# Scarcity pricing and compulsory contracting

## Summary of Submissions

Prepared by Electricity Commission

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# Executive summary

This report provides a summary of submissions in response to the *Scarcity pricing and compulsory contracting: options* consultation paper. This consultation outlined a number of broad alternative approaches that are intended to improve security of supply, namely:

- scarcity pricing
- buy-back / compensation mechanisms; and
- compulsory contracting mechanisms

The paper indicated the Commission's preference was

- to proceed with further development of scarcity pricing and buy-back mechanisms to develop 'working models' in sufficient detail to compare against the status quo
- not to proceed with further development of compulsory contracting at this time

Eighteen interested parties provided submissions, as listed below

| Generator / Retailer | Large consumer | Distributor | Other |
|---|---|---|---|
| Genesis | Business New Zealand | Orion | Transpower |
| Meridian | MEUG | Powerco | |
| Mighty River | CHH[1] | Vector | |
| Contact | Norske | | |
| TrustPower | Pan Pac | | |
| Todd | Rio Tinto | | |
| Powershop | WPI[2] | | |

The key issues raised by submitters have been summarised below, grouped under four main headings:

- General issues
- Scarcity pricing issues
- Default buy-back mechanism issues
- Compulsory contracting issues

## General issues

### *Underlying problem definition*

Most parties agreed with the consultation paper that the ability of participants to shift the costs of some actions onto others was the key underlying problem. Many particularly highlighted the distortions caused by the Whirinaki dry-year reserve scheme, and the ability for participants to lobby for political intervention during periods of scarcity.

[1] CHH = Carter Holt Harvey

[2] WPI = Winstone Pulp International

Meridian didn't believe that it had yet been proven that the current market design wasn't delivering an appropriate level of supply security.

Pan Pac appeared to question more fundamentally the ability of the market to deliver security of supply without falling foul of market power abuses.

### *Further design work needed*

There was almost universal acknowledgement that the issues are not trivial, and that the inter-relationships between other aspects of the Market Development Programme (particularly locational hedging) need to be considered carefully before a preferred design option can be chosen.

Almost all submitters requested detailed quantitative analyses to help understand the implications of the mechanisms, and demonstrate a clear cost-benefit for implementing.

### *Inter-relationship with other market design changes*

Most parties highlighted the inter-related nature of the MDP elements, and that some components may require others to be implemented first. In particular, many parties felt that regional scarcity pricing shouldn't be implemented until a locational hedging mechanism had been implemented, although several commented that a (national) energy scarcity price could be implemented ahead of a locational hedging mechanism.

Many commented that scarcity pricing shouldn't be implemented without ensuring the hedge market was sufficiently liquid (with several commenting that locational hedging was an important pre-cursor to such increased liquidity).

Several commented that buy-back / compensation mechanisms could be implemented independently (and ahead of) the other measures.

## Scarcity pricing issues

### *Whether to implement Option A or Option B*

Some submitters preferred Option A ('pure' scarcity pricing, i.e. only for actual shortage situations), whilst others preferred Option B ('modified' scarcity pricing, i.e. administered price floors for pre-shortage situations, and potentially also for actual shortage situations), and others were neutral between the two.

Concerns expressed with Option B centred around the perceived risk of political interference associated with administering prices during pre-shortage situations.

Some submitters distinguished between the best option and/or appropriateness of scarcity pricing for *energy* shortage situations versus *capacity* shortage situations. Again, there was no clear consensus as to which approach was best for which shortage situation. A number of the large industrials, led by MEUG, expressed a preference that capacity adequacy arrangements be addressed via a separate workstream.

### *Setting the scarcity price (level and timing)*

Almost all submitters who commented on this issue suggested that the scarcity price should reflect the value of load curtailed, but that this should take account of:

- The likelihood of load curtailment for pre-shortage situations (e.g. reflecting the amount of IR shortage for capacity pre-shortage situations); and

- Whether the shortage could be anticipated some weeks in advance (i.e. during an energy shortage situation), or happens suddenly with little notice (i.e. during a capacity shortage situation).

Some submitters suggested that a scarcity pricing regime be implemented gradually over time (e.g. with the scarcity price increasing over a period of years) to allow the market time to adjust. Meridian in particular suggested it should not be implemented prior to the HVDC upgrade, as the period to the HVDC commissioning is too short a time for parties to invest in supply-side options.

Some submitters suggested arrangements should be in place for automatic reviews of scarcity prices (e.g. once every 5 years, with 2 years notice before prices are changed).

***Regional scarcity pricing / exclusions***

Several parties acknowledged that scarcity pricing could be implemented regionally in response to regional scarcity situations – but that appropriate locational hedging arrangements should be in place to facilitate such arrangements [As detailed earlier in the summary of submitters views on the inter-relationships between different market design elements].

A number of parties suggested that scarcity pricing shouldn't apply if the regional scarcity situation were due to transmission inadequacy.

***Triggers***

Several submitters expressed concerns around the potential risks associated with political intervention around 'calling' pre-shortage situations such as conservation campaigns. This led many to reject Option B altogether, or require clear and transparent rules around its introduction.

Conversely, Genesis suggested such an administrative trigger should not be used as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. Instead they argued that the Minister of Energy should have the sole authority to declare an 'official' campaign, but that this should be through a formalised process which includes publication of all representations the Minister has received.

***Scarcity pricing leading to increased wholesale risk and barriers for new entrant retailers and non-portfolio generators***

Several submitters suggested that scarcity pricing will increase the real or perceived riskiness of the wholesale market, thereby increasing barriers for new entrant retailers and non-portfolio generators.

Other submitters suggested that an enhanced hedge market (the development of which they suggested should be incentivised by scarcity pricing) could counter-act this effect.

A number of submitters suggested that the introduction of scarcity pricing should be accompanied by enhanced prudential and other arrangements to manage potential purchaser default situations.

***Market power concerns***

Some submitters suggested that market power issues should be considered, particularly the potential for contrived rather than genuine scarcity situations / prices.

### *Other concerns*

A number of submitters mentioned the possibility of perverse hydro outcomes, in that if there were higher prices during pre-shortage situations, it could encourage hydro generators to release more stored water to take advantage of the higher prices.

Conversely, some submitters suggested that scarcity pricing would lead to hydro generators operating more conservatively leading to higher prices and greater spill.

Several submitters noted that any expectations of higher wholesale prices as a result of scarcity pricing would be passed through to customers via high retail prices.

### *Alternative mechanisms*

Several submitters suggested that alternatives to scarcity pricing should be considered, in particular:

- MEUG suggested a 'modified status quo' whereby policies are implemented to ban retailers acting collectively and restricting political interference, thereby allowing the market to derive scarcity values rather than having regulated values.

- Norske suggested that if Whirinaki was out of the way, the market's normal processes would be able to arrive at appropriate scarcity values.

- Orion suggested contracting with Meridian to deliver desired hydro management outcomes.

- Pan Pac suggested building the 12 TWh Lake Onslow pumped storage scheme funded by a levy.

- Powerco would like to see whether more can be done in the way of demand response

- Powershop suggested requiring generators to offer hedges into the market for a significant proportion of their generated capacity

### *Other related issues*

Several parties raised issues that should be considered in conjunction with scarcity pricing.

Many noted the current distortive effect of Whirinaki's operation and suggested that the scheme should be abolished and/or Whirinaki's offer be modified to reduce distortion. TrustPower suggested that Whirinaki capacity be tendered, thereby promoting visibility of reserve capacity pricing and enabling retailers to procure firm reserve volume.

Some mentioned thermal unit commitment issues, although there was disagreement as to whether specific additional changes such as warming contracts or complex offers were required.

Other issues raised by just one submitter included: consideration of changing the way in which hydro generators can access 'emergency' hydro lake storage; and revoking the rolling outage regulations.

## Buy-back /compensation mechanism issues

### *General*

Most, but not all, supported the principle of a buy-back mechanism. (Some felt it would achieve little, and/or be made redundant with smart metering)

However, there appeared to be a key disagreement as to whether its prime purpose was to

- incentivise customers to save power;

- incentivise market participants to undertake appropriate risk management; or

- assist ‘policy durability’

Submitters’ views on the prime purpose had a major bearing on their subsequent position on other key design choices, in particular determining the level of buy-back payment and who should be subject to the mechanism.

Several submitters noted that the cost of such buy-backs would ultimately be reflected in higher retail prices.

### *Who should be subject to the mechanism?*

Several submitters suggested it might be more appropriate that only those parties that were under-hedged should be subject to such a buy-back obligation, whilst others suggested that such targeting would be too difficult to implement.

Some suggested that generators, rather than retailers, should be the parties subject to a buy-back obligation.

### *Level of buy-back*

A number of submitters suggested that developing buy-back arrangements which dynamically set the level of buy-back based on observed customer savings (either on an individual customer or national aggregate level) would be too complex / costly to develop. They thus supported implementation of a default flat payment mechanism.

Others disagreed, suggesting that such flat payment mechanisms would give no incentive for consumers to save power during conservation campaigns.

### *Ability for retailers to implement their own mechanisms*

Many submitters suggested that a buy-back mechanism should have the flexibility for retailers to implement their own arrangements as an alternative to a default arrangement. In particular, it was suggested that this should encourage development of arrangements that more directly incentivise customers to save power at times of scarcity.

### *Who should receive buy-back payments?*

Some submitters suggested that buy-back payments should be extended beyond residential customers to all business customers on fixed price, variable volume contracts.

### *Triggers / exclusions*

Several submitters expressed concerns around the potential risks associated with political intervention around ‘calling’ conservation campaigns which could then trigger buy-back mechanisms. This led many to require clear and transparent rules around its introduction.

Conversely, Genesis suggested such an administrative trigger should not be used as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. Instead they argued that the Minister of Energy should have the sole authority to declare an ‘official’ campaign, but that this should be through a formalised process which includes publication of all representations the Minister has received.

TrustPower suggested that all such decisions should be left to individual retailers.

Contact suggested that it would not be appropriate to impose a buy-back obligation on generator/retailers for a security issue caused by withdrawal of, or underinvestment in, transmission capacity.

### *Inter-relationship of scarcity pricing and buy-back*

Several submitters questioned the consultation paper's portrayal of the inter-relationship between scarcity pricing and buy-back mechanisms, and suggested that only scarcity pricing would be required to incentivise appropriate risk management practices by market participants.

### *Alternative or complementary approaches*

MEUG suggested that the existing contractual relationship between retailers and consumers may create the ability for consumers to claim damages for non-performance if a retailer has not taken all reasonable steps to avoid a blackout caused by energy shortage – with the retailer paying some consumers to save power being one such reasonable step. MEUG argue that if such a contractual approach exists it would be preferable to a regulated approach.

Pan Pac suggested an alternative mechanism whereby consumers are exposed to spot price for any consumption above a pre-determined 'normal' level would be the most effective method to incentivise consumer savings.

TrustPower suggested that if there was greater public visibility of lake levels in the weeks / months prior to arriving at the point where a conservation campaign is required, this would engender greater voluntary saving by consumers.

## Compulsory contracting issues

There was unanimous agreement that compulsory contracting shouldn't be developed further at this stage, with parties suggesting it would be difficult to implement and likely lead to over-procurement of supply-side options.

A number of submitters suggested it could be implemented at a later stage if scarcity pricing doesn't result in the desired level of supply security.

# Contents

# 1. Introduction and purpose of this report

## Introduction

1.1.1 One of the major elements of the Commission's Market Development Programme (MDP) is consideration of market-based measures to improve security of supply.

1.1.2 The Commission released a consultation paper on these issues (*Scarcity pricing and compulsory contracting: options)* in October 2009. The paper outlined a number of broad alternative approaches that are intended to improve security of supply, namely:

- scarcity pricing
- buy-back / compensation mechanisms; and
- compulsory contracting mechanisms

1.1.3 The paper indicated the Commission's preference was

- to proceed with further development of scarcity pricing **and** buy-back mechanisms to develop 'working models' in sufficient detail to compare against the status quo
- not to proceed with further development of compulsory contracting at this time

1.1.4 The paper was released in parallel with two other consultation papers on related MDP issues:

*(a) Transmission pricing review: high level options.*

*(b) Managing locational price risk: options.*

## Purpose of this report

1.1.5 This report provides a summary of submissions for the *Scarcity pricing and compulsory contracting: options* consultation paper. Submitters provided both general comments on the consultation paper and some responded to specific questions asked in the consultation paper

1.1.6 In this paper, the Commission has tried to summarise the submissions as objectively as possible, and draw out the key issues raised by submitters. It hasn't in this paper commented on any of the points raised by submitters.

1.1.7 Inherently in attempting to summarise the many hundreds of pages of submissions into a summary of approximately 50 pages, some elements of submitters' responses will have been condensed or omitted. If a submitter feels that in the process of summarisation any of their key points have been omitted, or

their meaning changed, they should contact the Commission who will rectify the issue.

## Submissions received

1.1.8 Eighteen interested parties provided submissions, as listed below

| Generator / Retailer | Large consumer | Distributor | Other |
|---|---|---|---|
| Genesis | Business New Zealand | Orion | Transpower |
| Meridian | MEUG | Powerco | |
| Mighty River | CHH[3] | Vector | |
| Contact | Norske | | |
| TrustPower | Pan Pac | | |
| Todd | Rio Tinto | | |
| Powershop | WPI[4] | | |

[3] CHH = Carter Holt Harvey

[4] WPI = Winstone Pulp International

# 2. Summary of submissions by issue

2.1.1 This section of the paper sets out submitters' positions on a number of key themes / issues. The issues have been grouped under four main headings:

- General issues
- Scarcity pricing issues
- Compensation / buy-back issues
- Compulsory contracting issues

2.1.2 At the start of each issue, a summary box attempts to crystallise the key points raised by submitters into a few sentences.

## General issues

### Underlying problem definition

Most parties agreed with the consultation paper that the ability of participants to shift the costs of some actions onto others was the key underlying problem. Many particularly highlighted the distortions caused by the Whirinaki dry-year reserve scheme, and the ability for participants to lobby for political intervention during periods of scarcity.

Meridian didn't believe that it had yet been proven that the current market design wasn't delivering an appropriate level of supply security.

Pan Pac appeared to question more fundamentally the ability of the market to deliver security of supply without falling foul of market power abuses.

2.1.3 ***Business New Zealand:*** The primary problem is a capacity adequacy problem, or more specifically a peak capacity adequacy problem.

2.1.4 ***CHH:*** The ability for some electricity suppliers to offload their supply risk through political processes is at the root of the problem.

2.1.5 ***Contact:*** Current reserve energy policy has distorted prices, and reduced incentives to invest / undertake DSM for security.

2.1.6 ***Genesis:*** Administrative actions can create real costs; Such costs may not be reflected in prices (spot, wholesale contract or retail); and participants have little reason to avoid or minimise un-priced costs.

2.1.7 ***Meridian:*** Discussions about a security of supply problem seem to proceed based largely on anecdote. However, it seems the existing market arrangements may well be achieving an optimal level of security of supply at least cost. Meridian modelling appears to suggest this. The Commission should describe what success would look like under any changes to the market framework.

2.1.8 ***MEUG:*** Ability of large suppliers to:

- coordinate a campaign to elicit voluntary demand savings rather than paying consumers to reduce demand; and
- lobby government to enter a buy-back scheme with major users, the cost of which would have been levied to all consumers, rather than have spot exposed suppliers contracting bi-laterally with large users.

2.1.9 ***Mighty River:*** Dry-year public conservation campaigns suffer from 'public good' type market failure, in terms of generators gaining the benefits, but not bearing the costs – other than political costs in terms of possible market changes. Also the operation of Whirinaki suppresses spot prices, and rewards market participants that have not adequately hedged.

2.1.10 ***Norske***: Retailers being able to free load off the back of public conservation campaigns. The operation of Whirinaki resulting in a relatively low price cap.

2.1.11 ***Orion:*** How well one particular generator, namely Meridian, manages its hydro resources. Since there is no suggestion of either lack of competence or financial prudence on the part of Meridian, there would appear to be some sort of externality preventing Meridian's pivotal supply security role being adequately recognised in a commercial sense, and thus security is "underprovided" by Meridian.

2.1.12 ***Pan Pac:*** Insufficient storage to provide protection against periods of drought. During recent events (2001, 2003, 2008 and 2006 'near miss') there was with hindsight no electricity supply crisis, but pricing crises. Conservation campaigns to reduce electricity usage during these periods did reduce usage, confirming that the market had failed and that conservation programs succeeded. Conservation campaigns give false credence to the market prices prevalent during these periods. These prices, which are the result of market failure, are not set by effective competitive bidding on a SRMP basis.

2.1.13 As identified by Wolak >4 billion, and by extension including the 2008 event, about >6 billion dollars of extra income was obtained through market power.

2.1.14 ***Powerco:*** One company alone manages and controls around 70% of New Zealand hydro storage. The market is also one in which the customers do not see the time-based variation of prices, rather they see a long run marginal cost of supply. Therefore there is little if no demand response to high spot prices associated with a dry year situation. Also agrees that ability of market participants to shift the costs of some actions onto others is an underlying cause.

2.1.15 ***Rio Tinto:*** The ability of the supply-side of the industry to socialise the cost of their failure to manage dry-year risk across all industry participants. Also, the political hedge that is employed. That is, exposed suppliers currently have the option to lobby politicians for relief.

2.1.16 ***Todd:*** Government intervention via the likes of Whirinaki reduces incentives for participants to develop such schemes privately.

2.1.17 ***Vector:*** Objective should be to ensure generator-retailers (and any stand-alone generators or retailers) have appropriate incentives to ensure they have sufficient generation or hedge capacity to meet demand at all times.

2.1.18 Purpose of scarcity pricing & compensation mechanisms should be to ensure that generator-retailers are incentivised to manage their dry year risk and contract for sufficient generation. Ending public conservation campaigns should not be the focus of these mechanisms – rather public conservation campaigns will only occur when the cost of procuring the campaign (through higher spot prices) is cheaper than the generation / fuel holding alternatives.

## Further design work needed

There was almost universal acknowledgement that the issues are not trivial, and that the inter-relationships between other aspects of the Market Development Programme (particularly locational hedging) need to be considered carefully before a preferred design option can be chosen.

Almost all submitters requested detailed quantitative analyses to help understand the implications of the mechanisms, and demonstrate a clear cost-benefit for implementing.

2.1.19 ***CHH:*** Would like to see critical comparisons of international experiences (including assessment of validity to NZ energy scarcity). Wants to see cost-benefit analysis.

2.1.20 ***Contact:*** More work needed on how 3 MDP initiatives link before advancing to preferred options. Need numerical analysis of different locational hedging options with scarcity pricing.

2.1.21 ***Meridian:*** With respect to option B, the potential for unintended consequences from such an untested [internationally] proposal seem high. Thorough modelling of both options A and B is required before a decision can be made.

2.1.22 Setting a price floor is contrary to achieving the best outcomes at the lowest price. There may be better ways to achieve the least cost security of supply solution for New Zealand. To find these, we need an economic cost-benefit study running models to find which mechanism has the lowest cost. Currently, we seem to be working from a theoretical basis, rather than using quantitative analysis and modelling.

2.1.23 ***Mighty River:*** We believe this is something that lends itself to quantitative testing; measured in terms of allocative efficiency improvements and the (potential) benefits of improved dry-year management.

2.1.24 ***Orion:*** Consider there is considerable work still to be done to establish whether this is an appropriate regulatory response. Detailed proposal should consider such aspects as:

- Likely impacts on forward prices and other contracting arrangements
- Relative cost of public conservation campaigns versus supply side solutions
- Impact on potential new entrants, particularly their risk positions and prudential requirements
- Impact on innovative retailer offerings, for example Powershop.
- How the cessation of the Reserve Energy Scheme might impact on the market and security management.
- Whether such a regulatory approach will likely lead to a much wider intervention into the area of participants' contractual arrangements.
- With regard to buy back arrangements, the appropriateness of this applying to all (or indeed any) retailers, when it seems to be aimed at ensuring one generator manages its hydro resources differently.
- Counterfactuals, for example Orion's targeted solution of contracting with Meridian for hydro storage outcomes.

2.1.25 ***Powershop:*** Before considering scarcity pricing options further we encourage the Commission to undertake more robust analysis of the market to determine if there are real issues with the market's performance in supply shortage situations, and investment signals, under current arrangements.

2.1.26 ***Rio Tinto:*** We note the Commission's preference for scarcity pricing and the frequent references to its operation in other markets. However, in all but one market (Columbia) it is applied to solve a short-term capacity issue and not a long-term energy shortfall. We are concerned that the Commission might have insufficient regard to the magnitude of the difference.

2.1.27 We would expect to see in the next discussion paper:

- a fully developed comparison between the Columbian model and other jurisdictions where scarcity prices are used to manage capacity risks;
- an analysis of the expected behaviours the scarcity price is expected to drive – e.g. investment in new and existing generation, level and price of hedges, demand buy-back schemes;
- an analysis of other market developments that are required so that the market can manage the exposure to the scarcity price;
- a strawman proposal of how this might look in New Zealand; and
- a well developed cost-benefit analysis.

2.1.28 ***Transpower:*** Do not underestimate the complexity of designing a scarcity pricing regime in sufficient detail to understand:

- implementation issues (for example scarcity pricing needs to link smoothly with the market dispatch and pricing mechanisms);
- the relationship with energy and locational hedging;
- market power that may arise in a small market; and
- the change in investment incentives.

2.1.29 ***TrustPower:*** Recommend that: a detailed cost-benefit analysis is undertaken to

determine whether the increase in security justifies the greater cost to the retailer (and consumer) of increased risk mitigation; and the impact of this increased need for risk mitigation (and increased risk of insolvency) on retail new entry is assessed.

2.1.30 Prices may not necessarily become more volatile if VOLL pricing is introduced. Just the threat of being caught short when the price goes to VOLL should be enough to stimulate greater levels of contracting, which would fund greater levels of investment. Average prices should settle at a level higher than currently, however the increased level of security and looser capacity margins may result in prices not being any more volatile than today.

2.1.31 ***Vector:*** At this stage of the process it is important to examine the likely impact of the proposals before continuing with further detailed design. Much of the analysis to date, particularly in respect of locational price risk, has been focused on how to implement the proposals.

## Inter-relationship with other market design changes

Most parties highlighted the inter-related nature of the MDP elements, and that some components may require others to be implemented first. In particular, many parties felt that regional scarcity pricing shouldn't be implemented until a locational hedging mechanism had been implemented, although several commented that a (national) energy scarcity price could be implemented ahead of a locational hedging mechanism.

Many commented that scarcity pricing shouldn't be implemented without ensuring the hedge market was sufficiently liquid (with several commenting that locational hedging was an important pre-cursor to such increased liquidity).

Several commented that buy-back / compensation mechanisms could be implemented independently (and ahead of) the other measures.

2.1.32 ***Business New Zealand:*** The inter-relationships between scarcity pricing and such mechanisms as AUFLS, rolling outages, and the recently established Capacity Adequacy Industry Working Group need to be clarified.

2.1.33 Scarcity pricing should be accompanied with a liquid hedge market, otherwise the risks of more volatile prices may fall on major electricity users specifically those who have limited operational flexibility.

2.1.34 Whirinaki should continue to be available as reserve cover until scarcity pricing can be implemented, but under new pricing rules that do not suppress prices.

2.1.35 ***Contact:*** More work is needed on how these 3 key initiatives [scarcity pricing, locational hedging, and transmission pricing] link before advancing to preferred options.

2.1.36 Scarcity pricing and hedge market development can proceed ahead of more complex location and transmission pricing issues.

2.1.37 Scarcity pricing increases importance of robust market for hedging energy and locational risk. Contact supports development of EnergyHedge to include cleared trading, one-side participants, new retail oriented products, and additional nodes. This shouldn't require regulatory intervention to achieve.

2.1.38 ***Genesis:*** Can implement different aspects of scarcity separately. For example, a conservation campaign floor price should have a higher priority for rapid implementation than a demand curtailment floor price.

2.1.39 A conservation campaign scarcity price can (and should) be implemented without waiting for implementation of LRAs or FTRS if such scarcity prices will be applied nationally. However, scarcity prices to be applied on a nodal basis should perhaps not be implemented until locational price risk management regime is in place.

2.1.40 ***MEUG:*** It is not obvious that the same scarcity pricing mechanism should be used for foreseeable dry-year events and real time unforeseeable events. Policies for short-term unforeseeable events are best considered separately as part of the Capacity Adequacy Industry Working Group.

2.1.41 ***Mighty River:*** There are a number of complexities and interactions with other policy initiatives that would need to be worked through before it would be prudent to introduce a rebate/compensation scheme during public conservation campaigns and scarcity pricing. Because scarcity pricing / compensation could increase locational price risk, they should not be undertaken in isolation of initiatives aimed at removing barriers to retail competition (including the initiatives for development of the hedge market and management of locational price risk).

2.1.42 One of the next steps in MDP consultation should be the release of a paper which presents the Commission's overall preferred MDP package and explicitly works through the interrelationships of the different parts.

2.1.43 ***Rio Tinto:*** We note that Transpower has expressed the view that the introduction of a tradable locational price risk hedge, or FTR, should be a precursor to the introduction of scarcity pricing since scarcity pricing is likely to significantly increase locational price risk. We consider that a tool like an FTR is a precursor to a liquid hedge market developing, which is necessary to assist in managing dry year risk.

2.1.44 ***Transpower:*** The Commission is consulting concurrently on options. Some of the MDP options for managing locational price risk involve forms of zonal pricing, whereby purchaser prices are averaged across a zone, either directly or through LRAs. VoLL prices, depending on their design, could on occasion occur within but not throughout a zone, such as when a transmission constraint prevented other generation from alleviating a regional shortfall. Zonal pricing could severely dilute such a signal across the zone, to the point where observed prices might be much less than VoLL and market incentives to avoid supply shortfalls compromised. The larger the zone, the more significant this issue becomes. If a scarcity pricing regime is introduced, any mechanism for managing locational price risk should be carefully designed to minimise any compromise to it. It seems counterproductive to be trying to improve regional scarcity price signals while at the same time recommending damping locational signals by introducing LRAs, accepting that LRAs are not a strongly preferred option by the Commission. FTRs offer the only efficient and practical locational hedging solution, and the only solution that does not distort VoLL pricing.

2.1.45 Compensation mechanisms are largely independent of scarcity pricing or compulsory contracting.

2.1.46 Introduce FTRs, preferably in advance of the introduction of a VoLL pricing regime.

2.1.47 ***Vector:*** Not clear what criteria the EC is using to assess the various options presented. Clarity on the outcomes sought and the relative weighting between the outcomes would be valuable, particularly given the need for making trade-offs between the interlinked proposals (e.g. retail competition vs strong locational price signals).

2.1.48 Proposing that scarcity pricing apply to capacity shortages would not seem to be workable alongside an LRA regime, as an intra-island VOLL price would just increase the reference price across the relevant island, without incentivising actions to mitigate the capacity shortage.

2.1.49 ***WPI:*** Supports scarcity pricing, but should only be introduced when the electricity market is functioning well to avoid suppliers shifting risk and/or costs to consumers using non-market mechanisms.

# Scarcity pricing issues

## Whether to implement Option A or Option B

Some submitters preferred Option A ('pure' scarcity pricing, i.e. only for actual shortage situations), whilst others preferred Option B ('modified' scarcity pricing, i.e. administered price floors for pre-shortage situations, and potentially also for actual shortage situations), and others were neutral between the two.

Concerns expressed with Option B centred around the perceived risk of political interference associated with administering prices during pre-shortage situations.

Some submitters distinguished between the best option and/or appropriateness of scarcity pricing for *energy* shortage situations versus *capacity* shortage situations. Again, there was no clear consensus as to which approach was best for which shortage situation. A number of the large industrials, led by MEUG, expressed a preference that capacity adequacy arrangements be addressed via a separate workstream.

2.1.50 ***Business New Zealand:*** Tends towards option B, but with its implementation disconnected from public conservation campaigns.

2.1.51 ***CHH:*** Prefers A.

2.1.52 Scarcity pricing better suited to energy adequacy than real time capacity adequacy. "CHH would strongly prefer that the short term capacity adequacy issue is treated quite separately from the primary energy security need".

2.1.53 ***Contact:*** Supports scarcity pricing in principle. Neutral as to whether A or B are best.

2.1.54 ***Genesis:*** Prefers option B.

2.1.55 ***Meridian:*** Not sure whether scarcity pricing is required in that market appears to be working well. However, prefers option A of scarcity pricing options. Option B untested internationally, and will likely lead to price rises and perverse outcomes (see their 'other concerns' below).

2.1.56 ***MEUG:*** Would prefer revised market approach to any administered scarcity price. However, support A, not B, but only for energy scarcity. Capacity scarcity should be addressed via Capacity Adequacy Industry Working Group.

2.1.57 ***Mighty River:*** For *energy* scarcity not option B, because the market is still 'working' during conservation campaigns and setting a meaningful price. Conservation campaigns may dampen spot prices a little bit, but not to the extent there would be significant negative allocative efficiency impacts. They note that the Winter Review of 2008 only advocated for scarcity pricing during forced outages, not during public conservation campaigns. The use of scarcity pricing during public conservation campaigns would increase the incentive on gentailers

(with greater generation than retail customers) to lobby for public conservation campaigns as they would have more to gain from such campaigns.

2.1.58 For *capacity* scarcity option B (i.e. have scarcity pricing during reserves shortage).

2.1.59 Doesn't believe that floor prices during shortages would be necessary if Whirinaki was out of the picture.

2.1.60 ***Orion:*** If scarcity pricing is to be implemented we believe it must be some form of the "modified" version. This price could be linked in some way to the assessed security level, with a "scarcity factor" ranging between 0 and 1 being applied to the scarcity price.

2.1.61 ***Pan Pac:*** Does not think scarcity pricing will work as it [i.e. the high prices observed during past dry-year events] has not worked to date. When electricity prices rise above $100/ MWh pulp manufacture becomes uneconomic. The suggestion that higher prices are necessary for customer user response is not true. To suggest prices above $500/MWh is totally unrealistic and shows a poor understanding of commercial reality.

2.1.62 ***Powershop:*** Option A because it gives all participants greater certainty.

2.1.63 ***Rio Tinto:*** Scarcity pricing should be focussed on energy issues. More analysis on capacity issues is required before determining the appropriate remedy for capacity issues.

2.1.64 ***Transpower:*** Option A is a specific case of the second more generic option B. Option B should be developed to allow a wider understanding of scarcity pricing regimes, including both pre-shortage scarcity floors and the incidence of value of lost load (VoLL) prices when shortage occurs. However, must have VOLL pricing for actual outages.

2.1.65 Option A relies on market participants including the risk of incidence of high, non-notified, VoLL prices in their decision making/risk management strategies. In a dry year, such a severe option without pre-shortage scarcity floor signals may create incentives for participants to gamble on an improvement in inflows since it may be valid to assume that orderly trading in the market may become so complex as to be unworkable when scarcity prices apply.

2.1.66 The scarcity pricing regime should consider the introduction of scarcity prices whenever security, nationally or regionally, is deliberately reduced, including inadequate reserves, or reducing regional or grid exit point security to 'N', e.g. Mangamaire to increase HVDC south transfer.

2.1.67 ***Todd:*** Prefers Option A on the basis that it is relatively easy to implement and there are none of the regulatory risks associated with having to set escalating floor prices at defined trigger points, which would be subject to political lobbying.

2.1.68 ***TrustPower:*** Prefers option A. It should apply island wide or country wide – not in specific sections of the network, and not because of limitations caused by interruptions to transmission. Reserves are currently procured on an island wide basis, and it would be nonsensical to introduce scarcity pricing at a level of network granularity lower than this.

2.1.69 ***Vector:*** Prefers option B, providing also have VOLL pricing during actual outage.

2.1.70 Scarcity pricing shouldn't be implemented for shortages caused by capacity problems on the transmission network. The costs of such high prices would fall on purchasers who are generally not responsible for the condition of the transmission grid.

## Setting the scarcity price (level and timing)

Almost all submitters who commented on this issue suggested that the scarcity price should reflect the value of load curtailed, but that this should take account of:

- The likelihood of load curtailment for pre-shortage situations (e.g. reflecting the amount of IR shortage for capacity pre-shortage situations); and
- Whether the shortage could be anticipated some weeks in advance (i.e. during an energy shortage situation), or happens suddenly with little notice (i.e. during a capacity shortage situation).

Some submitters suggested that a scarcity pricing regime be implemented gradually over time (e.g. with the scarcity price increasing over a period of years) to allow the market time to adjust. Meridian in particular suggested it should not be implemented prior to the HVDC upgrade, as the period to the HVDC commissioning is too short a time for parties to invest in supply-side options.

Some submitters suggested arrangements should be in place for automatic reviews of scarcity prices (e.g. once every 5 years, with 2 years notice before prices are changed).

2.1.71 ***Business New Zealand:*** While there are pros and cons associated with either a demand or supply side methodology, Bus NZ considers that the choice should be influenced by the problem being a capacity issue.

2.1.72 ***Contact:*** With respect to energy scarcity situations would scarcity prices apply to off-peak where supply may exceed demand?

2.1.73 With respect to capacity scarcity, prices should reflect IR scarcity. Could be achieved by reducing reserves in blocks.

2.1.74 What happens with transmission constraints with different levels of shortage at either side?

2.1.75 ***Genesis:*** Scarcity prices that were set too high could over-incentivise cautious management of supply security. In theory it would be best to set scarcity values

from a consumer willingness to pay perspective. However, this is difficult to assess in practice, so it is also useful to consider from a supply 'missing money' perspective.

2.1.76 During demand curtailment, floor price should be set at or near VOLL.

2.1.77 The risks of setting scarcity prices too high are likely to prove limited.

2.1.78 During public savings campaigns, the floor price should be set significantly lower than VOLL.

2.1.79 ***Genesis:*** Floor price linked to the severity of the shortage and the consequence of an outage (i.e. significantly lower than VOLL).

2.1.80 Scarcity prices should be set for a 5-7 year period, with price reviewed and reset 2 years prior to expiry.

2.1.81 ***Meridian:*** It seems appropriate that there be two VOLLs, depending whether the outage was foreseen over time, or unanticipated.

2.1.82 VOLL figures need to based on sound empirical evidence, and subject to thorough sensitivity analysis.

2.1.83 A minimum notification period of 2 years should be implemented before changes to scarcity prices.

2.1.84 VOLL pricing should only take effect after the HVDC upgrade because otherwise the South Island will be subject to significant and potentially unmanageable price volatility, and the period to the HVDC commissioning is too short a time for new investment in generation.

2.1.85 ***Mighty River:*** Scarcity pricing should be implemented when there are insufficient reserves, with the scarcity price reflecting the probability of load curtailment. However, should consider the interdependencies of reserve market pricing with energy market pricing, which, coupled with the relative frequency of Grid Emergencies (compared to load curtailment), mean the wealth effects of scarcity pricing in reserve markets are much more acute than energy market scarcity pricing alone.

2.1.86 ***Todd:*** The problem of course is determining what an appropriate Value of Lost Load is given that the value will be different for each consumer or consumer type facing curtailment.

2.1.87 ***TrustPower:*** Implementation of scarcity pricing should follow a "small steps" approach. For example, the shortfall price should start at (say) 10% of the estimated Value of Lost Load ("VOLL"), and be increased annually. It may not be the case that the shortfall price required to achieve the desired increase in security of supply is actually as high as the VOLL.

2.1.88 ***Vector:*** While improved price signals should promote increased investment in generation, it is unlikely that generators will be able to increase their capacity

rapidly (e.g. due to RMA consenting, fuel availability and contracts etc.). This could mean that in the short to medium term the effect of these proposals is higher prices with continued insufficient generation. Vector therefore suggests that the scheme be implemented over a reasonable time period, allowing the generators to make optimal new investment decisions in the knowledge that scarcity pricing will be implemented but without the large cost being imposed on them in the short-term when there are few mitigation options available.

## Regional scarcity pricing / exclusions

Several parties acknowledged that scarcity pricing could be implemented regionally in response to regional scarcity situations – but that appropriate locational hedging arrangements should be in place to facilitate such arrangements [As detailed earlier in the summary of submitters views on the inter-relationships between different market design elements].

A number of parties suggested that scarcity pricing shouldn't apply if the regional scarcity situation were due to transmission inadequacy.

2.1.89 ***Transpower:*** The scarcity pricing regime should consider the introduction of scarcity prices whenever security, nationally or regionally, is deliberately reduced, including inadequate reserves, or reducing regional or grid exit point security to 'N', e.g. Mangamaire to increase HVDC south transfer.

2.1.90 ***TrustPower***: It should apply island wide or country wide – not in specific sections of the network, and not because of limitations caused by interruptions to transmission. Reserves are currently procured on an island wide basis, and it would be nonsensical to introduce scarcity pricing at a level of network granularity lower than this.

2.1.91 ***Vector:*** Scarcity pricing shouldn't be implemented for shortages caused by capacity problems on the transmission network. The costs of such high prices would fall on purchasers who are generally not responsible for the condition of the transmission grid.

## Triggers

Several submitters expressed concerns around the potential risks associated with political intervention around 'calling' pre-shortage situations such as conservation campaigns. This led many to reject Option B altogether, or require clear and transparent rules around its introduction.

Conversely, Genesis suggested such an administrative trigger should not be used as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. Instead they argued that the Minister of Energy should have the sole authority to declare an 'official' campaign, but that this should be through a formalised process which includes publication of all representations the Minister has received.

2.1.92 ***Business New Zealand:*** Scarcity pricing should not be tied to the introduction of a public conservation campaign, because this will be too late. Further, because a public conservation campaign is highly politicised, it may undermine the integrity of scarcity pricing. Instead it should be based on New Zealand-specific conditions (e.g. lake levels, inflows and margins).

2.1.93 ***Genesis:*** There should not be an administrative trigger for the scarcity pricing and buy-back mechanisms, as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. It would be more effective if the Minister of Energy has the sole authority to declare an 'official' campaign in response to representations from stakeholders, but would be required to: seek and publish advice from the Commission, publish the representations the Minister has received, and run a one-week consultation. Rather than exacerbating political risk, this formalisation of Ministerial intervention should improve decision-making dynamics.

2.1.94 ***Meridian:*** The Commission needs to specify the physical conditions that will result in a conservation campaign (and therefore a price floor under option B).

2.1.95 ***MEUG:*** Option B has the risk that there will be political intervention to modify the trigger date for pre-event planned rolling black-outs. Therefore Option B is not supported.

2.1.96 ***Mighty River:*** Need to have clear and transparent rules around when scarcity pricing would be introduced in order to minimise the risks of political interference. MUEG make this point well in the comment that "As an extreme last resort a regulated floor sends very strong incentives to suppliers and end users with net spot exposure. However there are potential difficulties if Ministers can activate a floor well ahead of an event becoming an extreme last resort. MEUG members remember clearly the intervention last year leading to Whirinaki being offered below SRMC. Unless we have better surety the rules on implementing a floor will not also be shifted, then MEUG is reluctant to support this proposal."

2.1.97 ***Todd:*** Todd Energy prefers Option A on the basis that it is relatively easy to implement and there are none of the regulatory risks associated with having to set escalating floor prices at defined trigger points. The setting of the floor prices and the trigger points at which they apply, would be subject to lobbying and introduce some of the same risks that face regulators with respect to conservation campaigns.

2.1.98 ***Transpower:*** The incidence of scarcity floors would need to be predictable. It is anticipated that triggers, or at least the mechanism for determining triggers, for moving to pre-shortage scarcity floors and VoLL pricing would be defined in the rules or in a published policy to minimise regulatory uncertainty.

## Scarcity pricing leading to increased wholesale risk and barriers for new entrant retailers and non-portfolio generators

Several submitters suggested that scarcity pricing will increase the real or perceived riskiness of the wholesale market, thereby increasing barriers for new entrant retailers and non-portfolio generators.

Other submitters suggested that an enhanced hedge market (the development of which they suggested should be incentivised by scarcity pricing) could counter-act this effect.

A number of submitters suggested that the introduction of scarcity pricing should be accompanied by enhanced prudential and other arrangements to manage potential purchaser default situations.

2.1.99 ***Contact:*** The consultation paper argues that scarcity pricing may result in greater wholesale price risk which may increase barriers for new entrant retailers and for non-portfolio generators. We note that while this may be so, scarcity pricing should also encourage growth in the hedge market which could mitigate this effect.

2.1.100 ***Meridian:*** A price floor will discourage vertical integration, and discourage vertically integrated companies from having a significant number of retail customers. Generators will want to be exposed to these regulated high prices. Retailers will not want to be exposed. This encourages companies to move towards short retail positions.

2.1.101 ***Mighty River:*** Scarcity pricing/compensation schemes can heighten barriers to entry/retail competition from independent electricity retailers and retailers with a bigger customer base than generation capacity, particularly on a locational basis.

2.1.102 ***Orion:*** Scarcity pricing will, by increasing the real or perceived riskiness of the wholesale market, increase barriers for new entrant retailers and for non-portfolio generators.

2.1.103 ***Powershop:*** The Commission should consider the incentives and responsibilities of generators and retailers separately. The paper bundles incentives and responsibilities by talking about gentailers, and frames net purchasers as security of supply free riders. If the Commission creates policies that prefer perfectly matched integrated participants over independent participants it risks creating barriers to entry and stifling innovation.

2.1.104 ***Rio Tinto:*** A concern we have is that the market becomes unconvinced that it can adequately manage its exposure to the scarcity price. In that case, we expect a marked reduction in competition as generator-retailers seek to rebalance their portfolios to minimise their potential exposure to the scarcity price. It is also likely that available hedge quantities offered to purchasers' will reduce in quantity or increase significantly in price. In such circumstances, there will be no new-entrant retailers that are not supported by firm generation capacity. It is also virtually certain that there will be a reduction in the already limited offering of hedge contracts. The terms of any hedge contracts are also likely to have more onerous conditions, such as suspension if certain hydrological thresholds are breached. If not implemented extremely carefully, scarcity pricing could be more costly in the long-run than the problem it was attempting to solve.

2.1.105 ***Todd:*** Option A should be supported by detailed consideration of purchaser default situations in the event that a participant elects to ignore risk as a part of their contracting strategy. Participants and consumers should not be in a position to assume that any supplier is too big to fail as this invites moral hazard risk - ie participants or consumers accept risks as they are protected in the event of failure. This should mean that not only suppliers face the risk and implications of being in default but also consumers increasing the incentive on them to consider quality and security of the supply as well as price.

2.1.106 ***Transpower:*** VoLL signalling and the risk of high prices at the margin would also drive the need for new contracting products like caps, options and futures. This could invigorate the hedge markets and address some of the competition issues that are of concern to the Commission. In addition, a stronger hedge market would reduce barriers to new entry by both generators and retailers.

2.1.107 ***TrustPower:*** Scarcity pricing will result in gentailers allocating retail product more conservatively, resulting in diminished retail competition, and new entrants to the market may find it harder to purchase hedges from gentailers at a reasonable price, due to the gentailers' increased aversion to running short.

2.1.108 ***Vector:*** Scarcity pricing increases the risk that retailers will be under severe financial stress through exposure to high spot prices. There could also be an impact on the costs faced by retailers in raising finance. A concurrent review of prudential and retail market arrangements is therefore critical, and mechanisms will need to be put in place to deal with a much higher risk of retailer insolvency.

## Market power concerns

Some submitters suggested that market power issues should be considered, particularly the potential for contrived rather than genuine scarcity situations / prices.

2.1.109 ***Business New Zealand:*** the potential for the exercise of market power leading to contrived rather than genuine scarcity should be assessed.

2.1.110 ***CHH:*** Market power issues need to be carefully considered.

2.1.111 ***Contact:*** Market power is a potential risk with both scarcity pricing and compulsory contracting. (Under compulsory contracting this market power would be exercised via the asymmetry of information between participants and the regulator, coupled with the regulator's incentives to over-procure security).

2.1.112 ***Genesis:*** The Commission generally overstates the risks of excessive market power. The prospect of scarcity pricing should lead to higher prices, more thermal dispatch and less aggressive hydro use in a dry sequence. This dynamic would directly decrease the risk of reaching scarcity triggers and would encourage investment in (or retention of) hydro firming plant. However, notwithstanding the above, Genesis support the enhancement of market integrity by strengthening market surveillance.

2.1.113 ***Todd:*** One of the concerns that participants have is market power and that prices may be unconstrained. Setting a Value of Lost Load can at least ensure that if curtailments are necessary, that prices will go no higher than that level.

2.1.114 ***Transpower:*** Market power may arise in a small market.

## Other concerns

A number of submitters mentioned the possibility of perverse hydro outcomes, in that if there were higher prices during pre-shortage situations, it could encourage hydro generators to release more stored water to take advantage of the higher prices.

Conversely, some submitters suggested that scarcity pricing would lead to hydro generators operating more conservatively leading to higher prices and greater spill.

Several submitters noted that any expectations of higher wholesale prices as a result of scarcity pricing would be passed through to customers via high retail prices.

2.1.115 ***Meridian:*** Scarcity pricing will inevitably lead to price rises to consumers. However, it is not clear that the current balance of supply security is not already at the most economically efficient level.

2.1.116 Under option B, a price floor:

- Will lead to hydro generators operating more conservatively leading to higher prices, greater spill, and less efficient outcomes

- Will only delay blackout by one or two days
- Will potentially lead to perverse outcomes from hydro generators through encouraging hydro generators to generate when they would otherwise not (if the hydro generator's view on the value of water was lower than the price floor)
- Will not meet the need for a price setting/discovery mechanism where physical supply and demand do not match.

2.1.117 Would need to differentiate between Islands, or even between nodes where transmission was constrained, in order to operate effectively

2.1.118 ***Mighty River:*** If scarcity pricing is used during conservation campaigns (resulting in higher spot prices than would otherwise occur) this could encourage hydro generators to release stored water to take advantage of the higher prices resulting in a heightened risk of forced outages.

2.1.119 ***Orion:*** Scarcity pricing will increase the average spot price (and forward contract prices), by its effect on the high end of the price distribution, and by its intended consequence of encouraging hydro generators to manage storage more conservatively, which other things equal can only be achieved by offering into the wholesale market at higher prices. Participants will be likely to at least try and recover the increased cost.

2.1.120 Scarcity pricing will inevitably increase hydro spill if it has the intended consequence of more conservative management of hydro storage.

2.1.121 Given the likely impact on prices, scarcity pricing is likely to place a number of existing contracts in or out of the money. This is not a problem in itself, but the impact should at least be considered, and it suggests phasing in any changes over an extended period: typical contracts are for a period of three years.

2.1.122 Some aspects of scarcity pricing impinge on contracting, and scarcity pricing itself will almost certainly change participants approaches to contracting with respect to such matters as:

- The volume and term of fixed price contracts offered
- The price of fixed price contracts
- The nature of contracts and in particular the force majeure type provisions in them

2.1.123 The commission may find that some of these commercially sensible responses run counter to its attempts to improve supply security by way of scarcity pricing, and as a result it may find itself being drawn into the area of contracting.

2.1.124 ***Powerco:*** If scarcity pricing is used, what will stop the generators/ retailers simply raising the average cost of supply over time ie just pass on these costs to the end customers.

## Alternative mechanisms

Several submitters suggested that alternatives to scarcity pricing should be considered, in particular:

- MEUG suggested a 'modified status quo' whereby policies are implemented to ban retailers acting collectively and restricting political interference, thereby allowing the market to derive scarcity values rather than having regulated values.

- Norske suggested that if Whirinaki was out of the way, the market's normal processes would be able to arrive at appropriate scarcity values.

- Orion suggested contracting with Meridian to deliver desired hydro management outcomes.

- Pan Pac suggested building the 12 TWh Lake Onslow pumped storage scheme funded by a levy.

- Powerco would like to see whether more can be done in the way of demand response

- Powershop suggested requiring generators to offer hedges into the market for a significant proportion of their generated capacity

2.1.125 ***MEUG:*** A modified status quo option may be a better solution through policies to ban retailers acting collectively and restricting political interference. MEUG prefers arrangements whereby the market derives scarcity values rather than having regulated values because:

- of the inevitable complexity that will be required to make regulations for setting a scarcity price;
- there is probably a better chance a market will recover quicker from an event and find the right price than having days or weeks of administered prices. MEUG opposes any administered scarcity price that could persist for days or weeks on end.

2.1.126 ***Norske:*** Floor prices during shortages should not be necessary if the Whirinaki Power Station, and the relatively low price cap that it has created, is out of the picture.

2.1.127 ***Orion:*** An option that should be considered is contracting with Meridian to change its behaviour around hydro management. This very targeted option has an advantage over scarcity pricing in that it does not require rebuilding the market pricing mechanism, imply contractual obligations where they (arguably) do not currently exist, or send potentially alarming signals to potential new entrants or other parties who have no influence over hydro management. We note that other aspects of security of supply are provided via contractual solutions, for example frequency keeping, instantaneous reserve and voltage support, and that the cost of these is, to a considerable extent, 'socialised'. Admittedly some of these have more potential providers, but Meridian's dominance of hydro storage is simply a

fact that can only be addressed by means other than changing the pricing process.

2.1.128 ***Pan Pac:*** The cause of the problem is insufficient water storage. The obvious solution is to increase storage. In this respect New Zealand is blessed with an opportunity in the proposed Lake Onslow pumped storage scheme, which has the potential for storing up to 12,000 GWh of electrical energy. This could be complemented in the North Island with inter dam pumped storage.

2.1.129 It would be preferable to abolish the wholesale market and to return to normal commercial terms of purchasing between seller and buyer, as most goods are exchanged. The user would have a direct relationship with the seller rather than some virtual seller as the market now is. Electricity would be sold on negotiated terms agreed by seller and buyer. The issue of supply shortages would then need to become part of such contracts and not just force majeure.

2.1.130 ***Powerco:*** Tackling some of the issues of demand response to price may be politically untenable so the approach proposed by the Commission is probably the next best thing. However Powerco would like the Commission to examine whether more can be done by way of demand response in certain parts of the market.

2.1.131 ***Powershop:*** Requiring generators to offer hedges into the market for a significant proportion of their generated capacity. The consequent increased depth and liquidity of the hedge market will facilitate greater retail competition, provide more efficient incentives for generation investment, and greater opportunities for management of dry year risk. It is our belief that gentailers will price scarcity risks higher to external parties than they will value the same risk internally. Requiring some level of hedges to be offered by generators encourages both integrated and independent participants to price scarcity risk effectively. We suggest that it also be considered in conjunction with any scarcity pricing mechanism because it still has the benefit of encouraging efficient pricing of scarcity risk.

## Other related issues

Several parties raised issues that should be considered in conjunction with scarcity pricing.

Many noted the current distortive effect of Whirinaki's operation and suggested that the scheme should be abolished and/or Whirinaki's offer be modified to reduce distortion. TrustPower suggested that Whirinaki capacity be tendered, thereby promoting visibility of reserve capacity pricing and enabling retailers to procure firm reserve volume.

Some mentioned thermal unit commitment issues, although there was disagreement as to whether specific additional changes such as warming contracts or complex offers were required.

Other issues raised by just one submitter included: consideration of changing the way in which hydro generators can access 'emergency' hydro lake storage; and revoking the rolling outage regulations.

## Whirinaki

2.1.132 ***Contact:*** Outside of dry periods, if Whirinaki is constrained on for security reasons, prices should reflect this. A return on capital should be included in Whirinaki price. The current price capping arrangement (if avg prices over 4 hrs exceed Whirinaki's reserve energy trigger price) should also be dropped.

2.1.133 ***Mighty River:*** Whirinaki reserve energy scheme should be removed.

2.1.134 ***Powershop:*** Disagrees with the suggestion that the beneficiaries of the reserve energy scheme are net purchasers because they benefit from lower spot prices. All purchasers/ end users are the beneficiaries of lower spot prices and of security of supply which is maintained through the operation of the reserve energy scheme so it is appropriate that the costs of Whirinaki, or any other reserve energy scheme are borne by all wholesale purchasers. If the costs of the reserve scheme were levied on net purchasers only it would create a significant barrier to entry, and undermine competition in the wholesale market by imposing additional cost on firms that don't match their purchase volumes with generation. Powershop agrees that reserves schemes such as Whirinaki dampen market price signals that would incentivize generation investment.

2.1.135 ***Transpower:*** The reserve energy scheme should be discontinued or modified to ensure costs are targeted as closely as possible to those parties who benefit from its use.

2.1.136 ***TrustPower:*** One proposal for removing barriers to entry would be to offer tenders on Whirinaki capacity, promoting visibility of reserve capacity pricing and enabling retailers to procure firm reserve volume. This would remove the distortion Whirinaki currently has on market behaviour and pricing, and increase the availability of caps to retailers.

## Unit commitment issues

2.1.137 ***Contact:*** Does not support warming contracts.

2.1.138 ***Genesis:*** The Commission should consider enabling complex offers for dispatch of thermal plant with warming constraints (e.g. offers that include a warming period and a minimum running time).

2.1.139 ***Transpower:*** With the growth in thermal generation and growing intermittent (wind) generation thermal unit commitment, given start times and minimum running loads, is becoming more challenging. A market design that manages the inter-temporal nature of thermal unit commitment, taking into account of; start

times; ramp rates; and minimum running, would allow all thermal plant to be offered when available, potentially enhancing security.

### Other issues

2.1.140 ***Genesis:*** A price floor should apply to offers where hydro plant is drawing on emergency reserves, with revenues recycled to affected community. Hydro developers would more likely consider such arrangements as a routine part of resource consenting.

2.1.141 AUFLS: A market-based regime should be introduced whereby the system operator procures AUFLS availability.

2.1.142 ***Mighty River:*** The rolling outage regulations should be revoked. Refer to their submissions: "Arrangements for Rolling Outages", 12 December 2008; and "The Preliminary Report of the Ministerial Review of Electricity Market Performance", 16 September 2009.

## Buy-back /compensation mechanism issues

### General

Most, but not all, supported the principle of a buy-back mechanism. (Some felt it would achieve little, and/or be made redundant with smart metering)

However, there appeared to be a key disagreement as to whether its prime purpose was to
- incentivise customers to save power;
- incentivise market participants to undertake appropriate risk management; or
- assist 'policy durability'

Submitters' views on the prime purpose had a major bearing on their subsequent position on other key design choices, in particular determining the level of buy-back payment and who should be subject to the mechanism.

Several submitters noted that the cost of such buy-backs would ultimately be reflected in higher retail prices.

2.1.143 ***Business New Zealand:*** Its use or purpose should not be made more sophisticated than it is – that of a punitive tool signalling a cost to retailers of a conservation campaign.

2.1.144 ***Contact:*** This measure is only reasonable if the market permits retailers to charge customers for the full costs of [generation] capacity. If the market does not allow full recovery, then customers are not paying for the full costs of security of supply and therefore should not be compensated [during public conservation campaigns or enforced power cuts].

2.1.145 ***Genesis:*** The buy-back scheme may assist with policy durability.

2.1.146 ***Meridian:*** Supportive. Buy-back arrangements will more clearly balance the incentives around calling public conservation campaigns.

2.1.147 ***MEUG:*** Supports further consideration of compensation payments.

2.1.148 ***Mighty River:*** Supportive.

2.1.149 ***Transpower:*** Consumer compensation may be of limited value. Timely installation of new metering technology should negate the need for this option. With the current mix of metering technology such a regime could be administratively complex. The first step in pursuing any domestic load demand side response initiative should be the installation of advanced metering to reduce the administrative complexity and allow the introduction of pricing regimes which would naturally incentivise conservation during periods of scarcity.

2.1.150 ***TrustPower:*** Supportive of having a compensation mechanism. However note that if customers are to be compensated for demand side response, the cost of this compensation will ultimately be reflected in retail prices, in the same way as the alternative (providing reserve capacity) would be.

2.1.151 We agree that a compensation mechanism should be progressed, but disagree with the example default buy back scheme described in the consultation document, and question the motivation behind compensating customers during savings campaigns. Is it to provide an economic incentive for consumers to save power, or is it to punish retailers? Giving consumers a specific rebate ($10 per week, for example) during conservation campaigns would be foolish. Such an approach gives absolutely no incentive for consumers to save. Consumers' savings should be measured based on a benchmark measured outside the campaign period, and they should be rewarded accordingly.

2.1.152 ***Vector:*** Doesn't support, particularly if paid to all consumers irrespective of whether they save power, and if paid by all retailers irrespective of whether they are properly hedged.

## Who should be subject to the mechanism?

Several submitters suggested it might be more appropriate that only those parties that were under-hedged should be subject to such a buy-back obligation, whilst others suggested that such targeting would be too difficult to implement.

Some suggested that generators, rather than retailers, should be the parties subject to a buy-back obligation.

2.1.153 ***Business New Zealand:*** The analysis should be extended to consider whether this punitive mechanism should be targeted to those who would most benefit from conservation campaigns (presumably 'short' generator/retailers)

2.1.154 ***Genesis:*** The option of targeting under-hedged retailers would be likely to be too difficult.

2.1.155 ***Meridian:*** The mechanism is aimed at influencing the incentives of generators, but imposes obligations on retailers. Targeting retailers will increase the risks for retailers with long retail positions, and benefit generators with short retail positions. Targeting a compensation requirement on retailers will disincentivise new-entrant retail.

2.1.156 ***Mighty River:*** Scarcity pricing/compensation schemes do not necessarily allocate the cost of dry-years/public conservation campaigns to gentailers who have not managed dry-year risk prudently. Instead independent retailers and gentailers with a larger customer base than generation portfolio would pay proportionality too much for (arguably) poor fuel reservoir management by other generators. For example, Genesis Energy has noted (in its September submission to the Ministerial Review), that "If the rebate applies to all suppliers, then it is detrimental to suppliers who have prudently managed their dry year risk. As the rebate obligation is on a per-ICP basis, this would also create an incentive to avoid retailing to residential and small business customers in favour of either larger consumers, or merchant generation."

2.1.157 ***Orion:*** Questions the appropriateness of this applying to all (or indeed any) retailers, when it seems to be aimed at ensuring one generator (Meridian) manages its hydro resources differently.

2.1.158 ***Powershop:*** Retailers have limited direct influence on the security of supply, thus we are particularly concerned that the default buy back mechanism places costs on 'retailers' that should correctly be placed on generators. The cost of the default buy back mechanism should be borne by generators so as to incentivise them to exhaust supply options before calling on the residential market to conserve electricity.

2.1.159 ***Todd:*** Doesn't support the development of a default buy-back scheme unless it is only targeted at net purchasers. Suppliers who are 'long' on generation have no benefit from public conservation campaigns as they have the effect of suppressing spot prices.

2.1.160 ***Vector:*** Doesn't support if paid by all retailers irrespective of whether they are properly hedged. If all retailers are forced to pay compensation may get perverse outcome of retailers taking less action to manage their dry year risk because even if they do manage their risk effectively they could still be forced into making payments because other retailers have been irresponsible.

## Level of buy-back

A number of submitters suggested that developing buy-back arrangements which dynamically set the level of buy-back based on observed customer savings (either on an individual customer or national aggregate level) would be too complex / costly to develop. They thus supported implementation of a default flat payment mechanism.

Others disagreed, suggesting that such flat payment mechanisms would give no incentive for consumers to save power during conservation campaigns.

2.1.161 ***Contact:*** Some standardised savings benchmarks should be developed for customers using standard meters to ensure that aggregate savings are being achieved before any compensation is paid.

2.1.162 ***Genesis:*** At least initially, the default scheme should us a uniform fixed rebate across all (non-exempted) customers. Adjusting the rebate level to reflect the level of national (or individual) savings may introduce a level of complexity that is not warranted.

2.1.163 ***Mighty River:*** Should be a default flat payment mechanism as reward schemes based on actual savings could be too complex.

2.1.164 ***TrustPower:*** Giving consumers a specific rebate ($10 per week, for example) during conservation campaigns would be foolish. Such an approach gives absolutely no incentive for consumers to save. Consumers' savings should be measured based on a benchmark measured outside the campaign period, and they should be rewarded accordingly.

2.1.165 ***Vector:*** Doesn't support if paid to all consumers irrespective of whether they save power. This may create perverse outcomes such as incentivising consumers to use more power to prolong the crisis and secure more weeks of savings campaigns (and associated compensation).

## Ability for retailers to implement their own mechanisms

Many submitters suggested that a buy-back mechanism should have the flexibility for retailers to implement their own arrangements as an alternative to a default arrangement. In particular, it was suggested that this should encourage development of arrangements that more directly incentivise customers to save power at times of scarcity.

2.1.166 ***Contact:*** Retailers should have the flexibility to use smart meters to innovate with specific price plans covering periods of energy shortage rather than imposing flat rates across standard metering and smart metered customers.

2.1.167 ***Genesis:*** An exemption mechanism designed to encourage innovative alternatives would be appropriate.

2.1.168 ***Mighty River:*** Should allow retailers to opt for a reward scheme based on actual savings. Retailers who are long on load should be particularly incentivised to develop such options.

2.1.169 ***TrustPower:*** Retailers must be able to tailor compensation schemes in such a way that they reward customers who actually save power. While a default scheme for the entire market is a good idea, retailers should be able to develop their own schemes in order to target and reward different sectors of their customer base, each of which may have a different price elasticity of demand.

## Who should receive buy-back payments?

Some submitters suggested that buy-back payments should be extended beyond residential customers to all business customers on fixed price, variable volume contracts.

2.1.170 ***Business New Zealand:*** Compensation payments should be extended to SMEs on fixed price, variable volume contracts.

2.1.171 ***Pan Pac:*** Wholesale spot users of electricity, such as Pan Pac, reduced consumption because of unaffordable prices and only maintained reduced usage through hedges. All consumers who respond by reducing load during a conservation program should receive compensation for their inconvenience and loss.

## Triggers / exclusions

Several submitters expressed concerns around the potential risks associated with political intervention around 'calling' conservation campaigns which could then trigger buy-back mechanisms. This led many to require clear and transparent rules around its introduction.

Conversely, Genesis suggested such an administrative trigger should not be used as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. Instead they argued that the Minister of Energy should have the sole authority to declare an 'official' campaign, but that this should be through a formalised process which includes publication of <u>all</u> representations the Minister has received.

TrustPower suggested that all such decisions should be left to individual retailers.

Contact suggested that it would not be appropriate to impose a buy-back obligation on generator/retailers for a security issue caused by withdrawal of, or underinvestment in, transmission capacity.

2.1.172 ***Business New Zealand:*** Scarcity pricing should not be tied to the introduction of a public conservation campaign, because this will be too late. Further, because a public conservation campaign is highly politicised, it may undermine the integrity of scarcity pricing. Instead it should be based on New Zealand-specific

conditions (e.g. lake levels, inflows and margins). The introduction of a consumer rebate, however, does appear better matched to the introduction of a public conservation campaign due to its predominantly punitive characteristics.

2.1.173 ***Contact:*** It is not appropriate to impose a compensation obligation on generator/retailers for a security issue caused by withdrawal of, or underinvestment in, transmission capacity. [Giving the example of the reduced HVDC capacity giving rise to South Island dry year risk]

2.1.174 ***Genesis:*** There should not be an administrative trigger for the scarcity pricing and buy-back mechanisms, as it creates a gaming risk and fails to deal directly with political interests in public savings campaigns. It would be more effective if the Minister of Energy has the sole authority to declare an 'official' campaign in response to representations from stakeholders, but would be required to: seek and publish advice from the Commission, publish the representations the Minister has received, and run a one-week consultation. Rather than exacerbating political risk, this formalisation of Ministerial intervention should improve decision-making dynamics.

2.1.175 ***TrustPower:*** The decision to call for consumers to save power should be left up to the individual retailers, as they are best placed to assess the need for a campaign and its likely benefit. If each retailer has schemes tailored to suit their customer and their book position, then the retailers should be able to call savings campaigns whenever the need arises, leaving the customers no worse off.

## Inter-relationship of scarcity pricing and buy-back

Several submitters questioned the consultation paper's portrayal of the inter-relationship between scarcity pricing and buy-back mechanisms, and suggested that only scarcity pricing would be required to incentivise appropriate risk management practices by market participants.

2.1.176 ***Business New Zealand:*** The finding portrayed in Fig 2, p18 of the consultation appears to be as much a construct of the assumptions as of real market conditions.

2.1.177 ***Contact:*** The finding portrayed in Fig 2, p18 of the consultation (i.e. that both scarcity pricing and default buy back are required to make retailers neutral) is very sensitive to the hedging and pricing assumptions, and a 'not neutral' result can be achieved through only a small change in assumptions.

2.1.178 ***Todd:*** A flat $10/week requirement won't reduce the incentives for suppliers who are net purchasers from lobbying for public conservation campaigns. Net purchase generators/retailers will be in a neutral competitive position if they are successful in their lobbying, as all suppliers could be forced to pay consumers to conserve even though some suppliers may have surplus generation or hedges.

2.1.179 ***Vector:*** Doesn't agree that compensation mechanism is required in addition to scarcity pricing. While generator retailers should not be able to use public conservation campaigns as a free resource, the risk of incentivising so strongly against them (by imposing both a spot price floor and compensation payments) is that they would not be used even when it would be efficient to do so. A properly designed spot price floor should provide sufficient incentives for generator-retailers to avoid savings campaigns where possible. Further, as a result of a spot price floor and VOLL-based schemes, retailers will likely *voluntarily* put in place compensation regimes that would apply during savings campaigns.

## Alternative or complementary approaches

MEUG suggested that the existing contractual relationship between retailers and consumers may create the ability for consumers to claim damages for non-performance if a retailer has not taken all reasonable steps to avoid a blackout caused by energy shortage – with the retailer paying some consumers to save power being one such reasonable step. MEUG argue that if such a contractual approach exists it would be preferable to a regulated approach.

Pan Pac suggested an alternative mechanism whereby consumers are exposed to spot price for any consumption above a pre-determined 'normal' level would be the most effective method to incentivise consumer savings.

TrustPower suggested that if there was greater public visibility of lake levels in the weeks / months prior to arriving at the point where a conservation campaign is required, this would engender greater voluntary saving by consumers.

2.1.180 ***MEUG:*** The consultation paper considers regulated compensation payments. MEUG suggests the Commission consider if there is an equivalent contractual incentive on retailers to ensure supply to consumers otherwise risk a damages claim for non-performance of contract, i.e. affected consumers may seek damages if they can prove the event was foreseeable and the retailer had not taken all reasonable steps to avoid the blackout. A reasonable step would be for a retailer to pay some consumers to save power to avoid others being blacked out. A contractual compensation or incentive mechanism, if one exists, would be preferable to a regulated approach. One way to decide if a market incentive exists would be to seek a Declaratory Judgement from the High Court. This would require the cooperation from a retailer(s) though we don't see that as a barrier because presumably they also would prefer a contractual rather than regulated solution.

2.1.181 ***Pan Pac:*** An alternative could be, as a conservation program is initiated, to define a proportion of the consumers load to be saved. The average load for the consumer, based on historical usage, would be determined and that load less the

proportion to be saved given fixed price protection. Usage above this would have fixed price protection removed, and be open to reflect the wholesale spot price. Any use of this electricity would be charged at the spot price, but additionally any savings made would be reimbursed at the spot price. Such a program would apply to all consumers/ users of electricity.

2.1.182 It is unlikely that consumers will respond significantly to a refund, especially if as indicated in the consultation paper, it amounts to a dollar per day. They are more likely to respond to a price increase. The signalled price increase would also reinforce the difficulty the nation is facing.

2.1.183 ***Powerco:*** Wants investigation of how to get improved demand response to dry year electricity price.

2.1.184 ***TrustPower:*** Believe that the public has not been made aware of the impending storage shortages early enough in the process, in some cases only learning of them just before (or as) savings campaigns have been called. A certain level of low-cost but valuable demand response would occur naturally if customers had more visibility of hydro storage levels.

## Compulsory contracting issues

There was unanimous agreement that compulsory contracting shouldn't be developed further at this stage, with parties suggesting it would be difficult to implement and likely lead to over-procurement of supply-side options.

A number of submitters suggested it could be implemented at a later stage if scarcity pricing doesn't result in the desired level of supply security.

2.1.185 ***Business New Zealand:*** Extremely difficult to implement in a way that does not distort investment decisions, and have substantial market power problems.

2.1.186 ***Contact:*** Likely to be more expensive than scarcity pricing because regulator incentivised to over-procure. Also, by trying to pick capacity 'winners', may displace more economic generation. In general, will stifle innovation and increase overall costs to consumers.

2.1.187 ***Genesis:*** Not a suitable intervention for New Zealand. Risks prescribing supply-side solutions, rather than encouraging participants finding the least cost way. It would be administratively complex, with considerable scope for regulatory error leading to under- or, more likely, over-procurement of reserve energy.

2.1.188 ***Meridian:*** Complex and high-intervention approach. It will also likely limit the ability of participants to obtain hedges, as the available capacity that generators would be willing to offer in hedge contracts will be reduced.

2.1.189 ***Mighty River:*** Would not support.

2.1.190 ***Norske***: Disagrees with the idea of compulsory contracting. Forcing consumers such as Skog to purchase electricity hedges would remove incentives for us to take actions such as: increasing cogeneration output; higher inventory holding; options for alternative supply from sister mills. This would make any hydro shortage situation worse.

2.1.191 ***Pan Pac:*** It appears it may work but is rather complicated and difficult to understand from the consultation paper. More work is needed for this option; certainly more evaluation of how well it is working in other jurisdictions.

2.1.192 ***Rio Tinto:*** Compulsory contracting has a clear disadvantage in that it will require regulations that effectively make the Government decide the maximum quantity of hedge cover that will be available. This will then have an influence on the price and so the Government becomes the de-facto setter of price and quantity in the hedge market. Generally, when Government's interfere in markets this way, the outcomes are poor and unanticipated.

2.1.193 ***Todd:*** A regulated compulsory contracting solution will be costly to develop and administer and also creates new risks that over time participants develop ways of circumventing or turning the rules around compulsory contracting to their advantage.

2.1.194 ***Transpower:*** Supports not proceeding with compulsory contracting at this time, but should retain as a fall-back if scarcity pricing / compensation mechanisms prove inadequate to incentivise supply security. I.e. compulsory contracting could be complementary, not alternative, to scarcity and compensation mechanisms.

2.1.195 ***TrustPower:*** Compulsory contracting is not necessary, as retailers already have a considerable incentive to hedge.

2.1.196 ***Vector:*** Doesn't support compulsory contracting at this stage. However, should remain an option to be implemented

# 3. Summary by submitter

## Business New Zealand

3.1.1 Generally supportive. Tends towards option B (modified scarcity pricing), but with its trigger not being linked to public conservation campaigns.

3.1.2 The inter-relationship with other aspects of market design needs careful thought.

## Carter Holt Harvey (CHH)

3.1.3 Generally supportive. Concurs with MEUG submission. Prefers option A

3.1.4 Wants detailed cost-benefit analysis, and careful design, with particular reference to potential market power concerns.

3.1.5 Thinks scarcity pricing is better suited to energy adequacy than short-term capacity adequacy (which it says needs separate treatment).

## Contact

3.1.6 Generally supportive. Neutral as to whether pure (option A) or modified (option B) scarcity pricing.

3.1.7 Wants detailed analysis of options, particularly the inter-relationship with the other MDP elements (locational hedging and transmission pricing).

3.1.8 Additional changes requested ASAP: Changes to Whirinaki offer; and clearer rules and better signalling of how Pole 1 of the HVDC is to be used.

3.1.9 Believes the hedge market needs to be further developed to help manage scarcity pricing risk, but that regulatory intervention is not required to achieve this.

## Genesis

3.1.10 Generally supportive. Prefers option B, with triggers for scarcity pricing and buy-back being based on the Minister having the sole authority to declare a savings campaign based on a prescribed process of consultation and publishing *all* representations received on the issue.

3.1.11 Different elements of scarcity pricing can be implemented incrementally, e.g. national scarcity prices for energy scarcity can be implemented ahead of locational hedging mechanisms.

3.1.12 Market power concerns linked to scarcity pricing have been overstated.

3.1.13 The default buy-back mechanism should be kept simple, but allow retailers to innovate.

## Meridian

3.1.14 Scarcity pricing will inevitably lead to price rises to consumers. However, it is not clear that the current balance of supply security is not already at the most economically efficient level.

3.1.15 If analysis should establish that a greater level of security than is currently being delivered is desired, then generally supportive of option A (pure). However, scarcity pricing should not be implemented prior to the HVDC upgrade because of the risk of extreme price volatility, in a timeframe which is too short for generation investment to respond.

3.1.16 Wary of option B (modified) as it is unique and untested internationally.

## MEUG

3.1.17 Mildly supportive of option A, not B.

3.1.18 Wants to consider a 'modified status quo' which requires mechanisms to prevent suppliers acting collectively, and letting the market reveal the scarcity values.

3.1.19 Also wants to consider an alternative to a regulated default buy-back mechanism, in the form of an equivalent contractual incentive on retailers to ensure supply to consumers otherwise risk a damages claim for non-performance of contract.

## Mighty River Power

3.1.20 Prefer A for energy scarcity, because B subject to political interference about when to implement, and risk of exacerbating poor hydro management practices. Prefer B for capacity scarcity – i.e. SP when insufficient reserves.

3.1.21 Scarcity pricing/compensation schemes can heighten barriers to entry/retail competition from independent electricity retailers and retailers with a bigger customer base than generation capacity, particularly on a locational basis.

3.1.22 There are a number of complexities and interactions with other policy initiatives that would need to be worked through before it would be prudent to introduce a rebate/compensation scheme during public conservation campaigns and scarcity pricing, particularly in relation to managing locational risk.

3.1.23 The default buy-back should be simple, but allow retailers to opt for an alternative where compensation is based on actual savings.

## Norske

3.1.24 Likes buy-back.

3.1.25 Believes if have Whirinaki out of picture, won't need scarcity pricing.

3.1.26 Dislikes compulsory contracting.

## Orion

3.1.27 Would prefer EC contracting with Meridian for hydro management, rather than introduce scarcity pricing.

3.1.28 Believe scarcity pricing will increase prices, and increase barriers for new-entrant retailers and portfolio generators.

3.1.29 If have scarcity pricing, support B, not A.

3.1.30 Question appropriateness of buy-back. applying to retailers when problem is Meridian hydro mgmt.

## Pan Pac

3.1.31 Doesn't believe market can be made to work.

3.1.32 Against scarcity pricing.

3.1.33 Recommends building 12 TWh Lake Onslow pumped storage scheme funded by a flat levy.

3.1.34 Believes 'carrot' of compensation mechanism should be backed up by 'stick' of penalising customers at spot for any increases in consumption during conservation campaigns.

## Powerco

3.1.35 Generally supportive of Commission's proposed approach. Option B appears to be more attractive.

3.1.36 Wants additional consideration of ways to improve demand response to dry year electricity price.

## Powershop

3.1.37 Doesn't believe there is a clear case that current market arrangements aren't working. More analysis required on this problem definition.

3.1.38 Should consider incentives on generators and retailers separately to avoid developing arrangements that entrench the vertically integrated model.

3.1.39 Buy back obligations should be on generators not retailers, because retailers have limited direct influence on the security of supply.

3.1.40 Wants consideration of compulsory hedging as an alternative (or maybe a complement) to scarcity pricing.

3.1.41 If scarcity pricing is implemented, prefers A to B.

## Rio Tinto

3.1.42 Some concerns whether SP will work for energy scarcity. Believes much more analysis is required.

3.1.43 Would prefer reallocation of SOE assets, and development of a liquid hedge market.

3.1.44 FTRs, not Hybrid LRA, are an essential precursor to such a hedge market.

## Todd

3.1.45 Supports development of option A, as option B is susceptible to political lobbying. Also need consideration of purchaser default situations if participants don't appropriately manage the increased price risk.

3.1.46 Doesn't agree with default buy-back mechanism unless targeted at net purchasers.

## Transpower

3.1.47 Prefers option B for scarcity pricing, including having scarcity pricing during actual outages.

3.1.48 Doesn't see default buy-back as a priority.

3.1.49 Doesn't want compulsory contracting at this stage, but it could be implemented later as a complement to scarcity pricing if scarcity pricing proves insufficient to deliver supply security.

3.1.50 Wants to see more detailed analysis, and notes the challenges relating to the inter-relationships of the MDP initiatives.

3.1.51 Highlights locational hedging risk as an issue with scarcity pricing, and comments that FTRs are the only solution that doesn't distort scarcity pricing.

3.1.52 Wants additional focus on market development to facilitate unit commitment for slow-start thermal units.

## TrustPower

3.1.53 Want to see detailed cost-benefit of scarcity pricing to see whether the increase in security justifies the increase in cost, and increase in barriers to new entry. If have scarcity pricing, want option A. Doesn't want intra-island scarcity pricing as a result of transmission failures.

3.1.54 One additional proposal is that Whirinaki capacity be tendered, promoting visibility of reserve capacity pricing and enabling retailers to procure firm reserve volume.

3.1.55 Want retailers to have ability to tailor conservation campaigns so that they reward customers that actually save power. Disagree with compensation being a flat amount that is not linked to customers' actual savings. Wants customers to have greater visibility of hydro storage levels as an additional measure that could deliver greater levels of voluntary savings prior to calling a conservation campaign.

## Vector

3.1.56 Supports scarcity pricing option B, provided includes having scarcity pricing during actual outages. However, shouldn't be imposed where shortages arise due to inadequate transmission capacity (because purchasers are not responsible for the condition of the grid). Also concerned that scarcity pricing doesn't align with the LRA proposal.

3.1.57 Doesn't support compensation payments / buy-back in *conjunction* with scarcity pricing, because it will overly incentivise retailers to avoid shortage situations, even when in some cases (e.g. extreme drought) public conservation may be the most economically efficient option.

3.1.58 Doesn't support compulsory contracting.

## Winstone Pulp International (WPI)

3.1.59 Concurs with MEUG submission. Supports scarcity pricing, but should only be introduced when the electricity market is functioning well to avoid suppliers shifting risk and/or costs to consumers using non-market mechanisms.

# Appendix 1 Responses to questions

3.1.60 Of the eighteen parties that made submissions, only fourteen[5] made specific responses to the six questions that were within the body of the consultation paper. Summaries of these specific responses from these parties are set out in this appendix. Such responses have also been incorporated into the 'Summary of submissions by issue' section in the main body of this report.

| Q | Party | Type[6] | Response |
|---|---|---|---|
| **1** | **What concerns do you have with regard to security of supply under existing arrangements?** | | |
| 1 | CHH | CL | Agree with consultation paper, plus add the issue of the Commission's role in managing Whirinaki. |
| 1 | Contact | GR | Current arrangements lead to inappropriate suppression of prices when capacity is in short supply. Current reserve energy policy has distorted prices and reduced incentives to invest in plant or demand-side management for security. |
| 1 | Genesis | GR | Deteriorating commercial returns on hydro firming plant such as Huntly 1-4. |
| 1 | Meridian | GR | Discussions about a security of supply problem seem to proceed based largely on anecdote. However, it seems the existing market arrangements may well be achieving an optimal level of security of supply at least cost. Meridian modelling appears to suggest this. |
| 1 | MEUG | CL | Suppliers collectively lobbying for interventions and using non-market strategies to minimise their commercial risk in dry years. |
| 1 | Mighty River | GR | Dry-year public conservation campaigns suffer from 'public good' type market failure, in terms of generators gaining the benefits, but not bearing the costs – other than political costs in terms of possible market changes. Also the operation of |

[5] Carter Holt Harvey, Contact, Genesis, Meridian, MEUG, Mighty River Power, Orion, Pan Pac, Powerco, Powershop, Rio Tinto Alcan, Todd Energy, Transpower, TrustPower. Business New Zealand, Norske, Vector, WPI

[6] CL = Consumer Large, GR = Generator Retailer, D = Distributor, O = Other

| Q | Party | Type[6] | Response |
|---|---|---|---|
| | | | Whirinaki suppresses spot prices, and rewards market participants that have not adequately hedged. |
| 1 | Orion | D | The cessation of the reserve energy scheme should change the incentives on participants regarding how they manage dry year risk. Scarcity pricing rather implies that this will not happen. |
| 1 | Pan Pac | CL | Generators Market power results in excessive and uneconomic prices. Price signals are opaque to most retail and SME consumers and as such no significant response to higher prices occurs. Conservation programs are then required, which achieve their purpose. |
| 1 | Powerco | D | General concurrence with Commission's proposed approach.<br>The past operation of reserve energy has provided excessive risk. |
| 1 | Powershop | R | The Commission should undertake analysis to determine if there is a real issue with security of supply under current arrangements. |
| 1 | Rio Tinto | CL | The ability of the supply-side of the industry to socialise the cost of their failure to manage dry-year risk across all industry participants. |
| 1 | Todd | R | Government intervention via the likes of Whirinaki reduces incentives for participants to develop such schemes privately. |
| 1 | Transpower | O | The concern about security of supply under the existing arrangements is more to do with incentives to integrate the available capacity and fuel, including hydro, to meet electricity demand than new investment. |
| 1 | TrustPower | GR | The industry's poor record of communication with the public (via the Government) in dry years. |
| **2** | **What, if any, other underlying issues lead to the potential for cost shifting among market participants?** | | |
| 2 | CHH | CL | Agree with consultation paper. "The ability for some electricity suppliers to offload their supply risk through political processes is at the root of the problem." |
| 2 | Genesis | GR | Administrative actions that impose costs not being reflected in prices including: reducing reserves cover; ordering demand curtailment; the AUFLS regime; the rolling outage regime; public savings campaigns; and accessing emergency hydro |

| Q | Party | Type[6] | Response |
|---|---|---|---|
| | | | storage. |
| | Meridian | GR | General agreement with the consultation paper, except for the consultation paper's assumption that the security of supply solution for NZ is the commissioning of additional oil-fired peakers. |
| 2 | MEUG | CL | 1. The willingness and ability of major suppliers to act collectively to minimise their net costs to the detriment of consumers; and<br>2. Politicians being open to lobbying by spot exposed suppliers and those interventions undermining confidence for the market to develop solutions. |
| 2 | Orion | D | Much of the scarcity pricing proposal is based on an unstated presumption that physical supply security is, or should be guaranteed, and that this is part of what is being paid for. This is something of a rewriting of the implicit or explicit understanding reflected in customer contracts. |
| 2 | Pan Pac | CL | Vertical integration between generators and retailers causes virtual hedging between their arms resulting in the wholesale market becoming dysfunctional during supply shortfalls primarily caused by droughts. |
| 2 | Powerco | D | No demand response to price because customers do not see the actual time-based pricing. It may be that a demand response is required in dry years.<br>A further question is to what extent has the management of hydro storage been reviewed by the commission. |
| 2 | Powershop | R | Need to consider incentives on generators and retailers separately.<br>Agrees that Whirinaki dampens price signals that would incentivise generation investment. |
| 2 | Rio Tinto | CL | The political hedge that is employed. That is, exposed suppliers currently have the option to lobby politicians for relief. |
| 2 | Transpower | O | The focus should be on providing adequate opportunity and incentive to invest, offer capacity, and to procure and manage primary fuel to meet expected electricity demand rather than the potential for cost shifting. |

| Q | Party | Type[6] | Response |
|---|---|---|---|
| 2 | TrustPower | GR | Both conservation campaigns and the development of Whirinaki benefit retailers who are short-positioned. |
| **3** | **What is your assessment of pros and cons of scarcity pricing approaches versus compulsory contracting?** | | |
| 3 | CHH | CL | Compulsory contracting not preferred because of complexity (and associated cost).<br>Scarcity pricing more light-handed approach that leaves more discretion to the market.<br>Market power concerns with both, but appear to be resolvable. |
| 3 | Contact | GR | Significant challenges in designing and implementing compulsory contracting in a hydro dominated market that is subject to many transmission constraints. Compulsory contracting likely to be more expensive than scarcity pricing because regulator incentivised to over-procure. Plus more likely to be inflexible, and limit innovation in the provision of secure electricity.<br>Scarcity pricing may lead to increased wholesale risk leading to barriers for new entrant retailers and non-portfolio generators. However, scarcity pricing should also encourage growth in the hedge market which could mitigate this effect. The potential increase in market power with scarcity pricing, the impetus for demand side response should help mitigate this effect. |
| 3 | Genesis | GR | Scarcity pricing can address market flaws while maintaining flexibility for participants to find the least cost ways of managing security of supply risks<br>Capacity markets are problematic and administratively complex. Extending the capacity market approach to suit an energy-constrained market could only exacerbate the standard weaknesses of capacity markets. |
| 3 | Meridian | GR | One of the cons of scarcity pricing is that prices could hit VOLL for weeks or months due to energy constraints, whereas overseas such prices only occur for a few half-hour periods because of capacity constraints.<br>VOLL price implemented prior to the HVDC upgrade would increase price volatility in a timeframe that is too short for generation investment to respond. |

| Q | Party | Type[6] | Response |
|---|---|---|---|
| | | | Under scarcity pricing option B, a price floor:<br>Will push up average prices, particularly in the short term.<br>Will Lead to hydro generators operating more conservatively leading to higher price, greater spill, and less efficient outcomes<br>Will only delay blackout by one or two days<br>Will potentially lead to perverse outcomes from hydro generators through encouraging hydro generators to generate when they would otherwise not (if the hydro generator's view on the value of water was lower than the price floor)<br>Will discourage vertical integration, and discourage vertically integrated companies from having a significant number of retail customers. Generators will want to be exposed to these regulated high prices. Retailers will not want to be exposed. This encourages companies to move towards short retail positions.<br>Will expose spot market customers, such as medium and large industrials, to high prices for extended periods of time. This can only be undesirable for New Zealand.<br>Will not meet the need for a price setting/discovery mechanism where physical supply and demand do not match.<br>Would need to differentiate between Islands, or even between nodes where transmission was constrained, in order to operate effectively<br>With respect to compulsory contracting, Meridian does not see any advantages, but many disadvantages (particularly complexity and risk of increased costs) |
| 3 | MEUG | CL | Scarcity pricing and compensation approaches are worth further investigation.<br>No further work is justified on compulsory contracting. |
| 3 | Mighty River | GR | Supports further work on scarcity pricing but not compulsory contracting. |
| 3 | Orion | D | We agree that scarcity pricing is superior to compulsory contracting. |

| Q | Party | Type[6] | Response |
|---|---|---|---|
| 3 | Pan Pac | CL | Scarcity pricing already exists with market power price rises. Can see no improvement from the proposal of scarcity pricing. Has concerns at the prices used in illustration showing a complete misunderstanding of the commercial realities for users of electricity for commercial purposes. Potentially may have small merit as a stop gap measure but unlikely to be significantly better than existing. |
| 3 | Powerco | D | Agrees with Commission's assessment. |
| 3 | Powershop | R | Have some concerns that without better problem definition, won't get good outcomes. Note that: determining VOLL accurately may be difficult; scarcity pricing will deliver greater price volatility that will increase the average cost of electricity; scarcity pricing in pre-shortage situations may impose unnecessary costs, and raise risk of cost-shifting and lobbying.<br><br>Supports buy back mechanism, but believes it should be levied on generators, not retailers. |
| 3 | Rio Tinto | CL | Concerned that scarcity pricing may lead to marked reduction in competition as generator-retailers seek to rebalance their portfolios to minimise their exposure. Also a likely reduction in hedge quantities offered, and more onerous terms, will act against new entrant retailers.<br><br>Concerned that scarcity pricing for energy is not sufficiently 'tested' overseas, and that implications for other market design elements haven't been properly considered. |
| 3 | Todd | | Considers scarcity pricing to be a more economically efficient solution than regulated solutions such as compulsory contracting. |
| 3 | Transpower | O | It is not so much a question of scarcity pricing versus compulsory contracting, but rather a matter of sequence. Scarcity pricing should be considered first and compulsory contracting added later if necessary. |
| 3 | TrustPower | GR | Does not support compulsory contracting. We believe it would be incredibly hard to control within a company, and virtually impossible to monitor by the Commission.<br><br>Scarcity pricing will result in gentailers allocating retail product more conservatively, resulting in diminished retail competition, and new entrants to the market may find it harder to purchase hedges from gentailers at a reasonable price, due to the gentailers' increased aversion to running short.<br><br>Scarcity pricing may result in greater levels of security of supply, but this can only be achieved through average prices |

| Q | Party | Type[6] | Response |
|---|---|---|---|
| | | | increasing for end users. Even if the probability of capacity shortfalls remains the same, if the prices during such shortfalls increase, retailers will be willing to pay more for capacity cover, and new investment in generation will appear more attractive. Both should stimulate investment and increase security of supply, without the need for mandated contracting. The greater cost of this risk management to retailers, however, will ultimately be fed through to end users.<br><br>Prices may not necessarily become more volatile if VOLL pricing is introduced. Just the threat of being caught short when the price goes to VOLL should be enough to stimulate greater levels of contracting, which would fund greater levels of investment. Average prices should settle at a level higher than currently, however the increased level of security and looser capacity margins may result in prices not being any more volatile than today. |
| **4** | **What other options should be considered to improve security performance?** | | |
| 4 | CHH | CL | Restructuring of SOE assets. |
| 4 | Contact | GR | Change Whirinaki's offer as soon as possible: Outside of dry periods, if Whirinaki is constrained on for security reasons, prices should reflect this. A return on capital should be included in Whirinaki price. The current price capping arrangement (if avg prices over 4 hrs exceed Whirinaki's reserve energy trigger price) should also be dropped.<br><br>Reserve prices should reflect scarcity, rather than drop as currently occurs.<br><br>Clearer rules and better signalling of how Pole 1 is going to be used. |
| 4 | Genesis | GR | Shift to market-based regime for AUFLS procurement<br><br>Revoke the rolling outage regulations<br><br>Have a price floor applied to offers where hydro plant is drawing on emergency water, with revenues recycled to affected community.<br><br>Revising the Whirinaki offer strategy.<br><br>Improve information available to participants.<br><br>Enabling complex offers for dispatch of thermal plant with warming constraints (e.g. offers that include a warming period |

| Q | Party | Type[6] | Response |
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| | | | and a minimum running time). |
| 4 | Meridian | GR | Market monitoring. |
| 4 | MEUG | CL | Modified status quo (through policies to ban retailers not acting collectively and restricting political interference); and<br>Possible incentives on suppliers to avoid damages claims for non-performance of supply contracts (as an alternative to regulated default buy-back mechanisms) |
| 4 | Mighty River | GR | Removal of the Whirinaki Reserve Energy scheme. |
| 4 | Orion | D | Separately contract with Meridian to manage its resources more conservatively. |
| 4 | Pan Pac | CL | Develop Lake Onslow pumped storage, funded by a flat levy. |
| 4 | Powerco | D | Improved demand response to dry year electricity price. |
| 4 | Powershop | R | Requiring generators to offer a significant proportion of their generation into the hedge market. |
| 4 | Rio Tinto | CL | Reallocation of the generating assets of the SOEs. |
| 4 | Todd | | None. |
| 4 | Transpower | O | A market design that manages the inter-temporal nature of thermal unit commitment, taking into account of; start times; ramp rates; and minimum running, would allow all thermal plant to be offered when available, potentially enhancing security. |
| 4 | TrustPower | GR | Whirinaki's output should be tendered into the market for two reasons:<br>1. To give a more visible view of the value of price caps, and<br>2. The output will be available for specific parties who can rely on it to cover their price and volume risk<br>Very few players in the New Zealand market can actually offer a capping product to retailers. By selling Whirinaki's output in this way, the total amount of firm capacity available to the market will be increased, which should dampen the prices currently charged for such capacity. The output could then be sold on a secondary market, like Energy Hedge. This could |

| Q | Party | Type[6] | Response |
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| | | | reduce costs to consumers, increase retailers' ability to offer firm capacity, and enhance retail competition in general. |
| **5** | **What approach to scarcity pricing should be preferred?** | | |
| 5 | CHH | CL | Scarcity pricing better suited to energy adequacy than real time capacity adequacy. "CHH would strongly prefer that the short term capacity adequacy issue is treated quite separately from the primary energy security need". |
| 5 | Contact | GR | Both options A and B should be explored. The difficulties of designing a workable and non-distortionary B may make A more practicable. Issues that need to be addressed with floor prices in B include: Would they apply to off-peak where supply may exceed demand? Does floor apply to reserve as well? What happens with transmission constraints with different levels of shortage at either side? Is the floor inside SPD's algorithms? |
| 5 | Genesis | GR | Priority should be given to implementing a price floor in public savings campaigns [i.e. option B] |
| 5 | Meridian | GR | Pure scarcity pricing (option A) |
| 5 | MEUG | CL | Capacity scarcity issues should be separately considered by the Capacity Adequacy Industry Working Group.<br>For energy scarcity, option A is preferred and not Option B. |
| 5 | Mighty River | GR | For energy scarcity option A. For capacity scarcity option B |
| 5 | Orion | D | If scarcity pricing is to be implemented we believe it must be some form of the "modified" version. This price could be linked in some way to the assessed security level, with a "scarcity factor" ranging between 0 and 1 being applied to the scarcity price. |
| 5 | Pan Pac | CL | Doesn't agree with scarcity pricing. With respect to compensation mechanism, believe that as well as rewarding customers for saving, they should be penalised at spot for any increases in consumption. |
| 5 | Powerco | D | Progress both A and B, but prefer B. |
| 5 | Powershop | R | Option A because it gives all participants greater certainty. |

| Q | Party | Type[6] | Response |
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| 5 | Rio Tinto | CL | Scarcity pricing should be focussed on energy issues. More analysis on capacity issues is required before determining the appropriate remedy for capacity issues. |
| 5 | Todd | GR | Prefers Option A as option B faces risks around lobbying in relation to when to trigger conservation campaigns. |
| 5 | Transpower | O | Option B |
| 5 | TrustPower | GR | Option A |
| **6** | **Do you agree with the outlined approach whereby the Commission will progress with a detailed proposal for a scarcity pricing regime and for a default buy-back arrangement? If not, what would be the best approach for moving forward?** | | |
| 6 | Contact | GR | Agrees that: don't pursue compulsory contracting; investigate scarcity pricing options A & B to see which is best; and investigate compensation mechanism.<br><br>With regards to compensation mechanism: only should be implemented if the market allows generators to make full recovery for investing in capacity; shouldn't be used if scarcity situations arise due to withdrawal of, or underinvestment in, transmission capacity (e.g. the HVDC link and lower NI AC grid into Wellington remains a bottleneck during high south transfer in SI drought situations); Standardised savings benchmarks should be developed for customers using standard meters to ensure that aggregate savings are being achieved before compensation is paid; retailers should have flexibility to use smart meters to innovate with specific price plans.<br><br>Questions the finding in Fig2 of consultation (showing that both scarcity pricing and compensation mechanism is required in order to make a retailer neutral) because the result can be made not neutral from small changes to the assumptions regarding hedge and price levels. |
| 6 | Genesis | GR | Agrees, but should also analyse options listed in Genesis' response to Q 4. |
| 6 | Meridian | GR | The proposed approach is appropriate, but needs to be undertaken with care to develop the detail of the options. |
| 6 | MEUG | CL | Generally agree, but also consider a modified status quo option; and possible incentives on suppliers to avoid damages claims for non-performance of supply contracts (as an alternative to regulated default buy-back mechanisms) |

| Q | Party | Type[6] | Response |
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| 6 | Mighty River | GR | Supports further work, but dependent on introducing policies aimed at locational price risk. |
| 6 | Orion | D | Consider there is considerable work still to be done to establish whether this is an appropriate regulatory response. |
| 6 | Pan Pac | CL | Sceptical of study, but agree should progress in conjunction with study of a scheme to increase water storage. |
| 6 | Powerco | D | Agrees with Commission's proposed approach. |
| 6 | Rio Tinto | CL | If reallocation of SOE assets is not going to happen, the best option it to improve the liquidity of the hedge market. A tool for managing basis risk is essential for this, with FTRs being the appropriate tool, not a Hybrid LRA option. |
| 6 | Todd | | Supports development of scarcity pricing, but not a default buy-back scheme unless it is only targeted at net purchasers.<br>Additionally should develop provisions for default circumstances and transfer of customers, and prudential supervision requirements. |
| 6 | Transpower | O | Yes for scarcity pricing. For default buy-back, the benefits should be confirmed before progressing with detailed design. In any event, the timely introduction smart metering should make such a mechanism redundant. |
| 6 | TrustPower | GR | Agree that the Commission should progress with developing detailed proposals for both scarcity pricing and savings campaign compensation. However, disagree that compensation mechanism should be a flat rebate to customers irrespective of whether they save electricity or not. |