TPM connection charges working paper - Transpower and the Authority's responses to MEUG questions

On 4th June 2014 the Major Users' Energy Group (MEUG) provided the Authority with a list of questions on the connection charge working paper issued on 13 May 2014.

As some of these questions were technical in nature, or required information that the Authority did not possess, the Authority provided some of MEUG's questions to Transpower and sought its response. The questions put to Transpower were questions 1, 2, 3, 4, 5 and 8. Transpower provided its response to those questions on 18 June 2014.

Please note that Transpower's responses do not necessarily reflect the views of the Authority.

This document provides responses to the questions put by MEUG. Where the Authority requested a response from Transpower, Transpower's responses are included. The Authority's responses to the other questions provided by MEUG are shown below. The Authority notes that Transpower has also provided responses to the other questions provided by MEUG. Transpower's full response can be found at: https://www.transpower.co.nz/about-us/industry-information/tpm-development/electricity-authoritys-tpm-proposal.

The Authority notes that MEUG asked for connection asset data sets from Transpower for a 20-year period and Transpower was unable to provide that data in the timeframes available. Accordingly, the Authority has provided, for interested parties, the connection data available to it at the time it prepared the connection charge working paper.

Questions from MEUG and responses

1. Please provide examples in the past ten years where loop configurations have been applied when changes or additions to connection or interconnection assets have been made.

   The Authority referred this question to Transpower for a response.

Transpower's response

There are no examples that we are aware of over the last ten years where loop configurations have been applied that have resulted in re-classification of assets from connection to interconnection.

However, the NAaN project caused certain interconnection assets to be temporarily classified as connection assets. The NAaN assets were reclassified from connection (during the phased implementation of the NAaN) to interconnection after a loop configuration was completed. The ALB_WRD cable changed from connection to interconnection after the circuit from Albany to Penrose (via Wairau Road and Hobson Street) was completed.

Transpower submitted a Code exemption request[1] to the Authority to avoid what we considered to be an unintentional product of the TPM's drafting. The Authority did not grant the exemption[2] and, as a consequence, approximately $3m in charges have been allocated to Vector as connection charges that otherwise would have been allocated to the interconnection pool.

Although Vector and Transpower agreed that it was not appropriate for these assets to be classified as connection assets during the phased introduction of the NAaN project, Vector did not agree that the current TPM required any of the assets to be temporarily allocated to Vector as connection assets. Vector has started proceedings under the Declaratory Judgements Act about Transpower's decision to treat NAaN cables as a connection asset while they were partly commissioned.

2. *Please provide the following information on the Transpower connection asset base.*

   a. *Value of total connection asset base for each year over the past twenty years.*

   The Authority referred this question to Transpower for a response.

Transpower's response

This specific information is not held in a readily accessible form and requires significant manipulation of data to produce. We can provide at least some of this information but unfortunately we do not have resources available on short notice to perform this analysis within the current consultation timeframes.

   b. *Average age of the total connection asset base each year over the past twenty years.*

   The Authority referred this question to Transpower for a response.

Transpower response

This specific information is not held in a readily accessible form and requires significant manipulation of data to produce. Unfortunately we do not have resources available on short notice to perform this analysis within the current consultation timeframes.

However, we have analysed asset ages for our fleet of connection transformers (as the single largest value connection asset). The chart and table below provide transformer ages as of 2014. This shows that in 2014:

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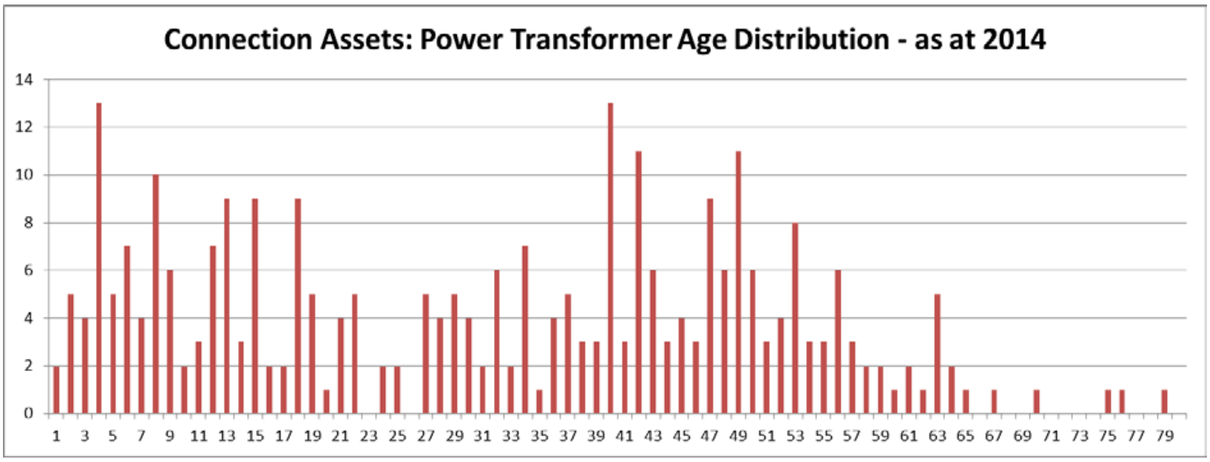
[1] [insert reference]

[2] Electricity Authority, Exemption application from Transpower New Zealand Limited for considering connection assets as interconnection assets for transmission pricing, final decision, 29 October 2013.

- the average age of connection transformers is 31.4 years (the accounting life of these assets is 50 years) and the oldest is 79 years old
- 42% of connection transformers are more than 80% depreciated and 18% are fully depreciated (i.e. have exceeded their expected economic life)



Connection Transformer age spread

	<normal economic life					> normal economic life		
Age (years)	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79
Transformer count	56	51	28	37	69	40	13	4
% of total	18.8%	17.1%	9.4%	12.4%	23.2%	13.4%	4.4%	1.3%

Extensive information on Transpower's asset management policies and strategies are published on our website including asset health information (which contains asset age information for some of our assets fleets). Please see: https://www.transpower.co.nz/about-us/industry-information/asset-management-framework and RT02 and https://www.transpower.co.nz/about-us/industry-information/rcp2-submission-and-itp/rcp2-regulatory-templates

c. *Average age at replacement of assets replaced over the past twenty years along with a comparison with their depreciation life.*

The Authority referred this question to Transpower for a response.

Transpower response

This specific information is not held in a readily accessible form and requires significant manipulation of data to produce. Unfortunately we do not have resources available on short notice to perform this analysis within the current consultation timeframes.

d. % of assets still in service older than their depreciation life.

The Authority referred this question to Transpower for a response.

Transpower response

This specific information is not held in a readily accessible form and requires significant manipulation of data to produce. Unfortunately we do not have resources available on short notice to perform this analysis within the current consultation timeframes.

However, for our own submission on this subject we have analysed asset ages for our fleet of connection transformers (as the single largest value connection asset) and have established that 18% of connection transformers are fully depreciated (further detail is provided in the table above).

The table below summarises asset replacement drivers and the action we take under each.

Driver	**Action**
Individual condition or failure	• If a specific connection asset (supply) power transformer suffers a major failure, or proves to be in a particularly high risk condition, we prepare a business case for replacement. This would typically be relatively short notice, and might require substitution within an existing capital plan • For the case of sudden major failure, it would normally be expected that we would mobilise one of our strategic spare power transformers, so as to be able to restore security within, say, 4 weeks. A replacement transformer will typically then be ordered within 12 months, to either replace the original failed transformer (thereby releasing the strategic spare -which may be over-capacity for the application), or alternatively to provide a new strategic spare, leaving the first spare unit in its new service position.
Fleet Asset Health	• Analysis of overall fleet performance and risk leads to a long term strategy to manage service risk and meet overall performance expectations by maintaining overall asset health over the longer term, mostly through planned replacements. The overall long term replacement programme is supported by economic analysis. • A medium-long term programme is prepared, and the capital funding required is set out in expenditure proposals under the IPP regulation. • We then plan and undertake the replacement of target power transformers in an orderly manner, but substitutions can occur within the programme, and between programmes • Asset health of the fleet is trended over time, so that we can

	compare the actual asset health profile with that forecast at the commencement of the regulatory period. • Replacement transformers installed as part of this long term programme may differ from the originals, but will generally be “modern equivalent”.
Capacity	• If the capacity increase is necessary to fulfil Transpower’s obligation to meet the GRS (refer Schedule 12.2) following the Grid Reliability Report process (refer Benchmark Agreement clause 40) then the investment cost is recovered via the TPM. • If a customer seeks an increase in firm capacity (where the rating of the connection transformer is the existing limit) above the GRS, then typically Transpower prepares an offer to replace the existing transformer(s), funded via a specific investment contract. The investment contract route requires our Customers to consult on possible price implications if reliability is above GRS (refer 12.35).

3. *Data that the EA may have on the variation of actual service levels of connection assets compared with their age.*

   The Authority referred this question to Transpower for a response.

Transpower response

The design of most customers’ connections provides N-1 security at the point of service. This means service performance (at the point of service) is usually a function of the availability / reliability of two circuits. Total interruption is likely to be caused by an event impacting one critical asset while the customer is reduced to N security (e.g. for maintenance). The relationship between asset age and service performance is therefore not strong, complex and inter-related with many other factors. Analysis of performance history shows the stochastic nature and influence of many factors.

The performance of individual assets can generally be expected to degrade over time although the degree of degradation and the timeframe over which this occurs will vary greatly between asset types. For example, communications assets will degrade differently to buildings and ground works which will degrade differently to transformers, switch gear, circuit breakers, transmission towers and conductor…etc. As a rule the performance of individual assets is more likely to follow the ‘bathtub’ curve (teething issues followed by a long period without problems and increasing problems near end of life) than be linear.

However, the key point is that the N-1 security provided in the design of supply to most connection points of service means that there is no direct and immediate link between asset age and delivered service.

4. *Please provide examples and values of stranded connection assets that have become evident over the past twenty years.*

   The Authority referred this question to Transpower for a response.

Transpower response

This specific information is not held in a readily accessible form and requires significant manipulation of data to produce. Unfortunately we do not have resources available on short notice to perform this analysis within the current consultation timeframes.

5. *Please provide the percentage of connection assets by value that have connected parties that are Commerce Commission-regulated distributors and are able to pass on any connection charges.*

   The Authority referred this question to Transpower for a response.

Transpower response

Electricity distribution businesses (in aggregate) account for approximately 76% of the book value of connection assets.

6. Results of the modelling work referred to on page 25 of the consultation paper.

Authority response:

The modelling work referred to on page 25 of the consultation paper is consistent with the example provided in Figure 2 of the connection charge working paper. This 'typical example' provided by Transpower shows the actual cost of connection pool assets (based on revenue building blocks and applying depreciation) compared to the TPM cost (which is averaged).

Transpower provided the Authority with one year of detailed Connection charge data, which the Authority has provided to MEUG. This data is provided on http://www.ea.govt.nz/development/work-programme/transmission-distribution/transmission-pricing-review/consultations/#c12271.

7. *Why not use accelerating depreciation rates over time to better reflect actual physical depreciation? ie to reflect that new assets initially physically depreciate little but at end of economic life depreciate rapidly*

Authority response

Transpower has advised that the Commerce Commission sets Transpower's depreciation rate. This suggests that Transpower might not be authorised to adopt a different depreciation rate for connection pool charging purposes.

If MEUG or others consider that it is appropriate that Transpower adopts different depreciation rules for the calculation of TPM connection pool charges, then please indicate this in submissions on the connection charge working paper.

8. *How are asset, maintenance and operating charges set in CIC's?*

   The Authority referred this question to Transpower for a response.

Transpower response

In contrast to TPM connection charges, CIC charges allocate the costs of specific assets covered by a CIC to the contract counterparty.

Asset charges in relation to assets provided by Transpower under a CIC are determined on a cost recovery basis such that Transpower recovers, on a net of tax basis, the whole cost of the plant including financing costs. Maintenance and operating charges are determined in accordance with the TPM.

We use CICs predominantly for new connections or material expansion (in excess of what is required to maintain GRS) of existing services, and customers thus see the cost of providing that additional service. CIC charges provide flexibility for customers to negotiate the charging profile, including the duration of the contract and the balance between annualised and lump-sum components. CICs have a default charge profile that is flat in nominal terms i.e. declining in real terms.

9. *The like-for-like issue is described as one customer having newer assets over time than a second customer, but both customers paying an averaged fleet charge though the first customer presumably gets better service because on average the assets are newer. Is this true and does it matter? For example if the second customer is over time, even with very old assets, getting superior quality of supply (ie less interruptions) compared to the first customer where the Transpower connection assets fail repeatedly then presumably Transpower will be paying compensation to that connected party for unplanned connection service disruptions. Hence it's Transpower's call to replace those poorly performing assets. If we had a DRC approach then the second customer, even though it's not any of their fault the connection assets Transpower installed fail, would have to pay higher charges than the first customer for like-for-like connection services.*

Authority response

The Authority will investigate compensation arrangements for unplanned connection service interruptions and factor this into its decisions around its preferred approach, which will be presented in the second issues paper.

10. *In the pros and cons of changing from ARC to DRC should the costs of designing and implementing a suitable transition be added as a cost? It would be inequitable and undermine confidence in the regulatory regime by parties that pay connection charges if, for example, a connected party had just entered into a*

connection agreement for new assets on expectation future charges would be at ARC only to find a change in the regulatory regime hoisted initial charges up to DRC. There is no point in giving such a customer any DRC level price signals because the decision has already been made. Hence a transition needs to be considered and implemented. This will take time and resources and hence isn't this a cost to be considered in the option of changing to DRC?

Authority response

The Authority will consider the approach to implementation, including the nature of any transitional arrangements, at a later date.

11. *Paragraph 1.19(b) suggests a benefit of changing from ARC to DRC is lower credit risk and lower stranding risk. The lower stranding risk issue is also discussed in paragraph 1.19(f), ie customers will have a higher incentive to disclose stranding risks. Is the stranding risk issue in paragraph 1.19(f) the same as that in paragraph 1.19(b)?*

Authority response

1.19(b) refers to reduced credit and stranding risk because of the higher portion of payments that are made in the earlier years of an asset's life. The Authority considers that, despite Transpower's revenue regulation and the depreciation method used for revenue setting purposes, Transpower's credit risk in relation to a particular connection pool asset will reduce if Transpower receives a higher portion of the capital costs of that asset in the earlier years of that asset's life. If Transpower moves to DRC, it will receive a lower return from assets that are older and have been heavily depreciated. Owing to this offset, Transpower would likely not over-recover from connection pool.

1.19(f) relates to a reduced risk of stranding under DRC-based charging because connected parties that are aware they might not need their connection assets in the future (and might cause assets to be stranded) are more likely to oppose a replacement, because they would face a higher charge after replacement. A connection customer with this knowledge would likely accept the lower reliability until they were more certain of their future requirements.

12. *There is some uncertainty about the lower credit risk argument in paragraph 1.19(b). Setting aside the stranding risk issue discussed in question 11 above, then how is any residual credit risk influenced by whether ARC or DRC is applied? Transpower will use all contractual options to recover charges if parties fail to pay their invoices whether ARC or DRC is used and in the end if Transpower cannot through the courts recover costs then doesn't the shortfall gets socialised across all customers because Transpower always gets its MAR?*

Authority response

In the event of financial failure of a large connected customer, the likelihood that Transpower will be able to recover the full costs of that asset from that customer are reduced. However, Transpower might still be able to recover a portion or all of the outstanding monies owed from that customer. The cost that is not recovered will be shared amongst Transpower's other connection pool customers. Since Transpower always gets its MAR, this will simply increase the cost to all non-stranded customers. This is an example of inefficient cost socialisation,

13. Is the argument in paragraph 1.19 (c) about inefficient allocative cross-subsidisation between customers supplied by different aged assets but paying equivalent charges the same as paragraph 1.19 (g) that discusses how an asset may be fully depreciated but under ARC a customer still pays as part of the bundled pool charge a deprecation component? If different, please explain.

Authority response

The Authority agrees that both 1.19(c) and 1.19(g) are related. They both relate to cross-subsidisation caused by charges being unequal to actual costs at a point in time. However 1.19(g) is more specific in that it considers cross-subsidisation caused by assets that are not replaced by the time they are fully depreciated.