signal and whether recently commissioned DG has been located in import constrained regions". If the TPM does not "provide an effective locational signal", Vector would not expect the distributed generation pricing principles to either. This is not necessarily a deficiency of the distributed generation pricing principles. It simply reflects that the TPM only provides a North-South Island locational signal.
22. If the Authority wants to ensure distributed generators (or anyone else for that matter) receive dynamically-efficient transmission pricing signals, then it would need to consider whether it would be practical to introduce some form of LRMC pricing for transmission.<sup>2</sup> This would signal the full transmission investment implications of generation/consumption location decisions (locational pricing) and peak usage (capacity charging).

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<sup>2</sup> Vector will address this point further in response to the Electricity Authority's working paper "Transmission pricing methodology review: Beneficiaries-pay options", 21 January 2014.

## VECTOR SUPPORTS REVIEW OF DG PRICING PRINCIPLES

23. Vector supports the Authority's position that "... a review of the provisions of Schedule 6.4 is ... warranted with a view to ensuring a stronger link between ACOT payments and efficiency benefits".<sup>3</sup> However, Vector considers the review should be widened to encompass Schedule 6.4 "Pricing principles", of the Electricity Industry Participation Code 2010 (the Code), in its entirety.
24. Vector had previously recommended a review of Schedule 6.4.<sup>4</sup>
25. Vector is not necessarily adversely affected by the requirements to make payments to distributed generators for avoided transmission, given that such payments are pass-through costs. However, we are concerned the current application of the distributed generation pricing principles can mean consumers bear extra costs from distributed generation.
26. The ACOT Working Paper provides a useful starting point for review of the distributed generation arrangements.<sup>5</sup> This particularly includes the Working Paper's explicit consideration of the impact of distributed generation from both a static and dynamic (investment) efficiency perspective.
27. The ACOT Working Paper shows how transmission charges plus avoided transmission payments can exceed the transmission charges consumers would incur absent any distributed generation. This is exacerbated by the distributed generation pricing principles providing for distributed generators to receive 100% of the benefits (avoided transmission and distribution) of distributed generation without any sharing with consumers. Even if distributed generation improves efficiency, consumers can be made worse off under the current pricing principles.<sup>6</sup>
28. The issues with the distributed generation regulations, contained in Part 6, including Schedule 6.4, of the Code are wider than the potential problems the Authority has identified with ACOT payments.
29. For example, Vector does not believe there is sound reason why consumers should bear all fixed and common costs while distributed generators should not be required to contribute to any of these costs. The current pricing principles provide that distributed generators receive all the benefits from distributed generation, which can be over and above any efficiency benefits, and do not have to share these with consumers. Vector cannot see how this is to the long-term benefit of consumers.
30. Vector's submission on the decision making and economic framework for distribution pricing expressed the following views:<sup>7</sup>

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<sup>3</sup> Paragraph 1.18, Electricity Authority, Working Paper, Transmission pricing methodology: Avoided cost of transmission (ACOT) payments for distributed generation, 19 November 2013

<sup>4</sup> For example, Vector recommended such a review as part of its review of the distribution pricing principles and methodologies. Refer to paragraph 54, Vector, Decision-making and economic framework for distribution pricing methodology review, 22 June 2012.

<sup>5</sup> The Authority should consider whether the analysis should include both connection and interconnection assets, and whether the time-periods considered in the analysis is long enough, to ensure it captures all potential avoided/delayed transmission benefits from distributed generation.

<sup>6</sup> It is not entirely clear whether the Authority sees lack of sharing/pass through of cost savings as a problem or not. The ACOT Working Paper states that "whether ACOT payments pass ... avoided transmission charges to the DG, consumers will not see this saving" but the Authority has also stated elsewhere that it should only take wealth transfers into account, when assessing the long-term benefit of consumers, in a narrow set of circumstances.

<sup>7</sup> Paragraph 30, Vector, Decision-making and economic framework for distribution pricing methodology review, 22 June 2012.

It should also be recognised that the Pricing Principles in Part 6 constrain the way in which EDBs can apply the Distribution Pricing Framework and EDPM Pricing Principles. Part 6, notably, favours distributed generators at the expense of consumers by precluding allocation of any common costs to distributed generators. This conflicts with the statutory objective of promoting the long-term benefit of consumers. It is difficult to see what benefit consumers would get from paying distributed generators a share of common costs. It would also conflict with Ramsey Pricing unless distributed generation (rather implausibly) has a zero elasticity of demand for distribution network access.

31. The Authority should ensure distributed generators are incentivised to only invest in efficient distributed generation from which consumers receive actual benefits.
32. The current distributed generation arrangements contrast with Transpower's Prudent Discount Policy which "aims to deter investment in alternative projects which would allow a customer to reduce its own transmission charges while increasing the total economic costs to the nation as a whole". It may be that Schedule 6.4 and the distributed generation regulations could be enhanced by including specific link to reduction in actual economic costs.
33. Vector agrees with the ACOT Working Paper that distributed generation can have positive or negative impacts on distribution network investment requirements. This can hinge on the scale of the distributed generation that occurs on the network.

## CONCLUDING REMARKS

34. The ACOT Working Paper raises valid issues about the efficacy of the current distributed generation pricing principles.
35. The Authority needs to ensure distributed generators are incentivised to only invest in efficient distributed generation, from which consumers receive actual benefits e.g. lower than otherwise prices.
36. Issues the Authority should consider, as part of its review of distributed generation arrangements, include, but aren't limited to:
  - a. Why do distributed generators receive all the benefits (avoided transmission and distribution) from distributed generation and consumers none?
  - b. Why aren't distributed generators required to contribute to fixed and common costs (incremental costs only)? Why should consumers bear all fixed and common costs when distributed generators also use and benefit from distribution (and transmission) networks?
  - c. Does the Authority believe it is efficient (lower future transmission investment needs) for market participants (whether distributed generators or not) to respond to RCPD charges in UNI and USI?
  - d. Is there an efficiency difference between load responding to RCPD charges by reducing peak load and distributed generation responding to RCPD charges?
  - e. What would be the impact of alternative TPM options? For example, the Authority's GIT + SPD and SPD + GIT TPM pricing options include MWh charges. These MWh charges would be substantial for Auckland and Northland. Vector considers that adoption of MWh charges would exacerbate the concerns the ACOT Working Paper has identified with avoided transmission payments to distributed generation.<sup>8</sup>
  - f. Should the distributed generation arrangements be modelled more closely to Transpower's Prudent Discount Policy? In particular, should it be modelled on the Policy's aim "... to deter investment in alternative projects which would allow a customer to reduce its own transmission charges while increasing the total economic costs to the nation as a whole"?
  - g. If distributed generation arrangements are changed in a way that impacts adversely on the financial viability of existing distributed generation, should transition arrangements be put in place to moderate those impacts?
37. At the moment, it may be the case that distributed generators are over-rewarded for distributed generation. There appears to be some conflict between the Authority's assessment of RCPD charges in the TPM Issues Paper and the assessment of distributed generation in the ACOT Working Paper. The former suggests that there are net benefits in UNI and USI from deferred transmission investment. The latter suggests there is no evidence of benefits from deferred transmission investment in any region, at least in relation to distributed generation.
38. Regardless, the current distributed generation pricing principles result in distributed generators receiving all, or more than all, the benefits of avoided distribution and transmission costs. Consumers presently receive none of the benefits of distributed generation and can actually pay higher charges (transmission plus avoided transmission

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<sup>8</sup> The option of MWh charges has been raised as part of the TPM review.



payments) than they would if distributed generation did not exist or if distributed generators were not rewarded for avoided transmission payments.

## APPENDIX: ANALYSIS IN THE TPM ISSUES PAPER

39. The ACOT Working Paper provides analysis which suggests the ACOT payments to distributed generation do not provide positive benefits through deferral/avoidance of the need for future investment in electricity transmission (or at least the Authority could not identify any evidence of deferral/avoidance of investment).
40. Vector's reading of Appendix D of the TPM Issues Paper is that the Authority considers the RCPD (12 regional peaks) charges in UNI and USI provide efficient signals to reduce peak transmission demand (through demand reduction, distributed generation etc) which will defer transmission investment, but the RCPD (100 regional peaks) charges in the LNI and LSI are intended to act as a fixed/unavoidable charge that is not responded to. Any response would result in wealth transfers/static inefficiency though "the inefficiency is probably relatively small".
41. What wasn't clear from the ACOT Working Paper was how its analysis aligns with the analysis of the impact of the current RCPD charges outlined in Appendix D of the Authority's TPM Issues Paper?<sup>9</sup> The analysis in the two documents appears to contradict each other.
42. The TPM Issues Paper suggests the RCPD allocation of the interconnection charge may efficiently incentivise reduction in regional peak demand if:<sup>10</sup>
  - a. some transmission investment needs are driven by regional peak demand growth;
  - b. participants respond to the RCPD incentive, resulting in regional peak demand that is lower than it would otherwise have been; and
  - c. the benefit of reducing the need for investment exceeds the cost of reducing demand.
43. The TPM Issues Paper also went on, for example, to state that:<sup>11</sup>

The above conditions appear to hold for the UNI (though to varying degrees throughout the region) ... The need for interconnection investment to serve the UNI is in large part driven by regional peak demand growth ... RCPD signals may also encourage parties to locate new peaking generation investment in the UNI (embedded into a local network, so that it can be used to reduce RCPD) in preference to the LNI. For instance, Trustpower's recent investment in the Bream Bay peaker may help to defer the need for UNI transmission investment, and may have been supported in part by revenues stemming from its ability to reduce RCPD charges ... The conclusion is that the current RCPD charge is efficient in terms of reducing the need for interconnection investment serving the UNI, resulting in a net benefit in the millions of dollars (NPV) through deferring the next tranche of reactive investment, and potentially substantially more in the longer term. [emphasis added]
44. Similar comment is also made in relation to USI prefaced with the uncertainty about demand growth created by the Christchurch earthquakes.<sup>12</sup>
45. The analysis in Appendix D of the TPM Issues Paper essentially parallels the rationale Transpower used to justify the introduction of RCPD charges, differentiated by region, to recover interconnection costs.<sup>13</sup> Transpower assessed that for UNI and USI there

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<sup>9</sup> Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

<sup>10</sup> Paragraph 62, Appendix D, Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

<sup>11</sup> Paragraph 63 - 77, Appendix D, Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

<sup>12</sup> Section D3.2.2, Appendix D, Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

<sup>13</sup> <http://www.ea.govt.nz/document/5812/download/our-work/consultations/transmission/proposed-transmission-pricing-methodology/>

would be benefits, in terms of deferred transmission investment, from reducing peak transmission usage:<sup>14</sup>

Transpower considers that signals to the UNI and USI customers may result in efficiency gains if growth in peak demand in those regions is moderated such that new transmission investment might be able to be deferred.

46. Where the ACOT Working Paper and Appendix D of the TPM Issues Paper do align (with qualification) appears to be in relation to LNI and LSI. The first TPM Issues Paper states that:<sup>15</sup>

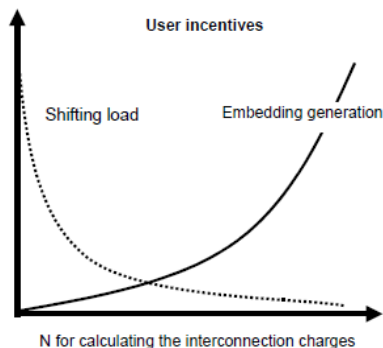
It appears to have been intended that there would not be a response to RCPD signals in the LNI and LSI regions – and hence the choice of 100 RCPD periods in these regions, as opposed to 12 RCPD periods in the UNI and USI ... Nonetheless it appears that some LNI direct-connect consumers do respond to RCPD by reducing their contribution to regional peak demand ... Such responses may result in wealth transfers on the energy market, and potentially also in increased production costs for the parties reducing load during RCPD periods. However the inefficiency is probably relatively small ...

47. Again, this mirrors the assessment Transpower made to justify regionally differentiated RCPD charges as Transpower considered that in LNI and LSI reduction in peak transmission usage could actually result in higher transmission:<sup>16</sup>

Demand reductions in the LNI or LSI could in some cases result in additional new investment being required as lower demand in the LSI would, for example, result in greater amounts of power having to be transmitted northward.

48. The following discussion from Transpower on the selection of the number of peak periods used in the RCPD charges is also germane to the above discussion:<sup>17</sup>

As the value of N is increased a charge calculated on the average of the N highest demands moves toward an energy-based charge, reducing the incentive to shift loads out of peak times but increasing the incentive to embed generation (or otherwise substitute for energy use). This is illustrated in the figure below.



... Increasing N beyond a certain limit will start to impact on energy investment decisions, rather than transmission investment decisions. This is potentially distortionary in that transmission prices would then provides incentives to substitute for energy, when the aim should be to signal only the need for transmission alternatives.

<sup>14</sup> Page 49, Transpower, Transmission Pricing Methodology Supplementary Material, June 2006.

<sup>15</sup> Paragraphs 83 - 85, Appendix D, Electricity Authority, Consultation Paper, Transmission Pricing Methodology: issues and proposal, 10 October 2012.

<sup>16</sup> Page 49, Transpower, Transmission Pricing Methodology Supplementary Material, June 2006.

<sup>17</sup> Page 42, Transpower, Transmission Pricing Methodology Supplementary Material, June 2006.