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HVDC component of Transpower's proposed variation to the Transmission Pricing Methodology

Decisions and reasons

14 August 2015

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Contents

1. Introduction

1.1.1 This paper sets out:

(a) the decision of the Electricity Authority (Authority) on one component of a proposal by Transpower New Zealand Limited (Transpower) to amend the transmission pricing methodology (TPM)

(b) the Authority's reasons for its decision, including the Authority's comments on key issues raised in the submissions it received.

1.1.2 The Authority is an independent Crown entity whose statutory objective is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.

1.1.3 Transpower is the owner and operator of the national transmission grid.

1.1.4 Transpower has carried out an operational review of the TPM. Schedule 12.4 of the Electricity Industry Participation Code 2010 (Code) sets out the TPM.

1.1.5 In February 2015, Transpower submitted to the Authority a proposed variation to the TPM, made up of five components. In March 2015, Transpower submitted two additional components.

1.1.6 The Authority considered Transpower's proposal and, in April 2015, the Authority published a consultation paper relating to four of the components titled 'Transpower's proposed variation to the Transmission Pricing Methodology', discussing four components of Transpower's proposed variation (the 'four components consultation paper').[1] After considering submissions, the Authority published a decisions and reasons paper.[2]

1.1.7 In June 2015, the Authority published a second consultation paper titled 'HVDC component of Transpower's proposed variation to the Transmission Pricing Methodology' (the 'HVDC consultation paper').[3]

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[1] The four components consultation paper is available on the Authority's website at http://www.ea.govt.nz/development/work-programme/transmission-distribution/transpower-tpm-operational-review/consultations/#c15231. A further two components (the bespoke NZAS component and the line maintenance component) were withdrawn by Transpower.

[2] http://www.ea.govt.nz/development/work-programme/transmission-distribution/transpower-tpm-operational-review/development/decisions-and-reasons-paper-published/

. In summary, the Authority has decided to amend the Code to implement two of the four components consulted on (N=100, reverse flows), to implement a modified version of one of the components (amended RCPD CMP) and not to implement the remaining component (RCPD quantity adjustment provision).

[3] The HVDC consultation paper is available on the Authority's website at http://www.ea.govt.nz/development/work-programme/transmission-distribution/transpower-tpm-operational-review/consultations/#c15388.

1.1.8 The HVDC consultation paper:

(a) set out that the historical anytime maximum injection (HAMI) allocation of the charge for the high voltage direct current (HVDC) interisland transmission link can distort operation of, and investment in, South Island generation

(b) proposed to address this problem by amending the TPM to allocate HVDC charges on a per-MWh basis, with an initial transition period (the 'HVDC component')

(c) sought submissions on the proposal to amend the TPM to implement the HVDC component.

1.1.9 The primary objective of the proposed amendment is to promote static efficiency for the long-term benefit of consumers, by reducing the incentive of South Island generators to withhold generation capacity to avoid HVDC charges.

1.1.10 The Authority received twelve (12) submissions on the HVDC consultation paper, from the parties listed in Table 1.

1.1.11 The submissions on the consultation paper, and a summary of submissions, are available on the Authority's website.[4]

Table 1: List of submissions

Generators, retailers and their representatives	**Consumers and consumer representatives**	**Distributors and distributor representatives**	**Other**
Contact Energy Genesis Energy – including a report by Castalia Meridian Energy Mighty River Power Pioneer Generation Trustpower	Fonterra Co-operative Group Major Electricity Users Group Winstone Pulp International	Powerco Unison	Transpower

[4] http://www.ea.govt.nz/development/work-programme/transmission-distribution/transpower-tpm-operational-review/development/decisions-and-reasons-paper-published

1.1.12 Further, some submissions on the four components consultation paper included comments specifically relating to the HVDC component. The submissions concerned are those of:

(a) Independent Electricity Generators Association, including a report by Andrew Shelley Economic Consulting

(b) MEUG

(c) MRP

(d) Trustpower.

1.1.13 These submissions have also been published on the Authority's website.[5]

[5] http://www.ea.govt.nz/development/work-programme/transmission-distribution/transpower-tpm-operational-review/consultations/#c15231

2. The Authority has decided to proceed with the proposal

2.1 HVDC charges will be allocated on a per-MWh basis

2.1.1 The Authority has decided to amend the Code to implement the proposal.

2.1.2 The proposed Code amendment is included in the marked up version of the TPM in Appendix A.[6]

2.1.3 The Authority has consulted with Transpower about when the proposed change will take effect. The change will take effect so that it applies to the calculation of prices for the 2017/18 and subsequent pricing years, but not the 2016/17 pricing year. The capacity measurement period (CMP) for the 2017/18 pricing year begins on 1 September 2015.[7] This means that, in practice, participants will need to take into account the impact of the change from 1 September 2015.

2.1.4 Under the proposed Code amendment:

(a) from the 2021/22 pricing year onwards, the HVDC charge will be allocated to HVDC customers[8] in proportion to their South Island mean injection (SIMI). A customer's SIMI is their total annual injection into the South Island grid, in MWh terms, averaged over the capacity measurement periods for the previous five pricing years

(b) for pricing years from 2017/18 to 2020/21, there will be a transitional arrangement, under which:

(i) a SIMI (MWh)-based component will be progressively introduced, making up 25% of the HVDC charge in the 2017/18 pricing year, 50% in the 2018/19 pricing year, and 75% in the 2019/20 pricing year

(ii) in the 2020/21 year, HVDC costs will be recovered through the SIMI (MWh)-based HVDC charge alone, but on the basis of total annual injections over four rather than five capacity measurement periods.

2.1.5 The changes that have been made to the drafting, compared with the version that was consulted on, are that:

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6 This version of the TPM reflects changes to the TPM to implement the n = 100 component, the RCPD capacity measurement period summer exclusion component, and the reverse flows component that were consulted on in the four components consultation paper. These changes do not show as mark-ups.

7 For the HVDC charge, a CMP is the 12-month period from 1 September to 31 August inclusive, immediately before a pricing year. A pricing year is the 12-month period from 1 April to 31 March inclusive.

8 HVDC customers are (a) grid-connected South Island generators, and (b) South Island distributors that have embedded generators connected to their networks.

(a) the definition of SIMI has been corrected to ensure that the capacity measurement period for the pricing year for which charges are being calculated is covered, as well as the capacity measurement periods for previous pricing years. In this context, paragraph 4.11 of the consultation paper referred in error to averaging MWh injections over "pricing years" instead of capacity measurement periods for the relevant pricing years

(b) the description of the calculation of HAMI in clause 33D of the TPM has been amended. As noted in the HVDC consultation paper, the intention is to transition from the current HAMI-based charge to the new SIMI-based charge. However, the drafting of clause 33D included in the consultation paper did not accurately describe how Transpower currently calculates the HAMI component. The revised drafting reflects the current calculation.

2.2 The decision supports the Authority's statutory objective

2.2.1 The Authority expects the amendment to promote the statutory objective, primarily by reducing the incentive on South Island generators to withhold generation capacity.

2.2.2 The amendment may also:

(a) promote dynamic efficiency, by promoting efficient investment in South Island embedded generation and grid-connected wind generation

(b) promote wholesale market competition, by reducing the incentive on South Island generators to withhold generation capacity, which will increase participation of South Island generation in the wholesale market

(c) promote reliability, by reducing the incentive on South Island generators to withhold generation capacity when supply conditions are tight.

2.3 The proposal is preferable to the status quo

2.3.1 The Authority considers that the proposal is preferable to the status quo and that its expected net economic benefit is positive. The proposal is also preferable to the alternatives, as set out in section 2.4.

2.3.2 The HVDC consultation paper described the CBA for the proposal, which had been prepared by Transpower. The CBA considered:

(a) the static efficiency benefits of the proposal, arising through achieving a more efficient dispatch by removing the disincentive for South Island generators to limit their peak injection, which were estimated to be between $6.1 million and $11.3 million per year

(b) the implementation cost of the proposal, which was expected to be less than $0.1 million present value.

2.3.3 The paper concluded that 'the proposal is expected to provide a net economic benefit relative to the status quo', adding that 'the proposal may have further benefits, in terms of dynamic efficiency, that are not included in the cost-benefit analysis'.

2.3.4 The Authority adds that the expected net economic benefit of the proposal would be positive, even if it only remained in force for a short period (eg several years) before being replaced by some other HVDC charging arrangement. This is because the proposal has a positive expected net benefit in each year of application, and a relatively low initial cost.

2.3.5 Submitters had mixed views as to whether the proposal was preferable to the status quo. Nine submitters supported the proposed amendment, while three submitters opposed it.

2.3.6 Table 2 lists the disadvantages of the proposal (compared with the status quo) that submitters raised, and the Authority's comments on each.

Table 2: Submitter comments on the disadvantages of the proposal, relative to the status quo

Submitter comment	Authority response
It has not been demonstrated that existing arrangements lead to material efficiency losses. (This comment was made in MEUG's submission. MEUG references earlier analysis carried out by NZIER,[9] concluding that Transpower and the Authority have overstated the economic costs arising from current arrangements – *'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.'*	The Authority considers that there is sufficient evidence to conclude that South Island generators withhold capacity in response to the HAMI allocation. This evidence includes that: • it would be economically rational for South Island generators to withhold capacity • analysis of South Island generator offer behaviour shows clear signs of withholding in response to HAMI • Contact has indicated that it will make more capacity available as a result of the amendment even though the Authority's analysis in the consultation paper shows that Contact is expected to pay increased HVDC

9 www.meug.co.nz/system/files_force/2014-53%20Attachment%20-%20TPM%20Problems%20final.pdf?download=1, www.meug.co.nz/system/files_force/Memo%20re%20Transpower%20TPM%20consultation%20-%20final%2019%20December%202014.pdf?download=1

Submitter comment	Authority response
The stated rationale for this view is that NZIER is not clear whether generators actually withhold capacity in response to the HAMI allocation of the HVDC charge. NZIER considers that the evidence to support this point is anecdotal.)	charges as a result of the amendment. Submitters have not raised any other specific criticisms of the cost-benefit analysis in the consultation paper. Accordingly, the Authority considers there is sufficient evidence to conclude that the net expected economic benefit of the amendment is positive.
The benefits to intermittent and embedded generation identified in the consultation paper are not true economic benefits. Some forms of generation would benefit from the amendment, but others would be worse off. (Meridian)	The Authority considers that the posited dynamic efficiency benefits, arising through 'reducing the disincentive against investing in some forms of South Island generation',[10] are true economic benefits. The Authority agrees, however, that the economic benefits of reducing the disincentive to invest in some forms of South Island generation are offset by the economic costs of increasing the disincentive to invest in other forms of South Island generation. However, the cost-benefit analysis of the proposal is primarily driven by *static*, rather than *dynamic*, efficiency.
Adopting the proposal would result in implementation costs (Meridian, MEUG).	Any change to the TPM will involve implementation costs. The key issue is whether the benefits from a change exceed the costs. Submitters have not provided evidence to show that the implementation cost of the amendment would exceed the estimate in the consultation paper (ie less than $0.1 million present value). This level of implementation costs is not sufficient to mean the proposal would not provide net benefits.
Adopting the proposal would result in an increase in spot prices (Winstone Pulp International).	The Authority has not formed a view on whether the proposal will result in an increase in average spot prices. In any case, an increase in spot prices is not, in itself, an economic disbenefit.

[10] HVDC consultation paper, p17

Submitter comment	Authority response
The proposal is no more durable than the status quo (Meridian, MEUG).	The Authority considers that the proposal is less likely to affect offer behaviour and, to that extent, is more durable than the status quo.
The proposal does not deal with some distortions or inefficiencies arising from current arrangements (Meridian, MEUG).	The Authority agrees. The Authority will seek to address problems with the way in which HVDC costs are recovered in its own review of the TPM.
The proposal is 'novel or unexpected' (Fonterra).	The Authority disagrees. Transpower has already consulted on this proposal, so it cannot reasonably be considered 'unexpected'. Further, the Authority does not agree that a flat per-MWh charge is 'novel'.[11] Per-MWh charges are used widely in the electricity industry, eg by electricity distribution businesses.
Adopting the proposal may lead to the Authority's own review being delayed, or the outcomes of the Authority's review being 'watered down' (Meridian).	The Authority's timeline for its own review of the TPM is not affected by this amendment. The Authority's own review will consider how to provide for HVDC costs to be recovered in the way that is most consistent with its statutory objective and Code amendment principles. This may lead to changes to the TPM guidelines.

2.4 The proposal is preferable to the alternatives

2.4.1 The Authority considers that the proposal is preferable to alternatives that are consistent with the current TPM Guidelines.[12]

[11] For instance, the Transmission Pricing Advisory Group considered a per-MWh HVDC charge in 2011 (https://www.ea.govt.nz/dmsdocument/10657).

[12] The TPM Guidelines are currently those published by the Electricity Commission on 24 March 2006 (http://www.ea.govt.nz/dmsdocument/2990). Under clause 12.89(1) of the Code, Transpower's proposed variation to the TPM must be consistent with the TPM Guidelines. Therefore, in the context of Transpower's review, the Authority only considered alternatives that were consistent with the TPM Guidelines. Some alternatives that are not consistent with the TPM Guidelines are being considered as part of the Authority's own review of the TPM.

2.4.2 The Authority considered and rejected other alternatives to the proposal. The consultation paper set out that the Authority would not consider any of the following options any further, in this context:

(a) a 'diluted HAMI' option – because a 'diluted HAMI' would have a lower expected net economic benefit than the proposal

(b) a capacity charge – because a capacity charge would disincentivise investors from building new South Island generation with a low capacity factor or from increasing the capacity of existing South Island generation

(c) an 'incentive-free' charge – because an 'incentive-free' charge might be perceived as 'arbitrary', which could undermine investment incentives across the electricity industry

(d) expanding the use of 'exceptional operating circumstances' – because this option would not be as effective as the proposal, would involve higher costs than the proposal, would result in more uncertainty than the proposal, and would not add incremental value if the proposal was adopted

(e) aggregating stations on a river chain for the purpose of calculating the HVDC charge – because this option would not be as effective as the proposal, and would not add incremental value if the proposal was adopted

(f) a per-MWh charge without a transition – because removing the transition period would have no incremental efficiency benefits

(g) a per-MWh charge (as per the proposal), but on total generation rather than net injection – because this option would not be consistent with the TPM Guidelines

(h) a per-MWh charge (as per the proposal), but calculated based on output in a single year rather than averaged over five years – because this option would result in charges that were more volatile over time.

2.4.3 No submitters provided evidence to suggest that the Authority should further consider any of these alternatives in this context.

2.4.4 No submitters expressed support for other alternative options.

2.4.5 One party (MEUG) submitted that the Authority should not approve the HVDC component, and should instead progress its own review of HVDC pricing. Another party (Meridian) submitted that the Authority should progress its own review of HVDC pricing, while not recommending that the Authority decline to approve Transpower's proposal. However, neither Meridian nor MEUG provided specific suggestions as to how HVDC costs should be recovered.

2.4.6 The Authority encourages parties to provide their views on HVDC cost allocation when they submit on the Authority's review of the TPM.

2.5 The amendment complies with section 32(1) of the Act, and with the Code amendment principles

2.5.1 The consultation paper set out that the HVDC component complies with section 32(1) of the Act and the Code amendment principles.

2.5.2 Nine submitters supported the proposed amendment. Two of them agreed that it complies with the Electricity Industry Act 2010 (Act) and the Code amendment principles.

2.5.3 Three submitters opposed the proposed amendment, for the reasons set out in Section 2.3. Of these, one submitter (MEUG) stated that the proposed amendment did not comply with the Act and/or the Code amendment principles, on the basis that MEUG did not consider the proposed amendment is welfare enhancing compared with the status quo or options that may emerge from the Authority's review.

2.5.4 Having considered submissions, the Authority considers that the amendment:

(a) complies with section 32(1) of the Act, and is lawful

(b) promotes the statutory objective – for the reasons set out in Section 2.2

(c) provides clearly identified efficiency gains relative to the status quo, and has a positive net expected benefit relative to the status quo – for the reasons set out in Section 2.3

(d) is preferable to alternatives that are consistent with the current TPM Guidelines – for the reasons set out in Section 2.4.

2.5.5 Therefore, the Authority considers that proceeding with the amendment is consistent with the Code amendment principles.

3. Upper South Island derating is still to be considered

3.1.1 The consultation paper:

(a) discussed extending the proposal to provide for Upper South Island derating (USI derating) – ie applying a lower HVDC charging rate to generators in the USI region, in order to avoid disincentivising new generation in the area

(b) set out that providing for USI derating could potentially better promote the statutory objective

(c) explained that the Authority had decided to proceed with the HVDC component without USI derating at this point, but that Transpower would further investigate USI derating

(d) set out the Authority's expectation that by late 2016, Transpower will provide either:

(i) a new proposed variation to stop the HVDC charge from discouraging USI generation investment located such that it might help to defer transmission investment, or

(ii) an explanation why such a variation would not promote the Authority's statutory objective.

3.1.2 Some submitters supported, and no submitters opposed, the above process for considering USI derating.

3.1.3 Over the next few months, the Authority will form a view on whether the issue of USI derating still needs to be addressed. The outcomes of the Authority's own review of the TPM could remove the need for Transpower to consider USI derating. For instance, if the HVDC charge was to cease to exist in its current form, then USI derating would no longer be relevant.

3.1.4 Some submitters expressed opposition to USI derating. Transpower can take these views into account when and if it considers the issue.

Glossary of abbreviations and terms

Act	Electricity Industry Act 2010
Authority	Electricity Authority
CMP	Capacity measurement period – for the HVDC charge, the 12-month period from 1 September to 31 August inclusive immediately before a pricing year
Code	Electricity Industry Participation Code 2010
'Four components consultation paper'	The Authority's consultation paper 'Transpower's proposed variation to the Transmission Pricing Methodology' of April 2015
HVDC charge	The component of the TPM that recovers the costs of the high voltage direct current inter-island link
'HVDC consultation paper'	The Authority's consultation paper 'HVDC component of Transpower's proposed variation to the Transmission Pricing Methodology' of June 2015
'HVDC component'	Transpower's proposal to allocate HVDC charges on a per-MWh basis, with an initial transition period
LNI, LSI	Lower North Island and Lower South Island – two of the four regions used in the calculation of the RCPD allocator of the interconnection charge
Pricing year	A twelve-month period from 1 April to 31 March inclusive, for which transmission charges are calculated
SIMI	South Island Mean Injection
TPM	Transmission pricing methodology
USI	Upper South Island
USI derating	The concept of applying a lower HVDC charging rate to generators in the USI region, in order to avoid disincentivising new generation in the area.

Appendix A Drafting showing proposed changes to the Electricity Industry Participation Code 2010

Proposed changes to the Code are shown in red.

This version of the TPM reflects changes to the TPM to implement the n = 100 component, the RCPD capacity measurement period summer exclusion component, and the reverse flows component that were consulted on in the four components consultation paper. These changes do not show as mark-ups.