

Transmission pricing problems

Assessment of the 2014 EA problem definition

NZIER report to MEUG

28 October 2014

Final

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Contents

| | | |
|------|---------------------------------|---|
| 1. | Introduction..... | 1 |
| 1.1. | Defining the problem | 1 |
| 1.2. | Our approach..... | 4 |
| 2. | Responses to the Authority..... | 8 |

Tables

| | | |
|---------|---|---|
| Table 1 | TPM problem definition – EA scope changes | 4 |
|---------|---|---|

1. Introduction

1. The Electricity Authority (Authority) have released a series of consultation papers that examine various issues that the Authority see as being important as they consider changes to the Transmission Pricing Methodology (TPM). This report to MEUG provides NZIER advice and assessment of the latest Authority paper on the problems that exist with the current TPM.
2. The Authority is seeking feedback from stakeholders via 25 specific questions from the problem definition paper. We have set out our initial thoughts on these questions and in the sections below we also provide our comments on the approach of the Authority in this their third attempt to define the problems with transmission pricing. Before considering answers to the questions we describe our assessment of the risks and issues with the Authority's approach to both 'defining the problem' with the current TPM and proposing a solution.

1.1. Defining the problem

3. The Authority seems to believe that changing the TPM can improve both the efficiency of the operation of transmission, generation, distribution networks, and demand side management, and the efficiency of investment across the sector. However the problems that the Authority believes are driven by the TPM and the appropriate solution have evolved over time. More recently there have been three attempts (TPAG, TPM 2012 and TPM 2014) at identifying and quantifying the problems with the current TPM. The three attempts have redefined the drivers of the 'problem' but do not appear to have led to either a stronger quantitative evidence base or a convergence of the estimate of the costs and benefits of the current TPM regime. The Authority proposal also has a tendency to:
 - oversimplify the decision making processes for MEUG members decisions on both production and co-generation, as well as over-emphasising the influence of transmission prices on these decisions
 - overstate the capability of consumers to understand and influence transmission investment decisions
 - ignore adjustments to components of the current model that might improve the efficiency of the particular component without requiring wholesale change of the TPM.
4. The evolution of the Authority's thinking is discussed below and summarised in Table 1.

TPAG – June 2011

5. When it was formed, the Authority inherited a Transmission Pricing Review project. To progress this work the Authority formed an advisory group to

progress the matter (TPAG) who published a discussion paper in June 2011¹. TPAG identified various problems with generation investments that they believed resulted from the methodology used to allocate the costs of the HVDC links. Using a complex investment ranking model TPAG assessed the inefficiencies from this source at “up to \$96m” and suggested various options for re-allocating all transmission interconnection costs.

6. NZIER examined the TPAG work in July 2011² and found material deficiencies in the analysis which suggested that the case for change to the TPM to be weak on economic efficiency grounds. Our quantitative estimate of the efficiency costs from the current HVDC charges was less than \$10m.

TPM – issues paper October 2012

7. Following the TPAG work the Authority formed an internal team to progress analysis of transmission pricing and to develop proposals to remedy the said issues. In October 2012 they published a consultation paper which identified a somewhat different set of problems to those of TPAG.
 - Inefficient investment from HVDC pricing - \$30m cost
 - Inefficiencies from HVAC - \$45m + \$35m cost
 - Sub-optimal grid investment - \$22m cost
 - Durability costs - \$30m
8. The problems identified in the October 2012 paper were more an extension of the TPAG work but importantly identified a number of ‘dynamic’ inefficiencies regarding the timing of transmission and generation investments and better matching transmission costs with those parties who benefit from use of the grid. The Authority also proposed that there were material inefficiencies from the various disputes and debates that threatened the durability of the TPM. Overall they suggested a mid-point estimate of costs at \$132m for these combined inefficiencies, the majority of which were now dynamic losses.
9. While we support the view that there are better ways to allocate sunk grid investment costs than the current TPM, NZIER was sceptical about the magnitude of the Authority’s problem definition – we regarded it as plausible but more illustrative than predictive. We felt that the quantification overstated the benefits from their proposed new pricing approach.
10. The major contribution to the transmission pricing debate from the October 2012 issues paper was not the problem definition but rather the innovative beneficiary pays (B-P) solution proposed by the Authority. Although very complex and incomplete, the B-P approach was a step forward as an option to allocate transmission costs more efficiently and in effect left the TPAG options behind. The Authority was looking to use the B-P approach to solve most of the problems that it perceived existed with the TPM. The 2012 issues paper attracted a lot of feedback, most of which was targeted at the solution rather than the problems.

¹ Transmission pricing discussion paper. 7 June 2011.

² A review of the TPAG HVDC pricing discussion paper – 7 June 2011. Report to MEUG.

11. NZIER was supportive of the B-P proposal but cautious about whether the proposal would be a practical solution to the various issues that the Authority believed existed in the transmission world. The potential cost re-allocation under the methodology depended on identifying the economic beneficiaries of various transmission assets. However a direct beneficiary could not be identified for most of the costs. The un-identified portion (up to 80% of total costs initially) would remain as a residual to be allocated in a 'yet to be agreed' manner. In our view this situation left the Authority with a large sub-set of the original problems that they had originally set out to fix as well as a set of potential new 'unintended' problems from the B-P approach.
12. We were also quite concerned about how issues with embedded and co – generation would be managed and how effective the approach would be on the back of flat to declining demand. We were not convinced that the problems the Authority believed existed with the current TPM warranted the costs and risks of introducing a complex replacement methodology that had considerable uncertainty attached to it.
13. Our feedback and that of other stakeholders caused the Authority to re-examine the problems with the TPM as well as consider in detail other issues that were raised by submitters.

September 2014 problem definition

14. This latest paper is also very much an extension of the TPAG but especially of the October 2012 paper. The Authority approach this time is to express the problems in a different manner – much more in terms of the efficiency of network and generation investment and operations. They have redefined the problems around the core argument that, to encourage efficient (dynamic) behaviour, transmission charges need to reflect the costs to serve particular users.
15. The authority 'addresses' previous criticisms about the complexity of their arguments, and supporting models, by using spreadsheet models rather than the investment (GEM) models, but they stick with their assertions regarding the existence of inefficiencies from the current TPM. Despite these improvements, the Authority does not however demonstrate how the spreadsheet models remove complexity in the pricing 'system' while still providing reliable predictions about how the system behaves.
16. The authority also down-sizes the magnitude of potential investment inefficiencies in recognition of the flat to declining demand situation but introduces a broader range of dynamic inefficiencies from dispatch, from demand side responses, from potential avoidance of the grid and from overall TPM durability;
 - SI investment disincentives - \$25m cost (but low probability)
 - Dispatch inefficiencies - \$12m cost
 - Demand side responses - \$3m to \$40m cost
 - Investment timing improvements - \$2m to \$6m cost

- RCPD inefficiencies - \$37m benefit to \$70m cost
- Inefficiencies to do with NZAS - \$4m to \$32m cost

- Overall the Authority’s new estimate of the cost of these inefficiencies has a wider range of \$45.5m to \$221m, and a higher midpoint than the previous estimates, though, as before, no probabilities are attached to the potential for these problems to be real.
- The Authority has expressed considerable concern about the effects of embedded and co –generation installations. We read some of the Authority concerns with alternative generation sources within the distribution network, or inside of direct-connect customers premises, as having the potential to discourage innovation and dynamic growth in the sector when one should see competition as a priority when thinking about efficient outcomes.
- Our rating of how the scope of the Authority problem definition has evolved over time is illustrative only and serves to describe how the emphasis has shifted over time.

Table 1 TPM problem definition – EA scope changes

(double tick = most material, small tick = least material)

| Source of efficiency gain | TPAG view | EA 2012 view | EA 2014 view |
|------------------------------|-------------|------------------|-----------------|
| New SI investment | ✓✓ | ✓ | ✓✓ |
| SI peaking incentives | ✓ | ✓ | ✓ |
| Remove dispatch inefficiency | ✓ | ✓ | |
| Competitive neutrality | ✓✓ | | |
| Allocative gains | ✓ | | |
| Match benefits to charges | | ✓ | |
| Improved gen location | | ✓ | |
| Improved investment timing | | ✓ | ✓ |
| Improve durability | | ✓✓ | ✓✓ |
| Demand side responses | | ✓ | ✓✓ |
| RCPD signals | | | ✓✓ |
| NZAS efficiencies | | | ✓ |
| Overall NPV estimate | Up to \$96m | Mid point \$132m | \$45m to \$221m |

Source: NZIER

1.2. Our approach

- We expect, however, that as the overall TPM project progresses the Authority will develop and improve their views about the nature and details of the problems, and from that be better able to identify improvements that can be

made to the current arrangements. This is a good process – thorough and largely transparent.

21. However, in the same manner as for the 2012 paper we again regard the inefficiencies described in the Authority 2014 paper as illustrative rather than representative of the system and not definitive. Many of the inefficiencies are largely assertions that use examples considered through the narrow perspective of transmission charges, as opposed to real world evidence to identify and quantify the problems.
22. The Authority has largely redefined the problems with the TPM, changing the emphasis from inefficient HVDC charges in 2011 to a set of narrowly defined issues that are more to do with demand side dynamics and the durability of the TPM over time. Encouragingly they refer to ‘cost reflective network pricing’ in various places but the paper does not put enough emphasis on the problems that are driven from the need to allocate the ‘guaranteed’ nature of the recovery of Transpower costs from the other participants in the system. This issue is at the heart of the TPM durability issue.

Re-defining the problem

23. We are nonetheless concerned with how the Authority is appearing to redefine the problems with the current TPM. Changes to demand for grid supplied electricity now makes generation investment less of an issue which is to be expected when the grid has been expanded and demand is expected to remain flat for some time to come. The Authority does recognise these changes but they still describe their examples of the problems in absolute terms rather than present any alternatives to assumed outcomes. Relativities are largely missing.
24. In a similar manner the problem definition takes a narrower view of the issues than before and uses quite specific examples of potential operational inefficiencies. For example they look in great detail at the potential for NZAS to avoid increased summer production because of RCPD charges but brush over how and whether distributed and co-generation are material problems when thinking about transmission charges. To us there appears to be a lack of coherency as to the nature and definition of problems over time and of how they are handled in this new paper.

Durability

25. It is unclear to us what the durability issues are that the Authority is attempting to fix. We agree that there will be differing views about transmission charges that could lead to frictions of different types however the core durability problem is not adequately defined which may explain why the proposed fixes appear to lack coherency.
26. Section 10 of the paper provides examples of potential durability problems, pointing to;
 - two examples of Transpower seeking ad-hoc intervention
 - the HVDC charges
 - potentially perverse outcomes from RCPD charges

- grid disconnection by large direct connect customers who have their own generation,

as problems to be dealt with.

27. The Authority suggests that the inefficiencies from these problems may be much higher than the \$36.5m they estimated, though we wonder whether there is an element of double counting here. These problems appear to have been identified and counted under the 'inefficient operations' category in their own right.
28. We can conceive of these 'problems' equally occurring under other approaches to the TPM. Transpower will seek concessions where it sees fit regardless of the TPM, while the drivers for direct connect customers to have generation on their side of the GXP are not especially related to TPM charges.
29. The drivers for these customers to install their own generation fall into two categories, there are those who use waste energy from their core production to generate electricity for productive efficiency purposes, and there are those who install alternative in-house generation to avoid transmission charges and/or to sell electricity, again for their own efficiency purposes. It may well be efficient for these businesses to continue to do so under any TPM, especially when the overall sum of charges is higher than the economic value of the transmission grid to them.
30. The Authority defines a durable TPM as both offering 'certainty' and being able to 'adjust'. It is difficult to see how these competing pressures can be balanced, particularly when the role of the TPM is to allocate a cost that is set by regulation across a group of consumers most of whom have little or no influence on how that cost is set.

Inefficient investment and use of the grid

31. Simplicity is a two edged sword. To deal with the core issues conceptually, there is benefit in identification and focus on what matters overall, however on the other hand it is the detail within the TPM that makes for potential difficulties, regardless of the version of the TPM that is in place.
32. We believe that the Authority is considering efficiency (of the overall electricity system) at too high of a level. Their approach over-simplifies both the issues emanating from the broader economics of the transmission grid and the importance of non-TPM drivers of business decisions made by generators and electricity users. The over-simplification can be seen in various places in their paper.
33. In section 8 where the Authority attempts to join the dots between the current TPM and the issues identified as problems, it uses a very simplified description to demonstrate their view of the problems. While their figure 2 illustrates the discord in how to price high fixed/low variable cost infrastructure services, it abstracts away from the problems that are at the heart of transmission economics. It also bypasses the reality that there are several pricing components in the current TPM which take account of the differences in the economics of different transmission services.

34. Section 8.6 further simplifies the issues through the contention that the apparent disconnect between transmission costs and charges results in material investment and grid usage problems under the current TPM. While transmission costs matter, in reality there are many other issues of a more material nature that are taken into account by generation, networks and load when contemplating investments.
35. While we accept that there are likely alternative TPM's that will deliver outcomes that could be better in some cases, the 2012 B-P proposal demonstrated for us the dangers of oversimplifying issues, the importance of testing elegant concepts with real world data, and how change could generate potentially worse unintended outcomes.
36. The Authority seems to be now placing much more weight on the alleged potentially inefficient behaviour of industry participants; generators, networks and load. In their paper the Authority uses the track record of various system participants to provide examples of distorted incentives and inefficient behaviour that variously drive inefficient investment in, and use of, the grid.
37. Some of these examples are addressed directly in Authority questions and we will respond to each as appropriate. As a general point however, we observe that, regardless of the TPM, there is likely to be less scrutiny of Transpower investment cases. This is because most industry participants are simply unable to review transmission investment cases because the cases are complex, involve quite specialised understanding and skills that are beyond what is available to these participants. Also, even if other parties do review these cases carefully, they have very limited influence on the investment decision. Changing the TPM will not change that situation.
38. There is of course the likelihood that many or most industry participants simply do not see signals that are relevant or material to them at the time that major investments are being proposed. It is only after the accumulation of large capital projects costs make a material impact on their transmission charges that they react and transmission pricing is brought into the spotlight.

2. Responses to the Authority

To give our advice focus and be able to provide input on the matters that we think need attention, we use the Authority's question structure to submitters as the backbone.

Question 1: Do you agree that, in relation to decisions around transmission pricing, the Authority should focus on overall efficiency of the electricity industry for the long-term benefit of electricity consumers? Why or why not?

In principle yes, but this high level principle is of limited use in deciding how to allocate transmission costs to produce the most efficient investment in the network. To be applicable this principle needs to be supported by evidence of how different consumers respond to transmission costs and how they can influence the drivers of transmission costs.

Question 2: Do you agree with the Authority's view on what constitutes an efficient charge? What role do you consider durability plays in determining efficient charges? Please explain your answers.

In general yes we agree, but the proof is in the pudding – how do you develop a charging system for transmission services that will be durable and practical in the real world over time. It seems to us that the trade-offs that are inherent in determining what constitutes an efficient charge will change over time. If the approach to allocating transmission costs does not keep up with changes then efficiency is compromised. It is likely for this reason that clause 12.86 of the Code was included (TPM review that is triggered by a material change in circumstances).

It seems to us that they are trying to solve the unsolvable, deliver short term investment efficiencies while avoiding longer term disruption – this is a tough ask.

Question 3: Do you agree with the Authority's revised position on the problem definition, described above? Please explain your answer.

Overall this is a difficult question to answer directly as the Authority does not restate the problem definition in a fulsome manner but rather provides a combination of propositions and comments on both aspects of their previous positions and submissions on those positions.

It seems that the Authority now interprets that their decision making & economic framework objective is to deliver efficient transmission investments and operations and that pricing principles of themselves are not as relevant. (A keep it simple approach!)

Some of our difficulty with this question stems from the changes that we perceive have taken place in the Authority's position regarding problems with the TPM. In Table 1 we attempt to illustrate both the scope and scale of these changes over time. From their somewhat disjointed approach we see challenges for the Authority as

they develop solutions to the perceived problems with the TPM. In the same way as for beneficiary pays, cost reflective pricing is likely to see direct recovery of only a portion of Transpower overall costs, leaving the balance to be allocated as a residual.

We have some concerns with the approach of the Authority to use analysis from this new problem definition paper to rebut criticisms of the October 2012 Issues paper. They do provide some new analysis but this, of itself, does not prove a problem or dis-prove the criticisms from the 2012 paper. This 2014 'evidence' is based on assertions and hypothesis rather than hard core real world evidence.

The issue of sunk cost recovery appears to be side-lined. In many ways this remains the core problem – what is the most efficient way of doing this in a cost and demand reflective manner so that investment and operational behaviours are not distorted and innovation is not discouraged.

Inefficiencies from HVDC charging have been reassessed from TPAG and 2012 days while the criticisms that were levelled about use of the GEM model have been 'addressed' by using NPV analysis that is built off simple assertions and assumptions. While it is definitely pragmatic, this approach presents stakeholders with a different set of issues to understand and resolve and does not provide evidence of how accurately the modelling reflects the behaviour of the system.

The EA appear to have reassessed their position on what is wrong with the current TPM and have expressed the same opinions in different language and using different examples to illustrate their points. The emphasis seems to have changed whereby efficiency is now 'achieved' in terms of cost reflective charges rather than in terms of beneficiary pays as before.

Question 4: To supplement information already provided by Transpower, do you have any comments on the steps taken by Transpower or by other parties after approval of the NAaN, NIGU, and other investments such as the LSI Reliability Upgrade investments, to review whether it might have been efficient to postpone elements of them?

Question 5: To what extent do current interconnection charges promote efficient timing of investments? Please explain your response.

Because questions 4 and 5 look at the issue of investment timing from different angles, the issues that emerge are similar, for efficiency reasons we have answered these questions together.

This section of the paper relies heavily on argument by example and anecdote. For this to be persuasive, the Authority needs to:

- demonstrate that the examples and anecdotes are representative of the response of consumers, and
- quantify the value of the decisions made by submitters on Transpower investment proposals and explain how they might be altered by a different TPM.

The effort made by submitters in analysing and commenting on network investment decisions already indicates they care. It is unclear to us how re-allocating network costs will make submitters 'care more' let alone increase their ability to influence network investment decisions.

Sections 8 and 9 are core components of the EA problem definition: section 8 joins the dots between the elements of the current TPM and the Authority analysis of the feedback from submitters regarding the issues raised by the 2012 paper. It is from this process that their current expression of TPM problems emerges: the inefficient investments in, and operations of, the transmission business and the durability of the current TPM.

Figure 2 introduces the notion of cost reflective charging but the analysis side-steps charges that use multiple components (which raises the suggestion that some components of the charges could need tuning rather than the whole TPM being put in the bin).

Similarly, section 8.6 suggests a hypothesis about the inefficiencies that may be caused by transmission charges not reflecting the cost of supplying of transmission services to each customer. However, before the hypothesis can be regarded as a strong argument for change in the TPM, this hypothesis needs to be tested by evidence of the materiality of this difference and the materiality of its effect on investment.

Section 9 is the Authority's platform for using the TPM as the mechanism for promoting more efficient investment. It seems to be somewhat a leap of faith to assume that it's the TPM charging mechanism which decides whether an investment is efficient (We would think that the impact of various charges for a particular investment would not be especially high on Transpower's priority list when contemplating grid investments because it's the engineering costs and benefits that they work up into a business case that goes to the Commission for approval).

There is some discussion in this section of the Authority paper about the non-trivial difficulties of connecting large lumpy investment decisions to users of monopoly transmission network. We question their suggestion that these difficulties can be overcome by encouraging some network users to examine large complex investment business cases.

Overall this section seems disjointed and makes a number of connections between the behavioural factors that make regulation difficult in the presence of large economies of scale. To us, their discussion contemplates the core question of how do you efficiently allocate fixed infrastructure costs across a diverse range of users.

[Question 6: To what extent do you consider participant support for transmission investments takes into account the cost implications for them and for other parties? To what extent do you consider the efforts made by participants to provide relevant information on transmission investments take into account the cost implications for them and for other parties?](#)

The Authority cite several examples of recent Transpower investments that they suggest could have been better scrutinised and they reference Appendix C to illustrate their view that various stakeholders (including MEUG members) should

have examined these recent large transmission investments but generally failed to do so. We have some concerns with this inference – mainly because the business cases for these investments were likely complex, technical, assumption driven and included large volumes of material. Scrutinising these projects is asking a lot of specialists in Transpower and the Commission and seems a rather big ask to expect consumers to undertake similar appraisals.

The submissions described in para 9.33 deserve a little attention – especially the question, are they really material in the scheme of things and would changes to the TPM make any difference to the outcomes. In the end none of these parties have any market power with which to influence things.

The Authority also cites various transmission projects (allegedly inefficient) that could have benefited from greater scrutiny – so much so that they suggest some could have been deferred. They blame the TPM for a fair bit of this failure. Overall we are not convinced by the Authority analysis of investment proposals in this section because there are likely many reasons, other than the cost implications of investment proposals, why parties may or may not wish to examine and comment on Transpower investment cases.

Question 7: Do you agree that the Kawerau investment proposal described is an example of an inefficient investment resulting from the TPM? Please explain your answer.

On first read of this section it appeared to us that the evidence presented did not quite support the argument. We understand that the reasons behind the 2008 connection decisions at Kawerau were to do with commissioning of a geothermal power station at Norske Skog and the subsequent closure of various plant at the pulp mill, rather than off-setting connection costs into the HVAC interconnection pool. We expect that Norske will comment on the details of this example.

Question 8: Do you consider that current TPM can incentivise parties to prefer interconnection assets over connection assets or building and owning their own assets (by which they will be required to pay a higher portion of transmission costs)? Please explain your answer and provide any examples you may have.

In the real world many factors can influence how investment decisions are made. We believe that it is dangerous to speculate on how individual parties might react to the allocation of transmission costs and how individual investment decisions may be influenced. Theory has it that parties will act in their own best interests and from that the most efficient outcome will result. This is simply not possible in the world of monopoly networks when an accumulation of factors can distort outcomes and make the underlying facts and motivations about individual investment decisions more or less opaque.

Generalising about the incentives from transmission charges on consumers needs to be considered in the context of the significance of those charges to the consumer and the view the consumer has on the predictability of those charges into the future.

The examples that the Authority cite in this part of the paper do not persuade us that there are material issues with investments that can be attributed to the current TPM.

Question 9: Do you agree that the TPM can materially impact investment efficiency? Please explain why or why not.

The Authority puts quite a lot of emphasis on investment efficiency which is likely to be less of a priority for the next five years because there are no big transmission capital investment proposals on the horizon.

The regulatory process is partly a game that will occur regardless of the TPM that is in place. Larger industry parties have more at stake than individual consumers and therefore have more incentive to engage in the regulatory process.

Question 10: Do you agree that cross-subsidisation of TPM costs between consumers may affect the durability of TPM charges?

In theory the RCPD charge is a suitable mechanism if the objective is to limit grid usage during periods of peak demand. If this is still one of the desired outcomes (there appears to be no reason to think otherwise), but the current RCPD instrument is too strong in some areas and the cross – subsidisation problem results in avoidance of the grid, then why not simply tune the RCPD down so the signal is not so strong. We note that Transpower have just recently proposed this as a solution to improve the current TPM from 2015.

The new Australian TPM guidelines include an RCPD type charge as well as interconnection and TUOS (transmission use of service) charges. Their RCPD charge appears to be regionally assessed and then allocated to individual GXP's based on their actual peak load over the previous 2 years.

HVDC durability issue is heavily influenced by the outlook for demand and from that the need for further generation to be built. Any perceived problems with the current TPM in this regard may simply 'go away'.

Perceived HVAC durability issues (from regional cross-subsidy for example) that have been raised by the EA will likely persist under whatever new cost allocation approach is adopted simply because it is impossible to directly attribute all network costs to consumer demand and thereby avoid cross-subsidisation. The Authority beneficiary pays proposal has a large residual that needs to be allocated somehow – which will result in the same problems as with the current TPM.

In the end, regardless of the TPM that is chosen, a significant portion of the cost allocation will be an 'administrative' solution which will cause the perceived issues with the current TPM to persist. It is an allocation process and there is no silver bullet.

Question 11: Do you consider that the current TPM is durable? Why or why not?

The answer to this largely depends on what we are comparing the current TPM to. If one believes that the current TPM really is so bad that anything is better, then no, the current TPM is clearly not durable and dissatisfaction with it will persist.

If on the other hand the current TPM is seen as 'not-so-bad' but aspects of it can be improved upon, then its durability can be enhanced and better outcomes are possible. Perhaps aspects of the current TPM just need a tune up to repair the components (whether through B-Pays, RCPD, residual or HVDC charges) that compromise its durability and efficiency.

Question 12: Do you agree that the examples provided above are examples of a durability problem? Please explain your response.

The recent Transpower investments that are cause for increases in transmission costs are sunk and increasing charges are a given.³ Increases in transmission costs makes for a durability problem regardless of the TPM that is in play.

It is not clear to us from the examples cited whether there are material problems with the durability of the TPM or not. The examples given through Figure 4 and 5 reflect the fact that allocated costs have increased because Transpower spent large on capex over the last 5 years. To us fig 5 illustrates that to date Vector has had a larger increase in HVAC interconnection costs than Aurora which one would expect. Going forward the Authority is forecasting a larger increase for Aurora than Vector for some reason.

In section 10.17 the Authority point again to the RCPD as a source of both an existing inefficiency and a durability problem going forward because they believe it discourages off-take and promotes potential disconnection. This mechanism is intended to discourage off-take at peak times and if it results in consumer disconnection then that is likely a problem with the economics of the overall supply of electricity to that customer rather than just the RCPD component of the TPM.

There will be many factors that contribute to a customer decision to reduce their use of grid supply or to disconnect, for example - DG technology, changes to overall demand patterns, economic conditions and the like. In the end it is likely hard to determine how material this durability issue will be in reality.

Question 13: If you consider there to be a durability problem, do you know of any further examples of durability problems with the TPM? If so, please describe. Please also estimate the costs that you have incurred in relation to submissions on the TPM for as far in the past as you are able to provide (ie in relation to current and previous TPMs).

We are unsure whether there is a durability problem at all because, in our view, participants will game the system/pursue their own interests regardless of the

³ There are however other issues regarding the level of charges for investments that appear to be un-economic and solutions to these may be more to do with write down of asset values than how to structure cost recoveries.

transmission cost allocation mechanism that is in place. Under any administrative pricing approach they will likely have incentives and the opportunity to do so.

Question 14: Do you agree that durability is a particularly difficult problem to measure? Please explain why or why not. Are you aware of an appropriate methodology for measuring durability? If so, please provide details of that methodology.

It is unclear to us what the durability issues are that the Authority is attempting to fix. We agree that there will be differing views about transmission charges that could lead to frictions of different types however the core durability problem is not adequately defined which may explain why the proposed fixes appear to lack coherency.

Question 15: Do you consider that the RCPD allocation provides an efficient signal of the need for load shedding at coincident peak times? Do you agree with the Authority's estimate of the possible efficiency effects?

We have difficulty with the Authority approach to the quantification of inefficient behaviour in section 11 because it is built on their assertions that there are problems with HVDC and interconnection charges and then the hypothesis (i.e. suppose the inefficiency looks like this) that they use to evidence an unsatisfactory outcome. We recall that they used the same approach in the October 2012 issues paper where they asserted a dynamic efficiency mark-up factor (0.03), which was subsequently criticised in submissions as self-fulfilling.

They present their assumptions and scenarios as key 'facts' (especially the 1.5% and 5% reduction in peak demands from the RCPD). With no evidence presented it is hard to understand where this reduced load could occur. The cost per MWh of lost load is also something of a guess though the span (\$150 to \$1000/MWh) is claimed (by the Authority) to be reasonable. Tables 5 and 6 are all very well but important here is the lack of evidence to support the conclusions. The Authority does however admit that they don't know whether, in reality, load responds to RCPD charges but assume that they would.

Question 16: Do you agree that the interconnection charge may over-signal the need for overall reductions in consumption? Do you agree with the Authority's estimates of inefficiency? Which of the four scenarios, if any, do you consider the most plausible? Please explain your answer.

We are unsure what 'over-signal' means – relative to what, lower prices? We understand the Authority calculations and assumptions but we are not sure what they mean or whether it would be useful in the context of assessing the impacts of interconnection charges on the productive economy.

The results of the EA assessment of potential dead weight loss (tables 7 and 8) from rising transmission prices reducing consumption are all very well but need to be considered in terms of the probability of occurrence and whether they present

realistic assumptions of the impacts across the economy. There is DWL from the current TPM and there will be loss from any variation in the TPM simply because they will be changing one administrative solution for another. In the absence of evidence the quantum of the loss is simply a matter of speculation.

Question 17: Do you agree that the interconnection charge may over-signal the cost of increasing Tiwai smelter production in summer? Do you agree with the Authority's inefficiency assessments? Please explain why or why not.

We are able to follow the analysis in this section but as we understand things running Line 4 at the smelter contributes only a small additional amount to NZAS output and in terms of electricity charges the additional costs are likely less material than the Authority's work suggests – the quoted change in NZAS transmission charges make up only a very small portion of their overall power costs.

Question 18: Do you agree that the interconnection charge and ACOT payments may over-signal the value of embedded generation? Please explain your answer.

We observe that to date the Authority has not formed a firm view on embedded generation – they have side-lined it in the meantime, though they do admit that it 'could be a problem' in the context of the TPM.

What we see missing here is a coherent discussion of where and how alternative generation options impact on core generation and the use of the transmission network. The EA seem to be approaching the subject in a piece-meal way with a separate paper on ACOT and (seemingly) no first principles consideration of how to handle alternative generation.

Embedding generation in a distribution network may be economic except for the recovery of transmission costs. Regardless of the TPM in play, this problem will likely exist until such time as allocated costs reflect the real economics of grid use which may mean that the value of the grid needs to be re-appraised.

Question 19: Do you agree with the Authority's assessment that, although the interconnection charge may over-signal the value of generation to direct-connect consumers, any resulting efficiency loss is likely to be relatively small? Please explain your answer.

There appears to be a disconnect between the discussion that past co-generation investments are sunk (and at this stage no further investments are planned), and the question which proposes that there are incentives to direct-connects to invest further in co-generation.

The issues around embedded generation and cogeneration need specific attention because the economics and technology attached to alternative generation choices are changing over time – they are not constants and offer dynamic choices to consumers. For example photovoltaics and industrial cogeneration have some commonality but differ in scale and technology choices.

It's the 'whole of system' business case for embedded/co-generation that needs attention not just the TPM.

Question 20: Do you agree that the HAMI allocation may incentivise SI generators to withhold existing capacity? Do you agree with the Authority's estimate of inefficiency? Please explain your answer.

Question 21: Do you agree that the HAMI allocation may discourage upgrades to SI generation capacity? Do you think this is a material problem? Please explain your answer.

Question 22: Do you agree that the HVDC charge may discourage investment in SI grid-connected generation? Do you agree with the Authority's inefficiency estimate? Please explain your answer.

Question 23: Do you agree that the HVDC charge may bring forward the need for upper SI transmission investment? Do you agree with the Authority's estimate of inefficiency? Please explain your answer.

Again for efficiency purposes we have merged our views on the perceived problems with the HVDC charges for questions 20, 21, 22 and 23 as follows.

From the discussion in the Authority paper it seems to us that the problem with the HAMI charge on the HVDC may simply be the 5 year duration of the additional HAMI charge, rather than the HAMI charge per-se. Of course the SI generators don't like the charge but they won't like a B-P/residual charge either so if the current TPM needs to be, and can be tuned to be more efficient, then why not tune it.

We don't know if they withhold capacity – the EA appears to be asserting that they do withhold based on crowd sourcing evidence. Their evidence seems somewhat anecdotal and appears to be less material when the probabilities of occurrence are taken into account, especially with flat to declining demand forecasts.

It is therefore nigh on impossible to speculate what the inefficiency value is if it is hard to identify whether there are inefficiencies at all.

The HAMI charge is less of an influence than is the prospect of flat to declining demand for grid connected generation.

We were previously of the opinion that TPAG overstated the costs that stem from the HVDC charges under the TPM and we believe that the EA also do this. While we have sympathy with the arguments about the possible effects of the HVDC charges, we believe that the costs, if they exist, are likely to be very small.

Question 24: Do you agree with the Authority's view on prudent discount policy? Do you agree with Transpower's view that a PDP for notional generation is not practically achievable because of the difficulties in valuing notional disconnection? Please explain your answer.

The problems with network pricing are structural and are not peculiar to transmission. In the context of the efficiency of the PDP we believe that the starting point is an evidenced assessment of the problems that give rise to the need to avoid un-economic bypass. The PDP is in effect a solution rather than a problem. Our concerns with this paper overall are that the existence and nature of the problems has not been established to our satisfaction. We have sympathy with the core argument that there has to be a more efficient way to allocate grid costs. It is easy to speculate on solutions but until we have clarity on the problems, practical solutions that will work in the real world cannot be adequately defined. The PDP falls into this category.

Question 25: Do you consider that there are any other material problems with the TPM (in particular, the HVDC charge, interconnection charge, and the prudent discount policy) that the Authority has not considered in this paper? If so, please provide details.

No.