Locational Price Risk Issues Paper – Submission summary

1. Submission summary

1.1.1 The following section summarises submitters' responses to the specific questions from the Issues Paper.

1.1.2 Twelve submissions on the Issues Paper were received. The submitters were:

Supply side (including retailers)	Lines	Demand side	Other
• Contact Energy • Genesis Power • King Country Energy • Meridian Energy • Mighty River Power • TrustPower	• Transpower • Vector	• Major Electricity Users' Group (MEUG) • Norske Skog • Rio Tinto Alcan	• Energy Link • NZIER (as part of Rio Tinto Alcan submission)

1.1.3 Some parties also commented on locational price risk in their submissions on the Market Design Review Options Paper. These comments were more general than the submissions made on the Locational Price Risk Issues Paper. This summary of submissions notes any additional comments in the Market Design Review submissions that are relevant to locational price risk.

1.2 Question 1 – Do you agree with the conceptual approach to defining locational prices discussed in section 2.2?

View in the Issues Paper

1.2.1 The Issues Paper defined locational prices as the price differences arising from the locational pricing of losses and

constraints. Locational prices reflect deviations of the actual prices at each node from a neutral reference price.

Agree

1.2.2 Seven respondents agreed with the conceptual approach to defining locational prices. King Country Energy, TrustPower, Contact, MEUG, Genesis, Mighty River Power and Meridian all supported the conceptual approach.

Disagree

1.2.3 Energy Link submitted that the definition of locational prices in the Issues Paper was vague and while it had some uses, they disagreed with how it was used in the context of hedging locational price risk.

Other comments

1.2.4 Transpower submitted that the conceptual approach was understandable, but that the paper used “locational price” to refer to a price difference, when the term “locational prices” was already in use to mean the actual prices at the locations. Transpower argued that it would create less confusion if another term that was not already in use was chosen to express this concept.

No comment

1.2.5 Norske Skog, Vector and Rio Tinto Alcan had no comment on question 1.

Analysis – Question 1

1.2.6 The Commission has reviewed the comments made by respondents and believes the conceptual approach to defining locational prices was well understood by most parties. Therefore, the Commission has decided to retain the conceptual approach discussed in the Issues Paper.

1.2.7 The Commission acknowledges that the term “locational prices” can be used to mean the actual prices at the locations and will consider whether an alternative term is required for future discussions on the topic.

1.3 Question 2 – Do you agree with the approaches to defining locational price risk discussed in section 2.3?

View in the Issues Paper

1.3.1 Locational price risk refers to unpredictable movements in locational prices, which are largely driven by the occurrence of line constraints. The analysis in the Issues Paper assumes all variations in locational prices are unexpected. Locational prices are largely driven by transmission constraints that reflect many complex and uncertain aspects of the electricity system; however, locational prices are also affected by transmission losses, which are more predictable.

1.3.2 A broader approach for locational price risk could take into account purchaser concerns about generators in a local region “gaming the market” when local line constraints are binding.

Agree

1.3.3 Six respondents agreed with the approaches to defining locational price risk.

1.3.4 Genesis was generally happy with the approach, but they weren’t convinced that generator-retailer ‘gaming’ was a serious problem or one on which the LRA initiative should be based.

1.3.5 MEUG felt the discussion in section 2.3 was useful background. However, they suggested that the phrase “locational price risk” be changed to “locational price uncertainty”, because in addition to price risks faced by consumers, locational price uncertainty took into account the extent of investment in

generation, transmission and demand-side response, which reduces uncertainty.

1.3.6 King Country Energy, TrustPower, Contact and Meridian agreed unequivocally.

Disagree

1.3.7 Four submitters disagreed with the Commission's approaches to defining locational price risk.

1.3.8 Transpower submitted that the definition should exclude transmission losses which are more predictable than constraints. Transpower also argued that while all participants are affected by losses, LRAs only allocate this value to participants receiving LRAs.

1.3.9 Energy Link believed that the "vague" definition of locational prices lead to a vague definition of locational price risk. In addition, Energy Link submitted that the Issues Paper assumed that constraints were the root cause of locational price risk, but changes in the overall direction of power flows from south to north also substantially reverse the direction of price differences on the grid.

1.3.10 Rio Tinto Alcan submitted that the Commission inappropriately defined locational price risk. Rio Tinto Alcan argued that price risk does not strictly result from unpredictable movements in prices, but rather is the exposure faced by a firm if it fails to, or cannot, manage the impact of price changes (whether unpredictable or not) on profits.

1.3.11 Mighty River Power stated that locational price risk is caused by the unpredictability of average price over long periods rather than volatility of half-hourly nodal prices, because volatility of half-hourly nodal prices will only create short to medium term risks and most location price effects are highly predictable on average.

No comment

1.3.12 Norske Skog and Vector had no comment on question 2.

Analysis – Question 2

1.3.13 The Commission considers that while losses are more predictable than constraints, losses are not necessarily completely predictable. In addition, the Commission assumed that much of the predictability of the impact of losses on locational prices would be reflected in the average locational price, which removes it from the locational price risk measure. In deciding on the next steps the Commission will consider undertaking detailed analysis on the predictability and magnitude of any volatility of losses.

1.3.14 Rio Tinto Alcan's submission appears to be seeking a measure of uncovered risk. The Commission sought to measure gross risk (i.e. both covered and uncovered risk). The Commission believes this provides a robust basis for analysis. This is because it does not depend on measures participants have taken to cover their risk, which of course could change if transmission hedges were introduced. In any case, the Commission does not have, and is unlikely to be able to obtain, sufficient information to measure uncovered risk.

1.3.15 Mighty River Power submitted that locational price risk should be measured over longer time periods. The Commission has measured locational price risk over shorter time periods because some short-term price changes are highly unpredictable and can be of a magnitude that firms may find difficult to manage even if partially hedged. Different parties will have different horizons for which they are most concerned about risk based on their risk profiles. To account for this the Commission is considering both trading period and monthly models.

1.3.16 The Commission considers that generator-retailer "gaming" is an issue that may require further analysis, but notes that "gaming" was only considered as part of the broader definition

of locational price risk. The analysis of locational price risk in the Issues Paper did not capture or measure this.

1.4 Question 3 – Do you agree with the Commission's problem definition, as outlined in sections 2.5 and 2.6? If not please explain the source of the problem from your perspective.

View in the Issues Paper

1.4.1 A poorly functioning transmission risk management market creates barriers to entry to the retail market, inhibits development of the wider risk contracts market, and encourages inefficient location decisions for retailers and large consumers.

1.4.2 The primary reason for the lack of a market solution is that parties supplying transmission risk management contracts would be vulnerable to the actions of one or two parties that could push spot market prices around. Giving guaranteed access to loss and constraint rentals would mitigate these problems, but doing so is a policy decision.

Agree

1.4.3 Five submitters agreed with the Commission's problem definition.

1.4.4 King Country Energy stated that the problem definition was clear and cogent.

1.4.5 TrustPower agreed with the problem definition and stated that reallocating rentals directly to purchasers using LRAs was logical given that the ultimate source of rentals is the mathematical treatment used in SPD. TrustPower believed that expecting the market to produce a financial instrument such as locational hedges would be unstable and complex.

1.4.6 Contact agreed the problem definition broadly covered the issues, but it failed to mention call contracts on local/embedded generation or load management that can be made to limit some of the incremental locational risk by a retailer.

1.4.7 Genesis agreed that the lack of transmission hedges affects a retailer's ability to seek load in regions where it does not have generation and where there are line constraints.

1.4.8 Vector supported the Commission actively progressing the development of transmission hedging mechanisms because the absence of a secure transmission hedging mechanism was adversely affecting the competitiveness of the wholesale and retail electricity market.

Disagree

1.4.9 Seven respondents disagreed with the Commission's problem definition.

1.4.10 Transpower submitted that the discussion in section 2.5 exaggerates the problem. They argued that the reason for the lack of development of a voluntary solution is that there has been no agreement on how the loss and constraint rentals might be made available to those who could implement a voluntary solution.

1.4.11 Mighty River Power submitted that the Commission had overstated the extent to which locational price risk is a barrier to retail competition. Mighty River Power believed that network access issues and regulatory compliance costs were much greater barriers to retail competition than locational price risk.

1.4.12 Energy Link questioned whether the assumption that location factor risk is a major barrier to entry warranted the attention that it was been given. Energy Link argued that there are many other factors that come into play, including potentially having to hedge with competitors, and the characteristics of certain plant (especially wind farms). Energy Link believed that the Commission had not produced any evidence that the LRA

initiative will reduce regional barriers to entry in the retail electricity market. Overall, Energy Link thought the Issues Paper failed to revisit the fundamental assumption that LRAs are actually necessary.

1.4.13 Rio Tinto Alcan submitted that it wasn't clear from the Commission's work to date whether LRAs were appropriate or would solve the competition problem the Commission believes exists. Rio Tinto Alcan felt the Commission needed to be more rigorous in its problem definition, identification of potential reasons for the problem's existence, and assessment of their scale. Rio Tinto Alcan also requested that the Commission do more analysis on the importance of LPR in forming a barrier to retail electricity competition. Rio Tinto Alcan also submitted in their Market Design Review submission that vertical integration may be inhibiting development of the hedge market.

1.4.14 Meridian submitted that the problem definition was not adequate for progressing the work further and wanted the Commission to undertake more analysis to thoroughly define the problem.

1.4.15 MEUG recommended that instead of discussing why there was a need for transmission hedges, the problem definition should ask what options there are to allow parties to better manage constraint risks. MEUG submitted that LRAs were just one possible solution, with FTRs and hybrid FTRs being other options.

1.4.16 Norske Skog argued that while loss rentals belong to consumers, constraint rentals arise due to the grid and therefore belong to the grid owner, rather than consumers.

Analysis – Question 3

1.4.17 The Commission believes this question considers two distinct issues – the need for transmission hedges (section 2.5) and the reasons for the lack of development of a solution by the market (section 2.6). That is, section 2.5 deals with the costs of having

no transmission hedge instrument, while it is section 2.6 that discusses the problem definition.

1.4.18 Transpower was the only respondent who submitted any issues with the problem definition in section 2.6. Transpower argued that the reason for the lack of development of a voluntary solution was that there has been no agreement on how the rentals might be made available to those who implement the solution. The Commission considers that while Transpower's suggestion may be one of the reasons, it is unlikely to be the only reason.

1.4.19 The other submissions responded to the Commission's assessment of the need for transmission hedges (section 2.5). The Commission acknowledges that the lack of an effective locational price hedge is only one of a number of sources of barriers to entry into the retail market, but maintains that an effective hedge market is critical to retail competition. The Commission also notes that while the Issues Paper emphasised the impact of transmission hedges on retail competition this is only one of the benefits that will be taken into account in the cost-benefit analysis.

1.5 Question 4 – Do you agree with the Commission's decision to exclude hybrid FTRs from the forthcoming cost-benefit analysis? Do you agree hybrid FTRs are not a reasonably practicable option to LRAs?

View in the Issues Paper

1.5.1 The option of hybrid FTRs was discussed in detail in the HMDSG consultation paper in 2006. The Commission has considered that analysis, and industry submissions on it, and decided not to further evaluate FTRs as a viable option at this stage. Reducing the number of market nodes on the transmission grid, or over-building the grid, are other options that are outside the scope of this project.

Agree

1.5.2 Five submitters provided general support for the Commission's decision to exclude hybrid FTRs from the forthcoming cost-benefit analysis.

1.5.3 King Country Energy agreed with the Commission's decision, and added that the LRA approach appeared to present the simplest way of dealing with the issues.

1.5.4 Contact submitted that it was prudent not to include FTRs and to work towards a simpler LRA scheme, particularly as Transpower's attempt to introduce FTRs in 1998 was not successful. However, they added that in the future the Commission could re-assess whether FTRs would be a suitable initiative and LRAs could be used as an incremental step towards FTRs.

1.5.5 Mighty River Power also agreed with the Commission's decision and added that they would not support any work being done on the development of FTRs. Mighty River Power considered the status quo to be superior to FTRs.

1.5.6 TrustPower and Genesis provided unqualified support for the Commission's view.

Disagree

1.5.7 Transpower, Meridian, Vector, Rio Tinto Alcan, Norske Skog and MEUG all believed that FTRs should be included as part of the analysis.

1.5.8 Transpower submitted that any consideration of transmission hedge products should include FTRs because they have significant theoretical advantages. Transpower noted that FTRs are not just a means by which to transfer wealth, but a mechanism that allows participants to value their risks. Transpower was also concerned about the lack of international experience with LRAs, while there was international practical

experience with FTRs, as well as significant academic attention.

1.5.9 Meridian argued that the Commission needed to further develop the case for management of locational price risk before an assessment of LRAs versus FTRs could be made. Meridian submitted that FTRs should be included in a cost-benefit analysis of all locational price risk management options.

1.5.10 Vector believed that a comprehensive cost-benefit analysis of all the options (including zonal pricing and FTRs) was needed to ensure the best option is implemented. Vector would welcome consideration of zonal pricing because it could offer potential benefits from both a risk management and retail competition perspective.

1.5.11 Rio Tinto Alcan considered that the Commission's approach to consulting on LRAs whilst making a decision not to develop FTRs was inconsistent and likely to lead to a suboptimal outcome. Rio Tinto Alcan believed that the Commission had not provided adequate reasons for not proceeding further with FTRs and felt that while FTRs were designed to be compatible with the nodal pricing system, LRAs were not.

1.5.12 Norske Skog argued that the flaws in Transpower's 2001 FTR proposal could be fixed and that FTRs would then be an acceptable instrument for managing locational price risk. Norske Skog also supported a comparison of zonal and nodal pricing in the New Zealand context prior to any decisions being made regarding allocation of loss and constraint rentals.

1.5.13 MEUG submitted that the Commission was statutorily required to consider all feasible options. MEUG also suggested that another option that should be considered was altering the definition of connection assets to shrink interconnection assets. This would increase rentals accruing to connection assets and reduce the residual interconnection rentals.

No comment

1.5.14 Energy Link had no comment on question 4.

Analysis – Question 4

1.5.15 Submissions on the Issues Paper have identified a split in opinion as to whether FTRs should be included in further analysis of options for managing locational price risk.

1.5.16 While the pragmatic approach is to restrict further analysis to LRAs, the Commission does note that it is required to consider all options. Therefore, the Commission has decided to include FTRs in the further work on transmission hedges. The Commission will include at least one LRA option and one FTR option in the cost-benefit analysis. The Commission will also consider whether there are any other practicable options for addressing locational price risk, such as zonal pricing.

1.6 Question 5 – Do you agree with the assessment outlined in sections 3.2 and 3.3 of the extent to which rentals are passed through to consumers? Is it sufficient to rely on competition, including that arising from LRAs, to promote pass-through of LRAs to consumers?

View in the Issues Paper

1.6.1 Lines companies vary in their approach to rental allocation, with some passing a percentage, or all, through to retailers, while others retain all of the rentals they receive.

1.6.2 Major retailers were surveyed to ascertain whether they passed rentals received from lines companies on to end users. All major retailer respondents but one revealed that they did not directly pass through rentals, but the magnitude of probable future rentals was, where possible, considered when prices were set.

Agree

1.6.3 Six respondents agreed with the Commission's assessment of the extent to which rentals are passed through to consumers.

1.6.4 Meridian considered it was sufficient to rely on competition to promote pass-through of LRAs to consumers. However, Meridian also noted that it was important that this should not be interpreted as a direct pass-through of LRA rentals, or that the rentals would necessarily be passed through quickly because in many cases there will be fixed-term contracts.

1.6.5 King Country Energy submitted that in the first instance the assessment should be based on the expectation that rentals are passed through to customers. Only if there was evidence of sequestering of LRAs should further action be contemplated.

1.6.6 Genesis believed that relying on competition was sufficient, and that it was the only feasible way to pass cost savings through to consumers.

1.6.7 Contact agreed that competition is the best way to have rentals passed onto consumers.

1.6.8 TrustPower agreed with the assessment of the extent to which rentals are passed through to consumers, but didn't believe that competition was sufficient to promote pass-through of rentals under the current rentals regime. This was because of the number of hands through which rentals pass, the varied and indirect methods by which each pass-through is (or is not) implemented, and because lines companies are not subject to any direct competition.

1.6.9 MEUG supported the overall description, but requested that more information be published such as actual payments to each of the connection, HVDC and interconnection baskets each month.

Disagree

1.6.10 Mighty River Power disagreed with the assessment of the extent to which rentals are passed through to consumers under current arrangements. They expect less rentals will be passed through by small trust owned Electricity Distribution Businesses (EDBs) under the Commerce Amendment Bill because this subset of EDBs will be able to increase their revenues by retaining rentals, without having to change their line charges. Mighty River Power agreed that it was sufficient to rely on competition to promote pass-through of LRAs, because there are no practical alternatives.

Other comments

1.6.11 Rio Tinto Alcan, Transpower and Norske Skog made some comments on rental pass-through, but did not indicate whether they agreed or disagreed with the Commission's assessment of the extent to which rentals are passed through to consumers.

1.6.12 NZIER submitted on behalf of Rio Tinto Alcan that the extent of rental pass-through is central to the benefit or not of LRAs. NZIER noted that hypothetically retailers could pass on rentals through lower prices, but whether this happened in practice would depend on the degree of competition in their respective markets. NZIER felt it was unclear whether competition was currently sufficient to promote pass-through of rentals and were unsure whether LRAs would enhance competition.

1.6.13 Transpower submitted that this was an issue best addressed by the Market Design Review.

1.6.14 Norske Skog was concerned that notional rentals only approximate actual rents in practice. Norkse Skog wanted an investigation into this matter.

No comment

1.6.15 Vector and Energy Link had no comment on question 5.

Analysis – Question 5

1.6.16 The Commission acknowledges Mighty River Power's comments on the Commerce Amendment Act. The Commission considers that under the status quo Mighty River Power's comments may be valid, although this will depend on how small trust-owned EDBs respond in practice to no longer being subject to price control thresholds. However, with the introduction of LRAs the problem is bypassed.

1.6.17 The Commission has decided to retain the assessment of the extent of rental pass-through outlined in the Issues Paper. The Commission will also request that Transpower provide information on actual payments to each of the connection, HVDC and interconnection baskets for each month.

1.7 Question 6 – Do you agree that the simple LRA model provides a reasonable basis for understanding the potential impact of LRAs on the market? Do you agree that further analysis, such as selecting among alternative LRA models and conducting the cost-benefit analysis, is meaningful without the use of participation factors? If participation factors are unavailable for implementing an LRA regime, would that alter your view on whether the LRA approach should be further developed or not?

View in the Issues Paper

1.7.1 Adopting a simple model may provide an acceptable level of accuracy for allocating rentals and for addressing concerns about locational price risk and barriers to retail market entry.

1.7.2 The general form of the LRA method uses differences in participation factors to allocate rentals, rather than price differences. This approach is more accurate as it identifies

separate pools for each constraint and allocates each pool only to the nodes affected by the relevant constraint.

1.7.3 Participation factors were not available for the simulations in this paper, so only the simple model has been assessed. The simple model appears sufficient for identifying in broad terms the potential impact on market variables.

Agree

1.7.4 Seven respondents agreed that the simple LRA model provided a reasonable starting point for understanding the potential impact of LRAs on the market. Of these seven respondents, some submitted that the simple LRA methodology was preferred to the participation factor methodology, while other respondents felt that participation factors should ideally be used in the next phase.

1.7.5 Contact submitted that the simple LRA methodology was preferred to the participation factor methodology. Contact argued that for LRAs to be effective participants needed to be able to understand the benefits of implementing LRAs so that decisions could be made in real time and with confidence. They added that it would be useful to compare the simple model outputs to using participation factors, but if this was not technically feasible the cost-benefit analysis should proceed regardless.

1.7.6 Meridian agreed that the simple LRA model provides a reasonable basis for understanding the potential impact of LRAs on the market. Meridian considered that using a participation factor model would end up the equivalent of running SPD without transmission constraints, thus implicitly challenging the nodal pricing model. Meridian argued that if this was the actual objective there may more direct and efficient ways of achieving it.

1.7.7 TrustPower agreed that the LRA approach should be further developed regardless of whether participation factors were available or not. They noted that while participation factors are

theoretically more robust, they were complex to determine and currently unknown in their effect.

1.7.8 Genesis considered that the use of participation factors was not warranted at this stage, but believed that the use or otherwise of participation factors should be part of the cost-benefit analysis. Genesis's preliminary view is that the simple LRA approach provides most of the benefits of an LRA model using participation factors, as well as having the advantage of being more easily understood and forecasted by purchasers.

1.7.9 Mighty River Power considered that the simple LRA model provided a good starting point. They submitted that further analysis should focus on selecting a methodology that best allocates rentals fairly back to purchasers, which may or may not be with participation factors.

1.7.10 King Country Energy thought the simple model provided a good picture of the potential outcomes from LRAs. King Country Energy also submitted that participation factors should ideally be used in the next phase, but if this was not feasible other options should be considered.

1.7.11 Vector welcomed the work done on simulating the effect of the simple LRA model. Vector supported the development and testing of other models.

Disagree

1.7.12 Norske Skog, MEUG and Transpower disagreed that the simple model provides a reasonable basis for understanding the potential impact of LRAs on the market.

1.7.13 Norske Skog argued that without participation factors the Commission could not work out the rentals arising from loop constraints and therefore LRAs could not be implemented without the use of participation factors. Norske Skog also submitted that Transpower's past excuses of being unable to provide participation factors due to problems with their software

vendor were unjustified given the very large amount of consumers funds invested in the new version of SPD.

1.7.14 MEUG submitted that the simple model was only sufficient for a very high level view. MEUG argued that further development of LRAs without participation factors could easily lead to wasted work, and so the Commission should wait for participation factors to be available before doing further work.

1.7.15 Transpower argued that the potential impact of LRAs cannot be assessed from the analysis. The analysis only showed the effect of wealth transfers and did not indicate how the reallocation of rentals would stimulate competition. Further analysis including participation factors would merely refine the level of wealth transfer.

No comment

1.7.16 Energy Link and Rio Tinto Alcan had no comment on question 6.

Analysis – Question 6

1.7.17 The Commission acknowledges that there are diverse views on whether the simple LRA model provides a reasonable basis for understanding the potential impact of LRAs on the market, and on the need or otherwise for participation factors in further analysis.

1.7.18 The Commission is currently investigating the feasibility of using participation factors. The Commission will consider LRA models using participation factors if it is practicable to do so – from both a computational and a cost perspective.

1.7.19 In response to Contact's submission that the simple LRA model was preferable so that participants' decisions could be made in real time and with confidence, the Commission notes that if the LRA model is more understandable or predictable it will have a greater impact on effective marginal prices.

1.8 Question 7 – Do you agree with the chosen simulation period, covering 2002-2006 inclusive? If not, please state why not and alternative simulation periods.

View in the Issues Paper

1.8.1 The simulations examine different LRA options using historical electricity market data for the five-year period from 2002-2006. While a longer timer period (eg 10 years) may have been preferable, the 2002-2006 time period was chosen because this is the longest period for which consistent data is available and because the relevant electricity market rules are consistent over that period.

Agree

1.8.2 Three respondents agreed with the chosen simulation period.

1.8.3 TrustPower submitted that the 2002-2006 simulation period was suitable for a preliminary evaluation of the LRA proposal. However, they recommended that 2007 and 2008 data be included as soon as it is available (even if in a provisional form).

1.8.4 Genesis and Mighty River Power agreed unequivocally.

Disagree

1.8.5 King Country Energy, Contact, MEUG and Meridian disagreed with the chosen simulation period.

1.8.6 King Country Energy submitted that the simulation period must reflect the latest data available, so should include 2007 data.

1.8.7 Contact wanted the simulation period extended to include the winter of 2008 because there had been market situations in the winter of 2008 that had not previously been seen.

1.8.8 MEUG submitted that further work should include 2007 and 2008 if the final data is available.

1.8.9 Meridian submitted that the simulation should include winter 2008 data.

Other comments

1.8.10 Transpower submitted that the simulation period was inconsequential relative to getting the analysis right.

No comment

1.8.11 Norske Skog, Vector, Energy Link and Rio Tinto Alcan had no comment on question 7.

Analysis – Question 7

1.8.12 Ideally, the Commission would like to include 2007 and winter 2008 in any future simulations, although it notes that this data is not reconciled. In addition, the Commission will consider the nature of further analysis in its decisions on the next steps.

1.9 Question 8 – Are there other areas or issues of interest that future simulations should examine? If yes, please state why and describe those areas/issues in sufficient detail for the Commission to examine.

View in the Issues Paper

1.9.1 The 2002-2006 period captures a year that was sufficiently dry to require electricity conservation measures – 2003 – as well as relatively wet and "normal" years. As well as capturing annual variation, this timeframe is also sufficient to capture variability at a monthly and trading period level.

1.9.2 As well as examining the impact of LRAs at a national level, the analysis also considers the impact of LRAs on areas and nodes that experience significant price volatility. To illustrate how the regime might alter risks for new entrant retailers, we also calculate locational price risk for three hypothetical retailers in different locations.

Yes

1.9.3 Five submitters wanted future simulations to examine other areas or issues.

1.9.4 Meridian recommended that the simulations should include additional modelling around possible outcomes of the outage of Pole 1 of the HVDC over the next few years, and consideration of completion of future investment.

1.9.5 Genesis submitted that future analysis should focus on whether a single New Zealand model is more or less efficient than a two island model. In particular, Genesis was interested in seeing the differences in rental allocations between the North Island and South Island when the single New Zealand model is compared to the two island model.

1.9.6 Vector recommended that the Commission use game theory approaches to test the circumstances under which LRAs, FTRs and zonal pricing result in benefits. Vector noted that the disadvantage of simulations was that they assumed behaviour was static, when the introduction of a mechanism such as LRAs was likely to change the behaviour of market participants.

1.9.7 TrustPower wanted a summary by node of the simulated LRA per kWh which would accrue to any retailer at that node. This would enable existing and new retailers to assess the implications of any market share accordingly.

1.9.8 MEUG suggested that an estimate of how new grid investment (that has already been approved) might affect the results based on 2002-2006 data would be useful. In addition, MEUG thought it would be interesting to analyse how the new generation

project considered in the SOO might change the frequency and significance of binding constraints.

Disagree

1.9.9 Transpower submitted that the model is oversimplified and produces outputs in terms of wealth transfer, which is not the correct way to evaluate the issue. Transpower believed further extension of the analysis would not add anything.

No comment

1.9.10 King Country Energy, Norske Skog, Energy Link, Rio Tinto Alcan, Contact and Mighty River Power had no comment on question 8.

Analysis – Question 8

1.9.11 The Commission believes it would be beneficial to include modelling of the possible outcomes of the outage of Pole 1 of the HVDC and new grid investment.

1.9.12 The Commission acknowledges Genesis's comments that future analysis should focus on the comparison of a single New Zealand model to a two island model. A model with a North Island/South Island split is one of the models that the Commission would investigate if it decides to further investigate LRAs.

1.9.13 The Commission is not convinced that any benefits from using game theory approaches will outweigh the significant costs and difficulty of implementing these approaches. The Commission believes that simulations remain the best methodology to use.

1.9.14 The Commission is happy to provide the information requested by TrustPower subject to it undertaking further work on LRAs.

1.9.15 The Commission considers that Transpower's submission relates more to the LRA instrument rather than the simulation

model. A decision on any transmission hedge will require a cost-benefit analysis.

1.10 Question 9 – Do you agree with the approaches to measuring locational prices? If not, please state alternative locational price measures that should be considered.

View in the Issues Paper

1.10.1 The locational price for a node in any trading period is measured by the following price difference (PD):

PD for a node = nodal price – LWAP

1.10.2 A key consideration for many spot market purchasers is their inability to obtain hedges away from key reference nodes. It is proposed in any subsequent assessment of the LRA model to measure how well each LRA method performs in this regard. To do this, each node is assigned to a benchmark node. Under this approach locational prices in any trading period are:

PD for a node = nodal price – price of assigned node

Agree

1.10.3 Four respondents agreed with the approaches to measuring locational prices. TrustPower, Transpower and Genesis agreed and provided no additional comment. Contact also agreed with the approaches to measuring locational prices, but noted that it would be useful to have a spreadsheet version of the detailed results as part of the detailed options paper.

Disagree

1.10.4 Mighty River Power submitted that location factors have traditionally been the accepted way of measuring locational price differences.

No comment

1.10.5 King Country Energy, Norske Skog, Vector, Energy Link, MEUG, Meridian and Rio Tinto Alcan had no comment on question 9.

Analysis – Question 9

1.10.6 Mighty River Power was the only submitter that had any issue with the approaches to measuring locational prices outlined in the Issues Paper. The Commission considers that locational factors (as suggested by Mighty River Power) are more appropriate for measuring locational prices over a longer timeframe than what is being considered here. Therefore, the Commission has retained the approaches to measuring locational prices outline in the Issues Paper.

1.10.7 The Commission is prepared to provide the detailed results Contact has requested, but this may come at an additional cost.

1.11 Question 10 – Are there other locational price risk measures you think should be used in this analysis?

View in the Issues Paper

1.11.1 Locational price risk can be measured using different variables. One approach is to measure the standard deviation of prices, which captures volatility around the average price. Another measure is value-at-risk, which measures the impact on a purchaser's electricity costs of the worst pricing outcomes (for example, the highest 10% of electricity expenditures during a period of time).

Yes

1.11.2 MEUG and Mighty River Power submitted that other locational price risk measures should be used in the analysis.

1.11.3 MEUG submitted that a measure of how the standard deviation and value-at-risk have trended over time might be useful. MEUG thought that in some areas the measures may have declined over time due to the market maturing, new grid investment, or local generation.

1.11.4 Mighty River Power submitted that locational price risk should be measured by the level of unpredictability of prices at nodes over time, rather than as short-term price volatility.

No

1.11.5 TrustPower, Contact, Transpower, Meridian and Genesis submitted that there were no other locational price risk measures that should be used in this analysis.

No comment

1.11.6 King Country Energy, Norske Skog, Vector, Energy Link and Rio Tinto Alcan had no comment on question 10.

Analysis – Question 10

1.11.7 The Commission considers that the standard deviation and the locational value-at-risk (LVAR) measures are the most appropriate measures for measuring locational price risk. However, in addition to calculating these measures over various time periods, the Commission considers that it may also be useful to show how they have trended over time (as requested by MEUG).

1.12 Question 11 – Do you agree that the analysis of effective marginal prices should be based on the assumption that purchasers never have and/or never exercise market power? If not, please provide a practicable method for estimating effective marginal prices for price movers for consideration by the Commission.

View in the Issues Paper

1.12.1 The simulations of effective marginal prices are based on the assumption purchasers never have and/or never exercise market power. This approach has been adopted because estimating effective marginal prices for price-movers is much more complicated than for price takers. Independent empirical analysis undertaken so far suggests that evidence purchasers exercise market power in the wholesale electricity market is weak.

Agree

1.12.2 Six respondents agreed that the analysis of effective marginal prices should be based on the assumption that purchasers never have and/or never exercise market power. TrustPower, Contact and Meridian agreed unequivocally, while Transpower, MEUG and King Country Energy had some additional comments.

1.12.3 Transpower submitted that basing the analysis of effective marginal prices on the assumption that purchasers never have and/or never exercise market power is a reasonable starting assumption.

1.12.4 MEUG submitted that for the purpose of the initial analysis of LRAs, the assumptions in the Issues Paper were appropriate, but if more detailed analysis of LRAs is proposed this may be an area where further work is warranted.

1.12.5 King Country Energy submitted that basing the analysis of effective marginal prices on the assumption that purchasers never have and/or never exercise market power is correct for practical purposes. King Country Energy also noted in their submission that rather than LRAs reducing price signals by lowering effective market prices it could be argued that the excess rental obtained has overstated real pricing. They argue there is a gross inequity in the current smearing of constraint rentals across all parties instead of limiting them to those who paid the excess charge.

Disagree

1.12.6 Mighty River Power and Rio Tinto Alcan disagreed that the analysis of effective marginal prices should be based on the assumption that purchasers never have and/or never exercise market power.

1.12.7 Mighty River Power argued that if purchaser market power is an important factor in determining whether LRAs should be introduced, then the Commission needs to undertake analysis to determine the extent to which it exists.

1.12.8 NZIER submitted on behalf of Rio Tinto Alcan that the Commission's consideration of market power is contradictory. The Commission assumes no market power exists in the analysis of effective marginal prices, yet includes the benefit of offsetting second order effects in its consideration of the benefits of LRAs. NZIER submitted that more analysis was required on this matter.

Other comments

1.12.9 In their submission on the Market Design Review, TrustPower submitted that while the main argument against returning the excess rentals to purchasers is that the marginal cost signal is distorted, they understood that the large direct connect customers are more responsive than any other market segment to such signals. This is despite direct connect customers presently receiving their share of the rental allocation directly. If

allocation to loads was truly a market distortion then direct connect customers should not be receiving the rentals under the present allocation methodology.

No comment

1.12.10 Genesis, Norske Skog, Vector and Energy Link had no comment on question 11.

Analysis – Question 11

1.12.11 The Commission appreciates the concerns raised by NZIER. However, the Commission notes that by assuming purchasers never have and/or never exercise market power, the Commission is assuming the worst possible outcome for the impact of LRAs on effective marginal prices.

1.13 Question 12 – Do you agree with the analysis in section 6.5 of how the benchmark LRA model could affect incentives for parties to exercise regional market power? In your view, is regional market power a significant issue?

View in the Issues Paper

1.13.1 One of the problems with the gross load approach is that it could exacerbate any market power that incumbent generator-retailers might have in a region when grid constraints bind. This occurs because a generator-retailer with market power in a region as a result of their net generation position can earn more LRAs by raising prices in their region relative to the reference prices in the LRA methodology.

Agree

1.13.2 Transpower, Norske Skog and MEUG agreed that the benchmark LRA model (which uses gross load) could exacerbate any market power that incumbent generator-

retailers might have in a region when grid constraints bind. These three respondents also submitted that this was a significant issue. Transpower submitted that it was a reason for not progressing any further with the LRA concept, while MEUG commented that it was a significant detriment of LRAs compared to the status quo or hybrid FTR options.

Disagree

1.13.3 Three respondents submitted that LRAs were not likely to exacerbate any market power that generator-retailers had.

1.13.4 TrustPower submitted that incentives for generator-retailers to exercise market power already exist and for a net generator to benefit from high LRAs for their load in a constrained region, they would also be allowing their competitor retailers to benefit as well.

1.13.5 Mighty River Power questioned the extent to which regional market power arises and noted that the Commission had not provided any evidence to suggest it is a material issue.

1.13.6 Contact submitted that regional market power was not a significant issue.

Other comments

1.13.7 Three respondents made other comments on generator-retailer market power.

1.13.8 King Country Energy submitted that more work was required on this topic in the next stage of the project.

1.13.9 Meridian submitted that the issue of whether regional market power exists is a matter for the Commerce Commission rather than the Electricity Commission.

1.13.10 Vector commented that the Commission's analysis does not demonstrate that LRAs will be sufficient to incentivise retailers to compete remotely from their own generation.

No comment

1.13.11 Energy Link, Genesis and Rio Tinto Alcan had no comment on question 12.

Analysis – Question 12

1.13.12 The Commission requires more information on whether regional market power is a significant issue before it can determine to what extent LRAs could affect incentives for parties to exercise regional market power. The Commission believes that the Commerce Commission investigation into whether participants in the generation and retail markets have behaved anti-competively may assist in determining whether regional market power is a significant issue. If regional market power is a significant issue, then the design of any measure for managing locational price risk will need to reflect this.

1.14 Question 13 – Do you agree with the Commission's suggested approach in regard to HVDC and connection rentals? If not, what approach is preferable in your view?

View in the Issues Paper

1.14.1 One option would be to include HVDC rentals in the LRA pool and either apply the LRA model nationwide, or include HVDC rentals in the South Island pool when power flows southward over the HVDC and in the North Island pool when there are northward power flows.

1.14.2 Including HVDC rentals in the pool could raise contentious issues about the ownership of rentals and their role in offsetting HVDC charges. An alternative to including rentals in LRAs would be to auction FTRs defined over the HVDC, and rebate the auction revenue to parties paying for the HVDC.

1.14.3 The Commission believes any consideration of including HVDC rentals should be tied in with any review of the HVDC transmission pricing regime.

Agree

1.14.4 Seven respondents agreed with the Commission's suggested approach in regard to HVDC and connection rentals.

1.14.5 King Country Energy submitted that inclusion of HVDC rentals in the LRA process would need to include a review of the HVDC pricing regime.

1.14.6 Contact strongly agreed with the Commission's suggested approach and submitted that the principle that those who pay for or partly pay for assets benefit from the pro rata allocation of rentals should continue.

1.14.7 Transpower agreed with the Commission's proposal to apply FTRs to the HVDC link and noted that this approach tends to confirm Transpower's view that some form of FTR solution would likely be the best method by which to manage locational price risk across the grid as a whole.

1.14.8 Meridian submitted that they did not expect the allocation of HVDC rentals to be changed in any way without a commensurate change to the Transmission Pricing Methodology.

1.14.9 Mighty River Power believed connection rentals should be allocated to generators.

1.14.10 TrustPower and MEUG agreed unequivocally.

Disagreement

1.14.11 Rio Tinto Alcan submitted that the Commission's approach to HVDC rentals and HVAC rentals was inconsistent. While HVDC rentals are paid to the South Island generators who pay for the HVDC transmission costs, under the LRA proposal

HVAC rentals will be allocated to purchasers even though they don't pay the interconnection charges. Rio Tinto Alcan believes the Commission has provided little sound justification for the different treatment of HVDC and HVAC rentals.

No comment

1.14.12 Genesis, Norkse Skog, Vector and Energy Link had no comment on question 13.

Analysis – Question 13

1.14.13 The Commission has decided to retain the approach it suggested in the Issues Paper in regard to HVDC and connection rentals. The Commission notes only one respondent (Rio Tinto Alcan) disagreed with this approach.

1.15 Question 14 – Do you believe other LRA model options should be considered? If yes, please define those options and explain the rationale for considering them.

View in the Issues Paper

1.15.1 The Commission needs to consider whether the pool of rentals is likely in future to be used for purposes other than offsetting transmission fees. For example, generators or particular load parties might agree in the future to pay for an expansion of a component of interconnection assets or provide capacity reserves for components of the interconnected grid. The Commission believes the LRA method is sufficiently flexible to accommodate this approach, and therefore implementing an LRA regime does not necessarily mean forgoing future opportunities.

Yes

1.15.2 Norkse Skog and Mighty River Power believed other LRA model options should be considered.

1.15.3 Norkse Skog argued that the modelling needed to include a break down of the rentals into losses and constraints because the rights to these rentals are different and there may be reason to allocate loss rentals differently to constraint rentals.

1.15.4 Mighty River Power believed the Commission could consider two further options – allocating rentals directly to purchasers at each node using an averaging or lagging methodology, and allocating rentals back to purchasers on a national basis. Mighty River Power felt that these options would address any potential pass-through issues from electricity distribution businesses (EDBs) to retailers, reduce transaction costs compared to the status quo, and have the advantage of tying the allocation of rentals to those who generated them whilst not unduly distorting marginal price signals.

At a later stage

1.15.5 King Country Energy and MEUG submitted that any other LRA model options should only be considered at a later stage when the situation arises.

1.15.6 King Country Energy believed that options such as those proposed in the paper should be addressed when the situation arises, so that the solution can not be prejudiced.

1.15.7 MEUG agreed that it would be useful to keep open the option of rebating interconnection rentals to parties voluntarily funding grid expansion.

No

1.15.8 TrustPower, Transpower, Contact and Meridian believed other LRA model options should not be considered.

1.15.9 TrustPower believed that other uses of transmission rentals such as allocating them to voluntary grid investors was not appropriate. TrustPower argued that rental allocations should remain tightly linked to the prices and volumes paid by grid end users.

1.15.10 Transpower submitted that no other LRA model options should be considered. Transpower submitted that unless the rentals were used to support a tradable transmission hedge product, the status quo allocation method should be retained. Transpower argued the transmission rentals should not be considered a pool of money that can be allocated for various ad hoc purposes.

1.15.11 Contact submitted that these model considerations are currently outside the scope of the project. Nonetheless, Contact argued that if generators or particular load parties are required to pay for the expansion of a particular interconnection asset component then the Grid Upgrade Process has failed.

1.15.12 Meridian did not have any other LRA models that it wanted the Commission to consider.

No comment

1.15.13 Genesis, Vector, Energy Link and Rio Tinto Alcan had no comment on question 14.

Analysis – Question 14

1.15.14 The Commission agrees that it would be beneficial to break down the rentals into losses and constraints. The Commission is currently investigating the feasibility of doing this.

1.15.15 In relation to Mighty River Power's comments, the Commission acknowledges Mighty River Power's suggestions and will investigate such options if the Commission decides to further investigate the LRA option.

1.16 Other issues raised by submitters

1.16.1 The Commission would like to highlight a number of other issues raised by respondents in their submissions.

Length of consultation period

1.16.2 Genesis Energy urged the Commission to shorten the timeframe over which the LRA workstream is completed. Genesis suggested that the process outlined for the end of 2008 could be truncated with the Commission moving straight to consultation on a preferred option, including cost-benefit analysis and draft rules. Genesis submitted that the Commission need to move quickly to implement the best worthwhile option (if there is one).

1.16.3 Meridian did not support any shortening of the comprehensive consultation process. Meridian considered it was important that the Commission followed a robust process with appropriate levels of analysis.

Commission's response

1.16.4 The Commission is considering streamlining the consultation process, by reducing the number of further consultation papers from two to one. If the Commission decides to take this approach, the Commission will supplement the advice it receives via advisory groups, and potentially an ad hoc technical advisory group and a workshop. If the managing locational price risk work programme is widened to include options other than LRAs, this may not necessarily mean a shortening in the timeframe over which the work is completed.

Zonal pricing

1.16.5 Vector requested further consideration of zonal pricing. Vector believed that zonal pricing could offer benefits from both a risk management and retail competition perspective by potentially increasing the number of participants interested in contracting

at each node. Vector believed that the Commission's apparent rejection of other options (including zonal pricing) is premature.

1.16.6 Norkse Skog believed the Commission had ruled out zonal pricing without providing any good reason to do so. Norske Skog supported a comparison of zonal and nodal pricing in the New Zealand context before any decisions are made on the allocation of loss and constraint rentals.

1.16.7 MEUG submitted that the Commission was required to consider all options, including those options the Commission listed in paragraph 2.7.8 of the Issues Paper as being outside the scope of the locational price risk project – reducing the number of nodes in the transmission grid or eliminating nodal pricing altogether, overhauling the transmission grid to eliminate grid constraints, and regulating the market power of generators and Transpower.

1.16.8 Transpower submitted on potential changes to the pricing structure in their submission on the Market Design Review Options Paper. One option suggested by Transpower for managing locational price risk was to adopt a split nodal pricing regime. Under this approach generators would receive nodal prices for their electricity on a half-hourly basis but wholesale market purchasers would pay the load-weighted average price (LWAP) for each half-hour. Transpower also noted in their Market Design Review submission that the Market Design Review should include an investigation of the potential benefits of reducing the number of nodes. Transpower believed that such benefits could include reductions in price volatility, constraint-driven pricing in the market, and the overall complexity of pricing, all of which could potentially reduce the barriers to competition in the wholesale market.

1.16.9 Meridian argued in their Market Design Review submission that a single national locational zone would create significant efficiency losses and/or security challenges. Meridian submitted that the desirability of using nodal prices is higher in New Zealand than in other jurisdictions.

Commission's response

1.16.10 The Commission noted in paragraph 2.7.8 of the Issues Paper that there were other options for managing locational price risk that were outside the scope of the locational price risk project. These options included greatly reducing the number of nodes in the transmission grid or eliminating nodal pricing altogether, overbuilding the grid to eliminate grid constraints, and regulating the market power of generators and Transpower.

1.16.11 The Commission acknowledges the submissions in favour of and in opposition to zonal pricing. In deciding on how to proceed, the Commission will consider whether any of the options identified (as well as any yet to be identified) represent practicable options for managing locational price risk and should therefore be subject to cost-benefit analysis.

Continuation of locational price risk project

1.16.12 Meridian were unconvinced that any further work should be done on LRAs. In addition, Meridian did not want work on LRAs to divert effort away from finalising transmission investment plans, any Commission input into the Resource Management Act – National Policy Statement proposals, or improving the overall transmission investment framework,

1.16.13 Transpower submitted that the LRA proposal should not be progressed further, but FTRs should be investigated as a possible solution to the locational price risk problem because they are the theoretically correct approach to managing transmission price risk. Transpower believed that the existing rentals allocation methodology is less distortionary than the LRA concept and should be retained in the meantime.

1.16.14 Energy Link questioned the value of further work on transmission hedges given little progress had been made despite considerable effort over an extended period.

Commission's response

1.16.15 As outlined in section 2.5 of the Issues Paper, the Commission believes that a poorly functioning risk management market is resulting in participants facing excessively high locational price risk. Therefore, the Commission believes that work on managing locational price risk needs to continue.