

Memo

To Ralph Matthes
From David de Boer
Date 19 December 2014
Subject Transmission pricing changes

We have conducted a brief review of Transpower's second consultation paper regarding the changes it proposes to recommend to the current transmission pricing arrangements. We have the following comments to make regarding three aspects of the Transpower view on the definition of operational problems.

Transpower reasoning re pricing problems.

1. Overall Transpower suggests it has similar aims as the Electricity Authority – to improve efficiency. However Transpower presents its proposed changes as an 'overdue' operational adjustment to address problems identified by stakeholders that complements the review by the Electricity Authority. In this paper it promotes more efficient outcomes with options analysis and detailed modelling that looks for incremental gains in performance – some of which are very small. Throughout its paper Transpower draws on the Authority problem definition work that was recently released for consultation.
2. We had quite some difficulty with the Authority approach to defining and quantifying what is wrong with the current transmission pricing arrangements and especially with how these problems had evolved over time. We did suggest that the Authority could consider fine tuning current pricing to fix easily identified issues.¹ By following this path the Authority could avoid introducing unintended outcomes from more wide-ranging changes that are built upon assumed inefficiencies and modelling outcomes that may not resemble the real world.
3. For the same reasons that we articulated in our 28 October advice to MEUG, we are very hesitant with Transpower using the Authority problem definitions and quantifications to justify short term changes. We are however broadly supportive of its overall approach – which is the belief that change can be made to components of the current pricing to improve outcomes. In particular we congratulate Transpower on its efforts to quantitatively model the system-wide case for changes in transmission pricing rather than rely mainly on qualitative arguments and examples. We note that:
 - the modelling for the question considered by Transpower was complex and to make the modelling tractable, required several simplifying assumptions about aspects such as generator response
 - the pricing question considered by Transpower was narrower and arguably much simpler than the question being considered by the Authority.

¹ As Transpower's analysis demonstrates even perceived easy fix options can be non-trivial.

RCPD structure and signal.

4. Transpower argue that the regional peak demand charges were put in place when transmission capacity could become constrained if their demand assumption were not met, hence their desire to incentivise efficient peak consumption. Both sides of this equation have changed over time – Transpower has invested heavily in minimising potential constraints while demand growth has declined. Demand is expected to remain flat or may decline overall. The slides presented by Transpower at their recent workshop suggest that it regards the 10 to 15 year outlook for demand as uncertain and hints that Transpower expects a lower rate of growth in electricity demand than the Authority.
5. We agree that changed circumstances require a rethink of quite a range of aspects of transmission economics, including pricing, but we are hesitant about adjusting one aspect of the perceived problems when the wider issues may be better addressed with a well-developed and wider ranging ‘package’ of measures.
6. There may be merit in adjusting the number of periods (from $N = 12$ to $N = 100$, or indeed another number) that are used to calculate the RCPD charge in different geographic areas but we would prefer to see further analytical work to better identify cause and effects between grid usage and the RCPD charges. The Transpower analysis is more or less on the right track but is materially built on simple assumptions and a complex modelling approach that combined, result in a very small re-allocation of interconnection costs between regions. The behaviour of individual consumers at peak-demand periods as a result of this re-allocation has not been assessed in the consultation paper which is somewhat surprising when it is their behaviour that is the driver for the proposed changes.²

RCPD regions

7. Transpower extends its analysis of RCPD charging periods (the ‘N’ above) into the 4 geographic areas where current interconnection charges are levied based on existing ‘N’ numbers. It concludes that where N is currently set at 12 (Upper NI and Upper SI) there is a greater risk of peak usage avoidance than if N was set at 100. Transpower is of the view that there will still be peak avoidance at $N = 100$ but any avoidance will likely be more efficient and flatten the load duration curve. They use the words ‘softer’ to describe the potential demand responses.
8. Transpower could be right with this thinking but we agree with their p28 conclusion that quantifying the costs and benefits of these choices could be ‘imposing’ and can easily overstate the costs:
The Authority attempted this task in their problem definition paper and prompted questions from ourselves and others regarding their assumptions and the credibility of the results. We believe that they over-estimated the efficiency improvements, a view shared by Castalia who undertook similar analysis.
9. Transpower has a preference for setting all regions to $N = 100$ and has analysed the re-allocation of interconnection costs on this basis. It uses a ‘peak-avoidance’ RCPD signal strength value to estimate the risk of uneconomic avoidance behaviour. We see this

² Is it also future behaviour that matters in a world where say households have (1) smart meters (2) may have PV and or EV (3) may have smart ways to decrease demand at short notice and (4) elect pricing options that are in effect reflect spot pricing. These are all hard to predict but important and require analytical effort.

approach as an over-simplification of the complex issues that surround grid connected generation versus distributed and co-generation. The 'N' number in the RCPD calculation is likely to be a factor in the decision to embed generation or to install co-generation to use waste energy from production, but we question whether 'N' will be a material component of the overall business case, particularly for co-generation.

10. Transpower relies on the Authority assessment of a set of problems at the NZAS smelter that result from having a LSI regional RCPD charge. Their conclusion from the Authority analysis is that the LSI region should merge with the LNI and the UNI.
11. We did not find the Authority analysis persuasive on this matter. A change to 'N' for the UNI RCPD in a non-trivial matter and needs to be considered as part of a broader solution which, for us, takes a merge of UNI, LNI and LSI off the table at this time. In the same manner we see the potential for unintended outcomes if LNI and LSI are merged and we urge that a well sorted holistic solution be developed for allocating interconnection costs.
12. We would also suggest that while the additional cost of transmission usage that NZAS face from a change in the RCPD charge is material of itself, it is likely not material in their overall electricity costs and especially in their decision whether to run a pot line or not.

HVDC charging

13. For some time now there have been concerns with the use of, and the mechanism employed in, HAMI as the charging approach for recovering HVDC costs. The major concern has been the same one that Transpower argue in their consultation paper – the alleged withholding of generation capacity to avoid a greater share of HVDC charges.
14. 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 Authority and now Transpower also agree with this view. While we have sympathy with the arguments about the possible effects of the HVDC charges on potential withholding of capacity, we believe that the costs, if they exist, are likely to be very small. Transpower and their advisors have undertaken modelling that is more complex than the Authority's earlier work and necessarily is assumption driver. The direct benefits are small and could easily become dis-benefits should assumptions be somewhat out compared to the real world.
15. The main benefits that Transpower cite from a change to the HAMI mechanism is from changes that generators will make to their offer behaviour, while system costs will fall by up to \$16.5 million. Transpower admits that these benefits are based on simulation and that its own sensitivity analysis suggests the gains could be as low as \$3 million per year, but is strong in the belief that the existing HAMI charge should be 'diluted' to reduce the incentive for generators to not fully use available capacity.
16. We note that the modelling of the gains from changing the HAMI charge is heavily dependent on the assumption on the HAMI being the binding constraint on maximum generation by South Island hydro generators but we are not clear what evidence Transpower has to support this assumption.

Overall views

17. We have earlier suggested in submissions to the Authority that a major restructuring of the TPM may not be necessary if specific issues could be improved incrementally from an adequately identified and evidenced cost-benefit assessment. Transpower is attempting to do just that and to us it seems a sensible approach. The issues that it has identified are controversial and have the potential to 'not' complement the Authority's efforts that are underway to improve the TPM overall. The Transpower suggestions for change have some merit by themselves but need better evidencing to supplement, and to make the complex modelling assumptions more real-world. We suggest that further work could deliver better solutions and that any decision to implement changes should be deferred.