Transmission pricing methodology: LRMC charges

Summary of submissions

Contents

1 Introduction

1.1 This paper provides a summary of the submissions received on the paper 'Transmission pricing methodology: LRMC charges, published on 29 July 2013 (the LRMC working paper).[1] "LRMC" refers to Long Run Marginal Cost.

1.2 The Electricity Authority (Authority) is reviewing the Transmission Pricing Methodology (TPM), which specifies the method for Transpower New Zealand Limited (Transpower) to recover the costs of providing transmission services. The TPM is contained in Schedule 12.4 of the Electricity Industry Participation Code 2010 (Code).

1.3 The Authority considers that the current TPM can be improved to better meet the Authority's statutory objective to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers. In October 2012 the Authority released a consultation paper 'Transmission Pricing Methodology: issues and proposal' (October 2012 issues paper) to obtain feedback on the TPM proposal.

1.4 The Authority received extensive feedback on the TPM proposal through various sources including submissions, cross submissions and a conference held in May 2013. Concerns were raised and suggestions made by stakeholders on the Authority's TPM proposal. As a result of these, the Authority decided to issue a second issues paper.

1.5 Prior to developing a second issues paper, the Authority has decided to prepare a series of working papers to seek a further understanding of the issues raised by submitters. Feedback on the working papers will form a key input into the Authority's development of the second issues paper.

2 Overview of submitters

2.1 The Authority received fourteen submissions from submitters covering a range of topics in the working paper. Table 1 lists the submitters and the sector of the industry with which they are associated.

1 The Authority has published the following working papers: 'Transmission pricing methodology: CBA' (3 September 2013); 'Transmission pricing methodology: Sunk Costs' (8 October 2013). 'Transmission pricing methodology: Avoided cost of transmission payments (ACOT) for distributed generation' (19 November 2013); 'Transmission pricing methodology: Use of LCE to offset transmission charges (21 January 2014); 'Transmission pricing methodology: Beneficiaries-pay options' (21 January 2014); 'Transmission Pricing Methodology: Connection charges (6 May 2014); 'Transmission pricing methodology: problem definition relating to interconnection and HVDC assets' (16 September 2014).

Retailer/generator	Distributors	Consumers	Other
Contact Energy	Electricity Networks Association (ENA)	Majority Electricity Users' Group (MEUG)	Transpower
Genesis Energy	Orion NZ Limited		
Meridian Energy	Powerco Limited		
Mighty River Power	PricewaterhouseCoopers (PwC) on behalf of 22 EDBs		
Nova Energy	Vector		
Ringa Matau Limited			
Trustpower			

2.2 Powerco and Orion supported ENA's submission.

3 Form of summary

3.1 The summary is set out as follows:

(a) Part 1: Legal and process issues

(i) The Authority has not complied with its obligations under the Code

(ii) The Authority has predetermined an outcome or is biased

(iii) The Authority has not appropriately dealt with other parties' views

(iv) Process for the review

(v) Interface with Part 4 of the Commerce Act / Commerce Commission

(b) Part 2: Other substantive issues

(i) The Authority should continue to investigate LRMC-based charging

(ii) The Authority should not investigate LRMC-based charges further

(iii) The Authority should not investigate LRMC until the problem definition has been established

(iv) Would LRMC-based charges provide sufficiently accurate price signals to promote efficient operation of, and investment in, the electricity industry. Would LRMC-based charges complement nodal pricing signals in the wholesale market?

(v) Is LRMC-based charging practicable?

(vi) If LRMC-based charging was adopted, what form should the charge take?

(vii) Comments specifically on beneficiaries-pay charging or SPD

(viii) Other

3.2 Paragraph 2.7 of the working paper asked for feedback on whether LRMC-based charges would better promote the Authority's statutory objective than the status quo or beneficiaries-pay charges, and whether LRMC charges should be investigated further. To avoid duplication, the first three matters addressed in Part 2 set out submitters' overall position on LRMC and their key logic in relation to that position, including views on whether the Authority should investigate LRMC further.

3.3 The second three matters addressed in Part 2 relate to particular matters that the Authority requested feedback on in paragraph 2.7 the working paper.

3.4 Some submitters stated that they did not comment in detail on LRMC because a detailed proposal had not been presented by the Authority. Others stated that they did not make extensive comments given that the problem definition working paper had not yet been finalised.

PART 1: LEGAL AND PROCESS ISSUES

Issue	Submitter	Submission	Page	Item no
The Authority has not complied with its obligations under the Code	ENA	The Authority is trying to specify a level of detail that goes beyond the Authority's role under the Code, which is to establish a process and guidelines that Transpower must follow to develop the TPM. The Authority should make clear the level of prescription it intends to impose on Transpower.	1, 2, 3	1
		The current review of the TPM is not following the process in clauses 12.91-12.94 of the Code. That process requires the Authority to either approve the existing methodology after its review, or refer it back to Transpower for amendment.	3	2
	ENA, Vector	The Authority has not established that there has been a material change in circumstances that warrants a review of the TPM under clause 12.86 of the Code.	3; 2	3
	Vector	Vector has serious concerns that any decision to change the TPM as a result of this review will be found to be ultra vires. The Code states that Transpower determines the TPM. The Authority has the power to create guidelines to support Transpower's review, which would assist Transpower to demonstrate that any new methodology would be to the long-term benefit of end-users, and may help if Transpower wishes to carry out another review.	2	4

The Authority has predetermined an outcome/is biased	Powerco	The Authority should stop using the decision-making and economic framework. It is an analytical straightjacket that the Authority is using for support rather than illumination. Options need to be considered based on individual cost-benefit analyses, not assumptions.	2	5
	ENA, Ringa Matau, Vector	The paper appears to be biased against LRMC-pricing. The paper presents technical issues that are not insurmountable, and that apply to non-LRMC options (eg SPD), and in relation to which the Authority has already spent time developing design details or has minimised the issues involved.	1, 5-7; 1-2; 4	6
	ENA	The Authority appears to have an entrenched fixation on the SPD-based approach and a single-minded drive to introduce a particular complex model, with little basis in transmission pricing theory. The Authority needs to consider a broader range of options and decide which one has the greatest net benefit. The Authority cannot prefer one option merely because it is the option in which it has chosen to invest.	1, 5, 6, 7	7
	Ringa Matau	The working paper paints a very negative view of LRMC by overplaying practicability issues and by not providing adequate factual material. The Authority has dismissed tilted postage stamp and augmented nodal pricing based on analysis by the Electricity Commission, NERA and TPAG, but has not taken that analysis into account in relation to beneficiaries-pay. If further investigation does proceed, all locational pricing options should be considered on the same basis. If that work were to proceed Ringa Matau would expect to see this investigated by an advisory committee, as the Authority is now unable to be objective about the TPM.	1-2	8
The Authority has not appropriately dealt with other parties' views	ENA	The Authority has misinterpreted the Electricity Commission's statements. The GEM analysis undertaken by the Commission could not assess whether there would be benefits from signalling reliability investments. That statement was of the Commission's opinion.	4	9
	Powerco	The Authority has not provided any meaningful response to submissions that SPD will increase scope for disputes.	2	10

	Trustpower	The working paper misstated Professor Bushnell's position. He did not suggest that nodal pricing provides price signals that reflect both SRMC and LRMC for transmission.	3	11
	Vector	The Authority has misrepresented support that submitters have attributed to the issues paper. Vector does not support the design of the beneficiaries-pay approach or the LRMC as proposed in the TPM Proposal or associated working papers.	5	12
	ENA	The Authority should refer to ENA's comments on LRMC in ENA's beneficiaries-pay working paper submission. ENA has not seen any analysis from the Authority to question ENA's ideas.	5	13
Process for the review	Genesis, Ringa Matau, Vector	The Authority should not continue work on the TPM review until after the problem definition is established.	2; 3; 2	14
	Transpower	Transpower is concerned with the costs and uncertainties imposed by continued consideration of radical change. Transpower doubts that there is a case for such radical change.	1	15
	Vector	The Authority needs to: • recognise flawed assumptions in its approach • step back from an entrenched fixation to promote better targeted and better timed transmission using beneficiaries-pay • recognise that Part 4 (not the TPM) encourages efficient timing and location of transmission assets • recognise that transmission assets are sunk, both in practice and under Part 4	5	16

		• recast its objective to be consistent with regulatory regimes • consider other designs for the TPM.		
Interface with Part 4 of the Commerce Act / Commerce Commission	ENA, Genesis, Trustpower, Vector	The Authority must ensure that the TPM is aligned with/not in conflict with processes under Part 4 of the Commerce Act.	2-3; 7; 2-3; 3-4	17
	Meridian	LRMC-based charging would potentially conflict with the Commerce Commission's approach, because LRMC-based charges conceptually pre-fund investment, whereas the Commerce Commission's approach is about recovering the costs of existing assets.	2	18
	Trustpower	Both LRMC and SPD need to be assessed in light of the fact that the transmission grid has high fixed costs, which means that it is efficient to have a monopoly. Regulation of the monopoly is to restrain prices and ensure that there is sufficient regulatory and contractual stability for investment. The changes to the Commerce Act in 2008 subject Transpower to an individual price path, which enables prices to be smoothed to avoid rate shocks and provides for an input methodology to approve capital expenditure. It follows that the function of the transmission charging regime is not to ensure that Transpower faces price signals as to where it should add capacity, based on consumers' willingness to pay, but to efficiently recover investment costs approved by another regulator. The input methodology process achieves similar outcomes to long-term contracts in workably competitive markets.	2-3	19
	Vector	The TPM should not frustrate Transpower's ability to fully recover its MAR.	3-4	20

PART 2: SUBSTANTIVE ISSUES

Issue	Submitter	Submission	Page	Item no
The Authority should continue to investigate LRMC-based charging	ENA	If the Authority can overcome the legal issues raised by ENA, the Authority must give proper consideration to non-SPD options, and more thorough consideration to LRMC-based charges. The high-level analysis so far is not sufficient. Given that the Authority's goal should be a material improvement in economic efficiency, LRMC-based charges could have a place in the TPM if part of a package of pricing tools (including nodal prices and FTRs) that provides a better signal relative to other approaches, including the status quo and beneficiaries-pay options. It is not yet established that additional location-based prices would be likely to achieve a material gain in efficiency. ENA's submissions on LRMC should not be interpreted as indicating ENA's preferred approach to the TPM.	1-2 and 4-6	21
	Nova	Nova favours a combination LRMC (MIC) and beneficiaries-pay charge The MIC approach would reflect a rise in price approaching the LRMC of the next increase in capacity. The beneficiaries-pay approach is consistent with an ongoing return that is locked in before proceeding to invest in the next major increment of supply. It would also recover more revenue, and reduce potential distortion from the residual.	1-2	22

	Orion	Orion uses an LRMC-based approach, and believes it has worked well. LRMC-based charges could provide net benefits relative to the status quo. Even if that is not the case, LRMC-based charges are preferable to beneficiaries-pay. Orion does not comment on the specifics of the discussion in the working paper, but supports ENA's submission.	1-2	23
	Powerco	In principle, LRMC-based charges could promote the Authority's statutory objectives. Further investigation of LRMC may be warranted. However, the Authority should first review the work already done in this area, such as NERA's 2009 investigation of LRMC-based charges (which concluded that a tilted postage stamp charge would be sensible). Changes to the TPM will create new opportunities for charging disputes. With the exception of the contentious HVDC charge, the current TPM is generally well understood and accepted. [Powerco urges the Authority to give high weighting to materiality when considering any possible future charging modifications. The NERA report shows that the practical impact of change would often be negligible. The Authority needs to carefully consider the wider pricing and investment arrangements that already affect transmission, as well as the degree to which the Commerce Commission is susceptible to lobbying. The Authority's cost-benefit analysis for SPD overstates this effect. Powerco supports ENA's submission.	1-2	24
	PwC for 22 EDBs	While PwC does not necessarily support LRMC at this stage, PwC supports further work and consultation on more detailed LRMC options. An LRMC option should be included in the second issues paper. The Authority dismissed traditional approaches to network pricing too quickly, in favour of an approach that would be a world first if adopted. Any charge must balance simplicity, stability, durability, and efficiency. An LRMC approach could be the most efficient and enduring, because it is aligned to fundamental network economics. LRMC approaches have been successfully adopted overseas. LRMC charges would be set in relation to the costs of future investments, would be durable, and would only	2-3, 7-8	25

		disincentivise grid use where the benefit from the use of the peak capacity is less than the cost of the next capacity investment. The status quo with modifications would be a simple and stable alternative. SPD-based approaches are unlikely to be simple, stable, or enduring, and there are serious concerns about whether it would promote efficiency. PwC agrees with the generic costs identified in the working paper, but the following costs are not necessarily material or likely: • Inefficient dispatch of generators at peak: because the primary focus of the TPM should be setting efficient transmission charges. The wholesale market is already relatively efficient. So long as transmission is priced efficiently and transparently then transmission costs become a cost input into formulating bidding strategies • Over-signalling of LRMC due to poor forecasting: because forecasting error does not necessarily over-signal costs • Charging future users of grid is not sustainable: because current capacity usage creates the need for the next increment of investment, and current users only pay for existing costs under Part 4 of the Commerce Act.		
The Authority should not investigate LRMC-based charges further	Contact	Contact opposes LRMC-based charges: • An LRMC-based approach would need a beneficiaries-pay based charge and a residual charge to recover all costs. That approach would exponentially increase the complexity of an already very complex electricity market, to collect fixed or sunk costs. • The approach would not provide a coherent signal to firms or individuals, and would not likely drive investment decisions • An LRMC charge may mask nodal pricing • There are simpler, more palatable ways to provide signals to customers so that they have regard to transmission costs when making choices.	1-2	26

		The best approach to change the TPM is to make incremental changes to the current TPM, rather than a "big bang".		
	Meridian	Meridian does not support an LRMC approach and the Authority should not consider it further. An LRMC-based TPM would be as unsustainable as the status quo, but for different reasons: • The practicalities of LRMC-based charging would limit durability • LRMC-based charging would result in perverse incentives regarding the timing of investments. Efficient investment decisions require transmission pricing methods to be durable and stable long-term. The Authority should continue to explore workable beneficiaries-pay approaches.	1-3	27
	MEUG	MEUG opposes further investigation of LRMC charging, because: • Problems under the status quo in assessing the accuracy of forecast demand and investment costs will continue under an LRMC-based charge • LRMC-based charging may lead to additional higher charges in advance for customers • Practicability issues with LRMC are considerable and will take a long time to investigate. An LRMC-based option that would adopt a beneficiaries-pay charging basis once investments are commissioned would create an unsatisfactory disconnect between the basis on which investment decisions are made (LRMC) and how charges are actually recovered (beneficiaries-pay) MEUG would prefer a beneficiaries-pay approach that applies to both investment decision-making and actual pricing. LRMC-based charges do not advance any solutions for treatment of the residual relative to beneficiaries-pay.	2-3	28
	Transpower	LRMC or LRMC-like charging warrants further exploration only if the Authority can convince itself that radical change to transmission pricing is desirable, but Transpower is doubtful that	1	29

		that is the case. The current pricing arrangement already provides a relatively simple LRMC-like charge. As a less radical option, these charges could be modified to adjust price signals.		
	Trustpower	Neither LRMC nor beneficiaries-pay would likely be of long-term benefit to consumers, in the context of the statutory requirement that Transpower must receive full recovery of its regulated revenue requirements. Both would be very complex, and a combination of the two plus a residual charge would be even more problematic.	2	30
The Authority should not investigate LRMC until after it completes the problem definition	Genesis	The Authority should complete its work on the problem definition before evaluating TPM options, so that both the Authority and submitters can focus on the material issues. LRMC-based prices in particular require a high level of confidence in regulatory decision-making processes, but the problem definition working paper suggests that the Authority does not have confidence in current regulatory decision-making processes. Overall, Genesis is of the view that LRMC-based charges could lead to efficiency gains. At a high level assessment against efficiency criteria, LRMC-based charges alone perform better than other options. For more details, see Table 2 of Genesis's submission. LRMC-based charges more closely resemble pricing dynamics in a workably competitive market than other options being considered by the Authority. Prices would rise when capacity is scarce, and fall after an investment is made to reflect competition between the owners of new capacity to meet demand. Such pricing dynamics focus users' minds on whether the value of their consumption is greater than the cost of supply. A forward looking charging method such as LRMC-based charges will incentivise engagement on the level of grid investment that is needed for the future, without penalising grid users for historical investment decisions or encouraging under-utilisation of built assets. Practicability concerns do not provide a reason not to further investigate LRMC-based charges, and can be overcome.	1-7	31

		Equity issues with LRMC-based charges are akin to equity issues with beneficiaries-pay approaches. Though LRMC-based charges may result in current users cross-subsidising future users, a beneficiaries-pay approach would create a negative externality of paying for unconsented built assets and it is inequitable for future generations to pay for undesirable over-built assets. However, to be effective, a TPM that includes LRMC-based charges will need to be aligned to the Commerce Commission's grid investment test (GIT) regime.		
	Mighty River Power	The Authority should defer the decision on whether to consider LRMC-based charging further, until a clear problem definition for transmission pricing reform has been established, because: • The dynamic efficiency benefits of an LRMC signal is likely to be very low, because of recent transmission investment and declining demand • A combination LRMC/beneficiaries-pay/residual approach, as required by the decision-making and economic framework, would be unnecessarily complex and could result in over-signalling and efficiency loss. In this regard, the international examples of LRMC do not have a beneficiaries-pay component. However, Mighty River Power supports the Authority evaluating whether any reform to the TPM could be applied prospectively.	1-2	32
	Ringa Matau	Ringa Matau does not favour significant change to the status quo. The problem definition needs to be covered before any further work is done on alternative options.	3	33
	Vector	The Authority should defer consideration of LRMC until after the problem definition consultation. If there is a clear problem, the Authority should continue to assess whether LRMC would better meet the Authority's statutory objective than the status quo. If there is no clear problem, the Authority should not consider making unnecessary changes to the TPM. Vector questions	2, 4	34

		whether the Authority has ensured that a solution is consistent with good market design, and presented a solution that materially improves consumer welfare.		
Would LRMC-based charges provide sufficiently accurate price signals to promote efficient operation of, and investment in, the electricity industry?	ENA	LRMC-based pricing is not synonymous with locational pricing, but LRMC-based pricing could create locational incentives, as could the other beneficiaries-pay options being considered. The Authority should consider whether, in the context of existing price signals, additional location-based prices (on whatever basis) would likely achieve a material gain in efficiency. It is not yet established that this is the case. The Electricity Commission and NERA came to differing conclusions on the value of providing an enhanced locational signal to generators. The Authority needs to recognise that it is impossible to design a perfectly efficient method of recovering transmission costs, because of the substantial levels of sunk and fixed costs and the presence of loop and two-way load flows.	2, 4-5, 7	35
		TPAG noted that the benefits of additional locational signalling depend in part on the effectiveness of the transmission investment approval process, and close coordination between the Authority and the Commerce Commission. The Authority consistently overestimates the ability of parties to effectively lobby to delay or bring forward investment, and hence overstates the extent to which changes to the TPM can influence the dynamic efficiency of investment.	3	36
	Genesis	Genesis has identified potential improvements in efficiency for loads and new transmission investment, has identified no material impact on efficiency for generation, and has identified potential reductions in efficiency in the wholesale market, but submits that further analysis is needed on the impact LRMC-based charges would have on the wholesale market. For further detail on the efficiency impacts of LRMC-based charges, see Table 1 of Genesis's submission. LRMC-based charges perform better than other options. LRMC-based charges will improve signals for load and strengthen the link between transmission pricing and investment decisions.	3-4, 5	37

	Meridian	LRMC-based charging would result in perverse incentives regarding the timing of investments. Users might promote an investment because they would not have to pay for it once it was commissioned. That is because LRMC reflects future investments, not existing investments.	2	38
	PwC for 22 EDBs	The working paper raised a concern that LRMC would reduce to zero after a new investment, creating perverse incentives to lobby for new investments. Whether this would happen would depend on the kind of LRMC charge that was used. For example, LRIC as adopted in the UK may not result in a zero price outcome. In addition: • It is efficient to incentivise new capacity • As usage rises, LRMC would increase, which is allocatively and dynamically efficient • The Commerce Commission would be unlikely to approve new investments if existing assets were not constrained • The cost of a new investment would be largely recovered through a residual charge where LRMC is zero.	7	39
	Trustpower	The promotion of efficient investment should not be the key focus of the Authority's TPM review. Instead, the Authority should be asking: "what is the most efficient way to allocate charges that have been determined by another regulator as producing the efficient level of investment by the grid owner?". It is problematic to use transmission pricing to create incentives for investment. Prices alone do not provide the answer because grid investment is lumpy and disruptive. Instead, the principles of natural monopoly pricing, like Ramsey pricing, are a good fit. Professor Bushnell's report was about the adequacy of nodal pricing in relation to incentives for generation location decisions, and the impact of individual location decisions on transmission investment. Professor Bushnell argued for a combination of locational marginal pricing and a credible	2-4	40

		central decision-making authority making investment decisions.		
Would LRMC-based charges complement nodal pricing signals in the wholesale market?	Contact	Contact is concerned that an LRMC charge may mask nodal pricing. Contact believes this is an important point, since the United Kingdom does not have nodal pricing in place.	1	41
	ENA	In theory, LRMC-based charges could be designed that would complement the signals provided by nodal pricing on the wholesale market. The Authority needs to think about how different types of transmission charges fit into the overall package of pricing tools.	7	42
	Genesis	Careful analysis is needed to understand how LRMC-based prices would interact with nodal pricing signals in the wholesale market. Nodal pricing in the wholesale market already provides some locational pricing signal for investment, reveals the SRMC related to constraints and losses, and encourages efficient use of electricity and transmission. However, nodal pricing provides limited incentives to consumers to moderate capacity demand when the grid is approaching a need to upgrade. Forward looking LRMC-based charges are likely to provide a clearer incentive to consumers. However, Genesis is concerned as to how pricing signals from SRMC nodal prices and LRMC-based charges will work together. Work is needed to establish whether, or to what degree, the charges will overlap. The TPM needs to strike a balance that incentivises participation in transmission investment decisions, but does not penalise customers who live in remote areas with poor transmission infrastructure.	5 and 7	43
	Meridian	Given that locational signals are already provided by the spot market, it is unclear why a further LRMC-based mechanism is needed.	2	
	Mighty River Power	The working paper does not establish whether there are material inefficiencies with locational signals, or that generation and load can be sufficiently influenced by transmission charging, to justify an additional LRMC signal. The combination of various price signals and nodal price	1-2	44

		differences in an LRMC/beneficiaries-pay approach could result in over-signalling and efficiency loss.		
	Vector	New Zealand's electricity market is premised on nodal pricing, which is the locational signal for investment and utilisation of generation and node management, and Part 4 of the Commerce Act is the mechanism for efficient investment. Using transmission pricing as a locational signal is likely to mute or militate against current nodal price signalling. Vector cautions against any action that would distort the efficient operation of the market to the detriment of allocative and dynamic efficiency.	3	45
Is LRMC-based charging practicable?	ENA, Genesis, PwC for 22 EDBs, Ringa Matau, TrustPower, Vector	Many of the seemingly insurmountable practical difficulties in relation to LRMC have parallels in other pricing methods including SPD (and/or the difficulties with SPD are no less challenging). Submitters took various conclusions from this: • Practicality should not be considered a disadvantage in relation to LRMC; or • The practicality problems with LRMC are resolvable/the Authority has managed to resolve or mitigate these problems in relation to SPD; or • If LRMC is dismissed on practicality grounds, SPD should also be dismissed.	1, 5-6; 6; 1; 4; 4	46
	ENA, Genesis, Powerco	Practical, technical and/or implementation issues have been dealt with in other jurisdictions that use LRMC-based charges. ENA noted that the AEMC's draft rule changes may assist the Authority for developing TPM guidelines in New Zealand, as may work previously done in New Zealand (for example, in relation to tilted postage stamp).	5-6; 6; 1	47
	Meridian	The practicalities of the LRMC approach would limit durability, for the following reasons: • Estimating LRMC for a particular user would be complex and subjective, as evidenced by the discussions about approaches in UK and Australia • There would be considerable scope for dispute about long-term forecasts that would be	1-2	48

		required in order to estimate LRMC • Potential conflict with the Commerce Commission's approach • Pre-funding assets is inherently unstable as grid users may end up paying in advance for assets that do not eventuate, leading to strong pressure for change • It would create a shortfall that would need to be recovered. The end-result of multi-tiered pricing must be stable and comprehendible for dynamic efficiency to eventuate.		
	MEUG	LRMC-based charges would rely on demand and cost forecasts. Transpower's demand and cost forecasting has been poor and costly. Transpower and other parties could use LRMC-based charges to spread the cost of unjustified over-investment in transmission based on poor forecasts.	1-2	49
		LRMC-based charges present significant design issues. These include ex ante settings that may not reflect true congestion prices, and deciding the fraction to be apportioned to supply and demand. An ex post beneficiaries-pay approach avoids such issues.	3	50
	Nova	A combination LRMC/beneficiaries-pay approach would double the level of complexity, which has the risk of being totally unwieldy, but it may be workable if the simplest forms of each charge were used.	2	51
	Trustpower	TrustPower agrees with the practicality issues identified in the working paper.	4	52
If LRMC-based charging was adopted, what form should the	ENA	The tilted postage stamp method was developed expressly to make an LRMC-based approach practicable. Tilted postage stamp has some distinct advantages over other possible options in terms of the possibility of implementing a transition path. There is no requirement that a package of charges that includes an LRMC-based charge must also contain a beneficiaries-pay based charge for the residual. That is a choice to be made	6-7	53

charge take?		after considering how the charges work together and what incentives they create.		
	Mighty River Power	Mighty River Power previously advocated for a tilted postage stamp approach, but the value of that approach is now considerably diminished due to recent transmission investment.	1	54
	Orion	An LRMC-based charge can only be effective in reducing or deferring network investment over time if the charge provides consistent price signals over time. • Just because LRMC, as calculated using the methods in the working paper, is volatile, does not mean that prices based on LRMC must also be volatile. However, targeted demand response programmes may be effective in dealing with short-term local issues, as identified in Orion's asset management plans • Without a consistent price signal, long-term investments made by consumers as part of consumers' demand response (such as dedicating space in a new house to a storage hot water heater to support choices about how that water is heated) might not be made, and the option value of those investments would be lost • Efficient network investment should not be thought of as much more incremental for pricing purposes, merely because efficient network investment is lumpy and must occur ahead of time.	2-3	55
		Demand response should be co-ordinated. Price signals alone cannot lead to demand response that will effectively reduce or defer network investment. LRMC-based pricing needs to be accompanied by a signal that tells consumers and retailers when a network is constrained. For example, Orion's LRMC-based pricing occurs within the context of active load management.	2	56
		Observed demand is not separate from historical pricing. Whether one considers a point in time maximum demand, or a time series of maximum demands, the level of the demand will differ	2	57

		depending on what the pricing approach has been. Orion estimate that the maximum demands on its network are nearly 20% lower than they would be had consumers not responded at all in various ways to LRMC based price signals. Likewise Orion's forecasts of future demands, no matter what the assumed growth rate, will track lower than they would if there was no demand response. If Orion now took the view that there will be no further growth and no need for further capacity it might conclude (under the methods in the paper) that the LRMC component of our pricing should be zero. But this would, in time, cause a significant reduction in existing demand response that would eventually lead to the need for further investment, which should presumably be signalled via LRMC.		
		In most cases, it is not useful to estimate the many thousands of different LRMCs for different parts of the network each of which could in principle have a different LRMC and have peaks at different times.	3	58
	Orion	Orion outlines its approach to estimating LRAIC, which shows that LRMC-based charging can and has been done with reasonable success. Orion: a. Calculates the capacity of the network as measured by maximum demand (kVA) b. Estimates the replacement cost of various levels of the network, allocating a portion of that replacement cost as load dependent (to reflect that some proportion of most assets is not load dependent, some assets are not load dependent at all, and some assets are provided for resiliency and security and not to meet loading levels) c. Dividing (b) by (a) to get an LRAIC as $ per kVA d. 4. Applies a factor to account for return, depreciation, etc, to produce an annualised LRAIC as dollars per kVA per year. Orion conducts separate calculations for the HV and LV networks. Since consumers on the LV network must also use the HV network, those consumers' LRAIC is the sum of the HV and LV values. Calculated LRACs are the key drivers of the cost reflective peak components of Orion's	3-4	59

		pricing, which are applied to coincident peak demands.		
	PwC for 22 EDBs	While MIC is deemed to generate the most efficient prices, it may be difficult to apply in practice and is likely to result in volatile prices over time. PwC therefore prefers more simple approaches like LRIC, which is likely to yield more stable prices over time, without the same degree of complexity.	4	60
		When considering the form of LRMC, the Authority should use and expand on previous experience generated by the Electricity Commission and TPAG, to define options in detail and consider the pros and cons of each. In particular, the Commission and TPAG previously considered simple LRMC approaches like tilted postage stamp charges which could be adopted.	4	61
		PwC would not support a hybrid LRMC/SPD charge as it would be complex and lead to double counting of liability for charges. The costs could outweigh the benefits. A residual charge based on RCPD and RCPI would be appropriate. If an LRMC/SPD charge is used (which PwC does not support), PwC suggests that LRMC could be marked-up to recover total costs, similar to Ramsey pricing. This could be based on willingness to pay considerations, potentially using a stripped-back SPD approach, run every 2-3 years.	4-5	62
		Zonal pricing, while more contentious, may be more practical than nodal pricing, resulting in smoothed charges and a better reflection of operational conditions on the grid. PwC supports further investigation of the zonal approach to LRMC used in the UK. Zones could be developed to minimise local loop-flow effects and could draw on previous Electricity Commission, TPAG, and TPM review work.	5	63
		While peak congestion is likely to be a better measure of capacity utilisation than peak demand, peak demand will be easier to apply and is likely to send clearer pricing messages. Peak times	5	64

		will often align with congestion periods, except in relation to short to medium term factors that are unlikely to affect the long-run costs of investing in capacity. Peak demand is already used and well-understood and is effective at signalling transmission peaks to distributors.		
		PwC prefers a capacity-related (demand) charge to an energy-related (per MWh) charge. Capacity-based charges are dynamically efficient as they reduce the long-run cost of providing capacity on the network by placing downward pressure on peak usage. Energy charges would reduce overall usage and be aligned to existing transmission charges but would be poor at reducing use at peak times.	5-6	65
		LRMC charges should be levied on grid users that exacerbate future investments in capacity. This includes generators (e.g. for usage of the HVDC or Wairakei ring etc.), direct connect consumers, and distributors. The allocation between generation and load is likely to be the most contentious issue, as found in the UK and Ireland.	6	66
		PwC agrees with the working paper's proposal to use Transpower's ten year expenditure and demand forecasts. This avoids unnecessary work and cost in creating new forecasts. It also defines a reasonable time period over which LRMC can reasonably be assessed. While 10 years is a short period for assessing further capacity upgrades, to go beyond Transpower's own forecasts is likely to increase concerns regarding subjectivity and forecast error. Concerns about forecasting accuracy are overplayed in the working paper and need to be tempered against simplicity and cohesion of tariff design.	6	67
	Ringa Matau	An ideal transmission pricing regime would: • Signal short-run opportunity cost through nodal prices, and recover revenue through loss and constraint surplus • Signal LRMC through a capacity charge	1-2	68

		• Recover contract payments for commitments made prior to investment • Recover the residual through a postage stamp rate that minimises disincentives to use existing assets. Under that regime LRMC does not need to be continuously variable or complex to calculate the charge and should only change as costs change over time. Tilted postage stamp in particular would compare favourably to beneficiaries-pay approach under any genuinely objective like for like comparison. Note that Ringa Matau does not favour significant change to the status quo.		
	Transpower	Complex, fine-grained, unstable pricing is unlikely to be worthwhile due to information challenges and forecasting uncertainties. If LRMC is adopted, Transpower would prefer a simpler option like a revenue-adequate tilted postage stamp charge with no residual.	1	69
Comments specifically on beneficiaries-pay charging or SPD	Mighty River Power	Mighty River Power is of the view that SPD-based charges will not result in dynamic efficiency benefits and may lead to material static inefficiencies. Mighty River Power is of the view that status quo arrangements achieve a high level of static efficiency and that Transpower's review will resolve inefficiencies in the HVDC charge. The Authority needs to consider whether significant change is warranted, given static efficiency trade-offs.	2	70
	PwC for 22 EDBs	The SPD-based approach produces perverse outcomes. SPD disincentivises usage of new investments by overcharging for these assets. This is highlighted in the preliminary modelling of SPD-based options, which suggests that the balance of transmission charges will fall on Auckland and Northland load after recent grid upgrades. This increase in charges disincentivises use of this new capacity, potentially increasing prices for all users and compromising the business case for investing in new capacity.	7	71
	Ringa Matau	The Authority has not demonstrated that beneficiaries-pay has net benefits compared with the	3	72

		status quo. By "beneficiaries-pay", the Authority really means its preferred option. Beneficiaries-pay should not continue to be treated as a counterfactual to any alternative.		
	Trustpower	Any TPM needs to mimic a market-based model. GIT-based charges would ensure consistency between the models used to make investment and calculate charges. It would not compromise static efficiency. Consistency between the approach used in transmission investment decision-making and in recovering the costs of those assets would be most likely to maximise dynamic efficiency. If the Authority puts weight on durability as it relates to the fairness of the charge allocation, then the model could be adapted to recover charges based on short-term rather than long-term forecasts of benefit. This would reduce uncertainty but also reduce dynamic efficiency.	5-6	73
Other	Contact	The allocation of HVDC costs should change from South Island generators to load, to reduce historic inefficiencies with the HVDC charging methodology and to alleviate the known inefficiencies in the current HAMI-based charging method.	1	74
		The working paper is an academic exercise. Investment in transmission is unlikely to be required for some time, because energy demand is flat for the foreseeable future and Transpower has completed its significant capital expenditure projects.	2	75