Post-winter review of electricity system

Summary of Submissions

Prepared for the Ministry of Economic Development

by Corydon Consultants Ltd

November 2001

ISBN 0-478-24277-3

CONTENTS

Introduction

In September 2001 the Minister of Energy announced a review of the way that New Zealand's electricity system functioned during winter 2001. This was in response to concerns among electricity consumers and industry participants about whether the market works properly under dry-year conditions. The purpose of the review was to identify whether further changes were required to electricity market arrangements.

This document is a summary of the submissions received. The points made are those of the submitters. The Government response will be announced in December 2001.

The submissions process

The review comprised a process of calling for submissions from interested parties, posting these on a website (www.winterreview.govt.nz) and inviting cross-submissions. The questions posed for submitters in the review's terms of reference were:

1. What factors contributed to wholesale electricity market developments in the 2001 winter?

2. How effective were existing market arrangements in responding to these developments?

3. What changes should be made to market arrangements, why are these changes recommended and what are the costs and benefits?

   (Submitters were asked, in responding to question 3, to take account of the improvements to market arrangements required by the Government as set out in the December 2000 Government Policy Statement on Electricity.)

4. What changes to the energy efficiency and conservation campaign should be considered in case the need arises in future for a similar campaign?

Forty-seven submissions were received in the first round, and 12 cross-submissions were received. A list of submitters is presented in Appendix 1.

Report structure

This document presents a series of bullet points that summarise the points made by respondents, followed by selected quotes relating to those bullet points (if applicable), and a list of the submitters who made each point. In cases where a large number of submissions contributed to a point, the respondents concerned have been listed in a shaded box following the applicable bullet point(s) and quote(s). In the case of points made in only one or two submissions, respondents are listed in brackets at the end of the applicable bullet point (this occurs particularly in the case of suggested changes in section 3). All quotes are attributed to the applicable submitter.

Each section begins with a brief summary of the key points made under that section. These summaries have also been collated together and presented at the beginning as a summary of the entire document.

Summary of Key Points

1 What factors contributed to wholesale electricity market developments in the 2001 Winter?

- The causes of the developments were drought combined with unusually high demand for electricity. A wide range of other factors exacerbated the situation.

2 How effective were existing market arrangements in responding?

2.1 Overview

- Opinion was divided on whether the market had responded effectively to the events of winter 2001. Those that thought it had said prices had risen in response to supply limitations and increased demand, sending signals about the need to reduce consumption.
- Those that thought it had not pointed out that Government intervention, appealing to the public goodwill, had been necessary to achieve savings.
- Some suggested that wholesale spot prices had over-reacted to the situation and reached unreasonably high levels.
- Industrial consumers exposed to the spot market considered they had been unfairly disadvantaged relative to customers protected by hedges and retail contracts.
- Some said that favourable market and environmental conditions during the preceding few years had made some electricity purchasers complacent, leading to a low level of risk preparedness.

2.2 Supply side

- New Zealand is heavily reliant on hydro-electricity and this inevitably means that New Zealand is exposed to dry year risk.
- Concerns were raised over the timing of fully activating thermal plant during 2001. Delays were said to have contributed to excessively high spot prices. Others considered that thermal generation responded appropriately to price signals.
- Concern was expressed about the management of hydro resources by generators.
- Many said that New Zealand has inadequate reserve capacity and that existing market arrangements failed to adequately reward generators for providing reserve plant.
- Barriers to the development of new renewable and distributed generation were noted.

2.3 Demand side

- Wholesale price signals were not passed on to many consumers who are shielded by fixed price contracts. This limits demand side responsiveness to market signals.

- It was suggested that the ability of consumers to respond to price signals, particularly short term price spikes, is limited.
- Several submitters said the current market arrangements present barriers to demand side management, particularly in terms of access to information, lack of real time prices and the 2 hour bid rule.

2.4 Transmission

- Transmission constraints were widely regarded as a barrier to effective competition and market efficiency. Constraints exacerbated supply problems during winter 2001.
- Recent grid investment was considered inadequate. There are inadequate incentives for transmission investment.
- Transpower's focus on maintaining system security was seen to conflict with the need to relieve grid constraints. Transpower, however, explained that a grid entirely free of constraints would be economically inefficient.
- Transmission losses represent a significant waste of energy.
- Lines companies have different approaches to dealing with transmission rentals. This was seen as inequitable for consumers.

2.5 Risk management instruments

- Submitters had widely varying perceptions of whether adequate hedges were available during 2001.
- Some (principally consumers) argued that hedges were in short supply.
- Generators argued that hedges were available, but at prices higher than buyers were prepared to pay. High prices reflected the risk faced by suppliers during a dry winter.
- Some said that favourable market and environmental conditions during the preceding few years had led to a low level of risk preparedness.
- It was pointed out that no effective tools currently exist to hedge against transmission loss and constraint risks.

2.6 Retail competition / market power / vertical integration issues

- The vertical integration of generator/retailers was seen by many to limit market competition and restrict the availability of hedges. Vertical integration was regarded as a barrier to entry to the retail market.
- Many submitters argued that the market is dominated by a relatively small number of generators, with limited opportunity for demand side influence. Some suggested the high spot prices of winter 2001 may have reflected the market power of generators.
- NZEM disagreed that market power had been demonstrated. M-co said that if they did, then this was a matter for the Commerce Commission to deal with.

2.7 Other market arrangement / design issues

- A wide range of submissions said market efficiency is hampered by the inability of participants to make informed decisions because of limited access to key information.

- The system of rewarding cleared bids at the marginal clearing price was criticised as inefficient. Others disagreed, and said the alternative, "pay as bid" pricing, would result in higher prices overall and out-of-merit order generation.
- It was suggested that current nodal pricing (including the use of marginal losses and constraints to determine prices) limits market efficiency. Other submissions explained that using marginal losses was the most efficient option.

2.8 Ownership issues

- Several submitters were concerned that the Government's involvement in the industry exposed the public to unnecessary market risk, and created market inefficiencies.

3 What changes should be made to market arrangements?

3.1 Overview

- Suggested solutions ranged from relatively small adjustments (such as improving access to information) through to radical redesign of the market or doing away with market arrangements altogether.
- A key debate was over the need for greater or lesser regulation of the market in the public interest.
- A number of submitters opposed greater regulation and argued that the market provides the best means of managing risk and sending signals to suppliers and consumers.

3.2 Supply side

- Various approaches were suggested to increasing the supply of reserve generation, including creating market incentives for generators, establishing various insurance schemes and imposing legislative requirements on generators. The importance of ensuring the market provides genuine incentives was noted.
- The need for incentives to facilitate investment in new renewables (particularly geothermal) and distributed generation (and to remove market barriers) was noted.
- The further break-up of generating companies to increase competition was suggested.

3.3 Demand side

- Many submissions recommended that all end consumers be exposed to some degree to wholesale price volatility in order to improve demand side response. Others cautioned that domestic consumers were not well-placed to respond to short term price rises and would prefer price certainty over volatility.
- Some support was expressed for real time pricing as a means of facilitating demand side management. Others said the effectiveness of a real time market would be limited by consumers' limited ability to respond.

- It was suggested that significant advances in demand side management would be made possible by updating local distribution technology and better management of load through local lines networks.

3.4 Transmission

- Many submitters recommended upgrading the national grid to remove constraints and improve security.
- It was suggested that better incentives are needed for transmission investment and a long-term strategic approach to investment should be taken.
- Transpower recommended developing contingency plans to cope with constraints in times of supply shortage, and also noted that a constraint-free grid was not a realistic proposition.
- A review of the treatment of transmission rentals by lines companies was recommended.

3.5 Risk management instruments

- Many submissions advocated greater liquidity in the hedge market and greater availability of hedges.
- The mandatory offer of hedges was suggested by some to improve retail competition.
- Opponents of mandatory hedges said that denying companies the full benefit of internal hedging would lead to increases in spot prices and less overall system security.
- Support was expressed for the development of financial transmission rights (FTRs) as a means of hedging against transmission loss and constraint risks.
- A number of reservations were expressed regarding the introduction of FTRs, particularly in terms of their potential to exacerbate generators' market power. Market competition issues should be addressed before FTRs are introduced.

3.6 Retail competition / market power / vertical integration issues

- A large number of submissions recommended the separation of the generation and retail arms of vertically integrated companies, to improve competition and liquidity in the hedge market.
- Generators and M-co argued that vertical integration was a legitimate risk management tool, allowing companies to internalise market risk, provide greater price stability to customers, and enhance backing for new generation investment.

3.7 Other market arrangement / design issues

- A comprehensive review of the NZEM rules and/or the structure of the market was recommended. The importance of taking an holistic approach rather than dealing with specific problems in an ad-hoc manner was stressed.
- Others argued against significant reform at this early stage of the market's existence, and said urgent matters such as the development of new generation capacity should take priority.
- A review of the marginal clearing price system was recommended.

- Replacement of the ex-post wholesale market with an ex-ante market was recommended.
- Some suggested imposing price caps to reduce consumer price volatility. Others strongly opposed this on the grounds that price signals would be retarded.
- A range of changes were recommended to the Electricity Governance Board and proposed rule book to ensure the market is able to deliver the outcomes required by the Government Policy Statement.
- Submitters identified a wide range of market information which, if more readily available to market participants and the general public, could improve market efficiency, demand side management and generator bidding behaviour.

3.8 Ownership Issues

- Two suggestions regarding Crown involvement in the industry were made:
  - the Government should divest its retail and generation interests; and
  - SOE generators should be converted into Crown Owned Companies.

3.9 Contingency Planning

- There is a need to develop contingency plans for dealing with extreme circumstances. This would speed up the response of suppliers and consumers.

4 What changes to the Energy Efficiency and Conservation campaign should be considered?

- Analysis of the 2001 campaign and its results to identify where effort should be directed in future was recommended.
- Improve access to demand information for consumers and those charged with encouraging conservation.
- Problems with the measurement of savings need to be addressed.
- A range of specific energy-saving measures were suggested.
- There is a need to focus on achieving long-term energy consumption savings.

1. What factors contributed to wholesale electricity market developments in the 2001 winter?

Summary of key points

- The causes of the developments were drought combined with unusually high demand for electricity. A wide range of other factors exacerbated the situation.

1.1 Drought

- It was widely recognised that the leading cause of the developments in winter 2001 was the low inflow of water to the hydro-power systems in both islands.

> "In hydroelectric terms, 2001 is the worst drought we have experienced in the last 71 years, for the first seven month period of each year. From being very full at the start of the 2001 year, hydro storage levels fell rapidly during the summer so that, by the beginning of winter, hydro storage was as low as it had ever been in the last 22 years, barring 1992. During April, May, and June hydro storage continued to fall rapidly, until the end of June when there was a rain storm which refilled the lakes somewhat. In July inflows reverted to the drought pattern and lakes fell more rapidly as the increasing winter demand required extra generation" – *Infratil*.

Alliant International, Business NZ, Contact, Federated Farmers, Fletcher Building, Grey Power, Infratil, M-co, Meridian, Mighty River Power, Robbie Morrison, Network Tasman, NZEM, NZ Geothermal Assn, Health Sector EBG, Norske Skog, Pan Pac, Sinclair Knight Mertz, TrustPower, Waikato DHB, WEL Networks

1.2 Increased demand

- In addition, early winter 2001 was unusually cold, which led to record high demand for electricity. Buoyant economic activity also stimulated increased demand.

> "A combination of increased overall demand plus an early cold snap resulted in demand levels reaching new record levels in June" – *Infratil*.

Contact, Federated Farmers, Infratil, M-co, Mighty River Power, Robbie Morrison, Network Tasman, NZEM

1.3 Exacerbating factors

- A wide range of factors (such as market structure, pricing arrangements, and market participant behaviour) were cited as having exacerbated the situation. These factors were cited by some submitters as causes of the situation (question 1 in the Terms of Reference), and by others in the context of questions 2 and 3. These factors are all dealt with in sections 2 and 3 of this summary.

2. How effective were existing market arrangements in responding to these developments?

2.1 Overview

Summary of key points

- Opinion was divided on whether the market had responded effectively to the events of winter 2001. Those that thought it had said prices had risen in response to supply limitations and increased demand, sending signals about the need to reduce consumption.
- Those that thought it had not pointed out that Government intervention, appealing to the public goodwill, had been necessary to achieve savings.
- Some suggested that wholesale spot prices had over-reacted to the situation and reached unreasonably high levels.
- Industrial consumers exposed to the spot market considered they had been unfairly disadvantaged relative to customers protected by hedges and retail contracts.
- Some said that favourable market and environmental conditions during the preceding few years had made some electricity purchasers complacent, leading to a low level of risk preparedness.

Did the market respond effectively to the events of winter 2001?

- Opinion was divided on this issue. Those arguing in the affirmative pointed out that prices rose in response to limitations of supply and increased demand.

- Some submitters suggested that no fundamental design problem existed with the spot market and expressed support for the current NZEM arrangements.

- Some market participants had previously argued that the high spot prices represented an "undesirable situation" under the NZEM rules. This was examined and rejected by the Market Surveillance Committee.

> "Rising spot prices prompted significant demand reductions and increased supply and spot prices tracked the costs associated with various alternatives to hydro generation (e.g. thermal generation/demand reduction) employed during the winter" – *Contact*.
>
> "The nodal pricing system is designed so as to provide an early warning of impending shortage and ensure that the appropriate signals were created to ensure a balance in supply and demand both in the short-run and the long-run, throughout the country… It is the view of the NZEM Rules Committee that, on this basis, existing market arrangements were most effective in responding to the circumstances that developed through 2001… The factors that contributed to developments were clear to all and the market was effective in driving the appropriate responses. The model provided an early signal of impending shortage and provided further signals that more should be done to avert a crisis when early winter demand shot up to historically high levels… High spot prices are an

expected outcome during times of shortage and are not evidence of a flawed market design" – *NZEM*.

AICon, Contact, Energy Management Assn, Federated Farmers, M-co, Meridian, Mighty River Power, Robbie Morrison, NZEM, Transpower

- Similarly, several submissions pointed out that the market worked to ensure that no blackouts eventuated.

Contact, Energy Management Assn, Mighty River Power, Transpower, Waikato DHB

- Other submissions, however, argued that the structure and/or rules of the market were not effective in dealing with the situation. It was pointed out that the Government needed to intervene by appealing to the public goodwill to conserve energy. This was cited as clear evidence that "either or both the structure and detailed market rules were inadequate" (*MEUG)*.

- Grey Power pointed out that high prices served to signal potential problems with supply, but questioned whether price signals should be allowed to cause serious disruption to the economy (this was reiterated in their cross-submission).

Business NZ, Comalco, Grey Power, MEUG, Robbie Morrison, Network Tasman, Pan Pac, Brian Tolley, TrustPower

- The fact that spot prices reach unprecedented levels during winter 2001 was seen by many submitters as a significant contributor to the crisis. Prices were said to have over-reacted to the supply situation, leading to dramatic price spikes and the threat of loss of supply to consumers. Some suggested that the "crisis" involved excessively high wholesale prices rather than a national shortage of supply.

> "[Spot energy prices were] well in excess of anything reasonably expected prior to the year and well in excess of the short run marginal cost of incremental thermal generation to displace higher priced hydro" – *MEUG*.

Alliant International, Business NZ, Fletcher Building, Grey Power, Health Sector EBG, Infratil, MEUG, Robbie Morrison, Network Tasman, NZEM, Norske Skog, Pan Pac, David Renouf, Transpower, TrustPower, Waikato DHB, Wallace Corporation, WEL Networks

- In its cross-submission, NZEM reiterated its view that the market had responded appropriately, and disputed the assertion that the need for Government intervention reflected a failure of the market. It said that the action taken by the industry and the Government to reduce demand had been in response to signals provided by the market, and suggested that some submitters may expect too much from the market:

> "The market could not miraculously produce additional generation. The maximum generation was being produced by prices moving to a level that allowed additional, higher priced generation to be dispatched" – *NZEM*.

- Mark Pickup's cross-submission provided the following overview of the debate:

> "Arguments are presented both for and against the market, often revolving around

different interpretations of the exact same events… to an extent the exact truth does not matter, what is important is the perception of the truth. [Here] we have what we would term '*a crisis of perception*.' Assertions by the supply side and market operators that the market is functioning well and as expected, are simply not believed by the demand side participants who have suffered mostly in financial terms in the recent crisis… Unless consensus is achieved… on how to interpret some of these key issues then this will continue to undermine the efficiency of the market and affect the development of governance arrangements" – *Mark Pickup*.

Did wholesale market prices impact unfairly on large industrial consumers?

- During winter 2001, industrial consumers exposed to the spot market or with expiring contracts bore the brunt of high wholesale prices while other users were shielded by hedges and competition among retailers for customers. The costs to industrial consumers had wide-ranging implications for production and exports, and risks to employment.

> "… larger energy intensive manufacturers, most of whom had reasonable hedge to spot portfolios… never expected the unreasonable and excessive spot prices that eventuated" – *MEUG*.
>
> "… the imbalance in demand side impact led to a wealth transfer from industrial load exposed to the spot market, and those time of use customers who came off contract during the winter, to domestic customers who did not save" – *Alliant International*.
>
> "High price levels certainly sent signals to our company. From early June to the end of August, we curtailed newsprint production by around 20%, as we were able to combine inventory reduction requirements with the skyrocketing electricity price. However, that was also a loss of export sales and therefore foreign exchange of over 20 million dollars" – *Norske Skog*.
>
> "The increased costs to the productive sector will be experienced for some years, due to the contract price ratchet that is now occurring. [There will be a severe] impact on NZ's reputation as a place to invest, especially for industry that is reliant to any extent on a secure power supply" – *Comalco*.

Alliant International, Business NZ, CHH, Energy Link, Fletcher Building, MEUG, Norske Skog, Pan Pac, Wallace Corporation

Was there insufficient appreciation of risk by purchasers?

- Several submitters suggested that favourable market and environmental conditions during the preceding few years (since the inception of the market) had made retailers and industrial consumers complacent about market risk. Expectations of low prices led to a low uptake of hedges and consequent high spot market exposure. This insufficient risk preparedness resulted in significant costs to some purchasers.

> "Since the market's origin… competition… drove prices down to [unprecedented] levels. Dry years, transmission constraints or long-term thermal outage risks were not adequately reflected… Exposure to the [spot] market provides both benefits and costs and sometimes those costs can be very high" – *Mighty River Power*.

Contact, Meridian, Mighty River Power, Network Tasman, Waikato DHB, WEL Networks

- However, as discussed in section 2.5 (Hedge availability), some submitters argued that the limited availability of risk management instruments had left them exposed to the spot market. They suggested an increase in risk-aversion following winter 2001 was likely, and that both the supply and demand sides would be likely to seek greater hedge cover in future.

- It was suggested that problems with inadequate risk protection related to the fact that the market is relatively new (and that some large industrial consumers may have lacked sufficient understanding of how the market would operate under dry-year conditions). Improvement can be expected over time as participants gain more experience (e.g. retailers and large consumers are more likely to purchase sufficient hedging in future).

Grey Power, Meridian, Network Tasman, WEL Networks

- Grey Power expressed the view that energy retailers and large consumers will be likely to seek long-term contracts rather than trading on the spot market.

2.2 Supply side

Summary of key points

- New Zealand is heavily reliant on hydro-electricity and this inevitably means that New Zealand is exposed to dry year risk.
- Concerns were raised over the timing of fully activating thermal plant during 2001. Delays were said to have contributed to excessively high spot prices. Others considered that thermal generation responded appropriately to price signals.
- Concern was expressed about the management of hydro resources by generators.
- Many said that New Zealand has inadequate reserve capacity and that existing market arrangements failed to adequately reward generators for providing reserve plant.
- Barriers to the development of new renewable and distributed generation were noted.

NZ's dependence on hydro-electricity

- This was identified as a risk to supply security: because NZ depends heavily on hydro-electricity, the market is highly sensitive to adverse weather events. Dry years are a fact of life so the market will in future face conditions similar to winter 2001.

Federated Farmers, David MacClement, Natural Gas Corporation, Network Tasman, NZ Geothermal Assn, Sinclair Knight Mertz, Sustainable Energy Forum, TrustPower

- Network Tasman and Sinclair Knight Mertz argued the heavy dependence on hydro power limits the efficient operation of the market.

> "A shortfall of hydro generation in this small market will inevitably lead to an increase in regional market dominance and price setting ability for thermal plant owners" – *Network Tasman*.

> "The cost of fuel is virtually zero but the capital cost is high. Many stations are 'run of river' and will spill if they are not able to generate, so run of river stations must bid in low and the stations with storage bid in at what they reckon the market will stand. Which most of the time is not much, and during a drought is very, very high. A business that loses money most years and hence needs to make huge profit during droughts is in the high risk category" – *Sinclair Knight Mertz*.

Management of hydro resources by generators – in the public interest?

- Several submissions expressed concern about the management of water resources by hydro generators.

- Comalco said hydro levels were high during January 2001 but had fallen rapidly to low levels by June, during which time there had been low use of thermal generation. Comalco questioned whether generator strategies took account of the public interest.

- TrustPower suggested that during 2001, Meridian continued to offer in at a high volume and low price levels until there was a significant change in the company's committed hedge position at the end of May. TrustPower believed that the significant price increase in the last few days of May reflected a lack of competition, whereby Meridian was able to influence the market price to its advantage.

- Robbie Morrison suggested that, given the right circumstances, the high spot prices that can result from a supply shortage may even provide a perverse incentive to mis-manage hydro storage capacity. Grey Power's cross-submission agreed.

- Meridian's cross-submission rejected Comalco's comments about the absence of community/public good in generator strategies. The submission argued Meridian had "acted with great care throughout a winter of extreme hydrology, balancing many competing interests and always in the context of the national interest in avoiding a shortfall in supply and enforced rationing."

Concerns about hydro spill

- Network Tasman said that during the first quarter of 2001, South Island hydro storage was spilled while thermal plant was being dispatched. The spilling of hydro water while thermal (particularly gas) plant was being drawn on was regarded as a waste of resources. Some suggested that excessive hydro-spill might reflect abuse of market power by generators.

> "Generators [may prefer] to spill some of the water rather than sending more electricity from the South Island to the North Island if this will lower the price. This is an extremely wasteful use of resources, replacing hydro energy which can be converted to electricity at near 100% efficiency with thermal energy mainly from natural gas at a much lower conversion efficiency and producing unnecessary greenhouse emissions" – *Sustainable Energy Forum*.

John Blakeley and Bruce Hunt, Network Tasman, David Renouf, Sustainable Energy Forum, Wallace Corporation

- In its cross-submission, Meridian explained that its spilling during January 2001 was

primarily required in order to comply with its resource consent conditions, and to avoid flood risk to the Tekapo community.

Impacts of RMA requirements on hydro generation

- Mighty River Power argued that the requirement to maintain minimum water flows in rivers, imposed under the Resource Management Act, creates a disadvantage to hydro-generators relative to thermal generators.

- The Business Roundtable argued that Resource Management Act requirements create impediments to new investment.

Response of thermal generators during winter 2001

- A key issue regarding the response of the market to the situation was whether reserve thermal capacity was brought on line early enough, in response to the shortfall in hydro storage.

- Many submitters argued that the commissioning of maximum thermal capacity was delayed – that it should have run earlier in the year, when the shortfall in hydro-capacity became apparent. While it was widely acknowledged that transmission constraints played a part, some submitters suggested the delay was a deliberate exercise of market power by generating companies.

> "In a competitive market thermal generators would have entered the market as soon as spot prices exceeded the variable cost of production" – *MEUG*.
>
> "High spot prices that should have 'triggered' the entry to the market of the thermal generation. For reasons that remain unclear reserve thermal generation did not run at capacity until June or July. This indicates that thermal generators have excessive market power. This clearly contributed to the extraordinary price levels. The question must be asked as to whether the backup thermal units were withheld from the market in order to leverage up the prices on the spot market" – *Business NZ*.
>
> "The reserve thermal plant on the system did not run at capacity until June and July. It is not clear why this delay occurred. Transmission constraints may have contributed, but we suspect the main reason was the exercise of market power" – *Infratil*.

- Many suggested that spot prices reached artificially high levels due to the delayed introduction of reserve thermal capacity.

> Business NZ, CHH, Comalco, Grey Power, Infratil, MEUG, Network Tasman, Pan Pac, Sinclair Knight Mertz, TrustPower, Wallace Corporation

- In response, NZEM, Contact and Genesis argued that reserve thermal generation *did* respond appropriately. NZEM pointed out that thermal generation was increased incrementally as prices firmed, and production was increased over time as prices increased. Genesis pointed out that the Huntly power station generated significantly more electricity (and operated earlier) in 2001 than would be expected in a normal year.

> "The strength of the supply response can be gauged by looking at generation from Huntly and New Plymouth (the only significant non-baseload thermal stations). Their production rose sharply in March when, after an extended period of low inflows, lake levels dipped below mean, and spot prices rose to around 5c/kWh. Production continued at this general level until late May when prices rose sharply with the onset of much tighter demand, and further deterioration in lake levels" – *Contact*.

Inadequate reserve capacity and inadequate incentives for investment

- Many submissions suggested that NZ has inadequate reserve capacity to call on in times of short supply (particularly in dry years). This was seen as a major contributor to the problems of winter 2001.

- It was suggested that the current pricing system fails to adequately reward generators for providing reserve generation plant. Anyone building a power station to service peak demand periods may find it sitting idle for years in between peaks.

- It was argued that because the market does not reward generators for maintaining reserve capacity during normal years, in times of short supply they are forced to seek high prices in order to justify the upkeep of this extra infrastructure. Generators have a natural interest in having as many assets as possible operating at full capacity.

- AICon suggested that maintaining reserve plant represents a public good, and this is not recognised by the current approach of treating it on a purely commercial basis.

> "Dry year conditions may only affect wholesale prices for three or four months in a five year period. As a result, it is a risky investment to build extra generation capacity simply to cover dry years" – *Natural Gas Corporation*.
>
> "Lack of ongoing recognition of the value to the system of critical reserve capacity encourages owners of that capacity to behave extractively when the plant has to run in dry years" – *Network Tasman*.
>
> "The current system works for base load generators and mid-range generators who will be getting more than their marginal cost most of the time… For generators, providing the reserve capacity needed to make the market work is a loss-making business. If there is no reserve capacity competition disappears and generators are no longer motivated to bid in at their marginal cost and the market fails" – *Sinclair Knight Mertz*.
>
> "Before the reforms began… the Electricity Department had built a number of power stations for which there was no demand yet… The Department knew full well about the system's vulnerability to droughts, and they also knew that starving the economy of electricity in a hydro crisis would be far more costly than maintaining a few idle power stations… the reforms of the nineties designed the power crisis into the system [because there is no provision for encouraging provision of reserve capacity]… Our hydro lakes are narrow and deep. Without inflow, and at full generating load, the lakes go from full to empty in 54 days" – *Peter Kammler*.

AICon, Contact, Genesis, Grey Power, Meridian, Natural Gas Corporation, Network Tasman, Sinclair Knight Mertz, Sustainable Energy Forum, Todd Energy, Brian Tolley

- In contrast, NZEM's original submission argued that the market does provide incentives for new generation investment.

- NZEM's cross-submission pointed out that average prices seen in the market to date have not yet reached high enough levels to warrant investment in new generation plant. It estimated the minimum long-run marginal cost of additional generation at 4.8c/KWhr.

Barriers to new renewable generation

- The NZ Geothermal Association pointed out that geothermal energy represents a clean, renewable source of energy and argued that NZ should make greater use of it.

- They argued that development of geothermal generation is inhibited by competition from other cheaper power sources, natural gas in particular, because gas is so easy and cheap to develop. The disadvantage of using gas over thermal is that gas produces greenhouse gas emissions (that are not currently included in prices).

Barriers to distributed generation

- According to Carter Holt Harvey, barriers to entry for co-generation plant and other distributed generation have limited the development of distributed generation (which has the potential to alleviate grid constraints, line losses and harmful emissions).

- Transpower's cross-submission noted criticism of its policy regarding contracting with distributed generation by submitters who claimed that:
  - Transpower contracts exclusively with line companies to the disadvantage of small generators; and
  - Transpower's refusal to contract directly with distributed generators means that the only way a distributed generator can obtain the benefits it confers by way of 'avoided' transmission costs is by building new lines to customers.

- Transpower disagreed with this criticism, arguing that its policy does not create such barriers. Its policy is to "offer open access to the grid and contract with any distribution company, generator or major user that is physically connected to the grid... Transpower's pricing methods encourage investment in distributed generation to the extent that this investment genuinely reduces the demand for grid capacity."

- NZEM's submission argued that there had been new investment in distributed generation since the inception the market, in direct response to nodal pricing signals.

2.3 Demand side

Summary of key points

- Wholesale price signals were not passed on to many consumers who are shielded by fixed price contracts. This limits demand side responsiveness to market signals.
- It was suggested that the ability of consumers to respond to price signals, particularly short term price spikes, is limited.
- Several submitters said the current market arrangements present barriers to demand side management, particularly in terms of access to information, lack of real time prices and the 2 hour bid rule.

Many consumers are shielded from price signals

- Many submissions pointed out that wholesale prices are not reflected in the prices faced by most consumers. Hedges and fixed price contracts shield consumers from price signals and retard demand side responsiveness. This was considered a contributor to the developments of winter 2001.

- In order for prices to have an effect on demand, it is necessary for the price signal to be received by sufficient numbers of players who are able to respond and reduce their demand accordingly.

- Competition among retailers for customers meant there was a delay in the spot market price signal reaching consumers not directly exposed to the spot market. This led to significant costs for retailers.

- It was suggested that the limited exposure of consumers to wholesale market prices represents a failure by the market to provide adequate, timely incentives for demand reduction.

> "Intense competition at the residential level has impeded the ability of retailers to pass on the impact of rapidly increasing spot prices to customers" – *Meridian*.
>
> "The wholesale spot market 'price signal' directly affects only about 15% of end consumers, the remaining 85% are immune through being on a tariff or having some form of price increase delay built into their contract" – *Wallace Corporation*.
>
> "A significant problem in NZ's electricity markets is that the wholesale and retail markets which co-exist are out of alignment. As a result important price signals are not passed through to the majority of consumers while a minority see intensive price signals that they cannot manage… The lack of demand side response during winter 2001 suggests limitations of current market arrangements" – *Bill Heaps (Transpower)*.

Alliant International, Business NZ, CHH, Contact, Federated Farmers, Fletcher Building, Genesis, Grey Power, Bill Heaps (Transpower), Infratil, Robbie Morrison, Norske Skog, Pan Pac, Meridian, MEUG, Network Tasman, Mark Pickup, Plastics NZ, Sinclair Knight Mertz, Transpower, TrustPower, WEL Networks, Wallace Corporation

- Mighty River Power and Contact acknowledged the lack of direct price signals to retail consumers but explained that they had other means of facilitating demand reduction among their customers. Steps taken during winter 2001 by Mighty River Power, for example, included:
  - individual price rebates to mass market customers for reductions in use ('Project Save');
  - customised buy-back plans for large scale customers; and
  - an advertising campaign to encourage energy efficiency.

> "Mass market customers did not face price increases during the winter period but they were sent signals to conserve via the Project Save initiative. Over 60% of residential customers received a rebate" – *Mighty River Power*.

Limited demand responsiveness to price signals

- Several submitters suggested that demand side responsiveness to price signals is limited, particularly when it comes to short term price spikes.

- Mighty River Power suggested that energy prices would need to go even higher than in winter 2001 before industrial consumers reduced demand. The company's experience in relation to its rebating of commercial customers for reduced consumption was that:

> "… for most commercial customers even with rebates nearing 20 c/kWh little incentive exists to reduce demand. This is to be expected as the value added for most business outputs will generally be greater than the savings from reduced consumption" – *Mighty River Power.*

> "The use of electricity is not responsive to short term price spikes. Companies have contracts to fill, employees to pay and bank loans to serve. They do not reduce their production just because electricity becomes more expensive for a time" – *Peter Kammler*.

Peter Kammler, David MacClement, Mighty River Power, Mark Pickup

Barriers to demand side participation

- Several submitters said the current market arrangements present barriers to demand side management, particularly in terms of access to timely information and the 2 hour bid rule.

> "The present market gives no forward price signal and therefore neglects the ability of the demand side to ameliorate kW demand" – *Brian Tolley*.

CHH, Comalco, MEUG, Mighty River Power, Brian Tolley

- In response to criticism about lack of opportunity for demand side participation, NZEM's submission argued that the market is an open one, with no artificial restrictions on membership, and that demand side response to prices is provided for. NZEM argued that the only limitation the rules impose on demand side response is through the two-hour rule that prohibits both purchases and sellers from changing bid or offer data within two hours of real time. MEUG also made this point.

2.4 Transmission

Summary of key points

- Transmission constraints were widely regarded as a barrier to effective competition and market efficiency. Constraints exacerbated supply problems during winter 2001.
- Recent grid investment was considered inadequate. There are inadequate incentives for transmission investment.
- Transpower's focus on maintaining system security was seen to conflict with the need to relieve grid constraints. Transpower, however, explained that a grid entirely free of constraints would be economically inefficient.
- Transmission losses represent a significant waste of energy.
- Lines companies have different approaches to dealing with transmission rentals. This was seen as inequitable for consumers.

Transmission constraints – barriers to an efficient market

- Submitters identified several areas affected by grid constraints, including:
  - North-south flow on the HVDC link (this, it was suggested, occurs semi-regularly);
  - eastwards from Taranaki;
  - the Tokaanu-Whakamaru circuit
  - between Bunnythorpe and Wellington, restricting generation from Taranaki and limiting the flow from north to south;
  - through the North Island when the Otahuhu power station is out of service (this occurred during 2000); and
  - from South Island hydro stations to north of Lake Taupo.

Business NZ, Energy Link, Infratil, Meridian, Natural Gas Corporation, Sinclair Knight Mertz

- Transmission constraints were widely regarded as creating a barrier to effective nation-wide competition and market efficiency. Constraints on transfer between regions create market distortions because purchasers in some areas are unable to access the cheapest source of power in the country. It was suggested that grid constraints could lead to monopoly pricing opportunities for generators within constrained regions.

- Grid constraints were said to have exacerbated supply problems during winter 2001, particularly in terms of north-south electricity transfer across the HVDC link, and from Taranaki to other parts of the North Island.

- The Geothermal Association also argued that constraints on transmission throughout the North Island reduce the value of geothermal generation.

- Network Tasman said that grid constraints physically and financially restricted the operation of reserve thermal plant.

- Addressing transmission constraints by increasing the capacity of the grid was seen as an urgent priority.

> "Existing suppliers have little ability to manage transmission constraint risk leading to suppliers retailing only in regions where they have a 'natural' own generation hedge. This creates a barrier to nation-wide retail competition" – *MEUG*.

Business NZ, Comalco, Fletcher Building, Geothermal Assn, Grey Power, Health Sector EBG, Infratil, M-co, Meridian, MEUG, Mighty River Power, Robbie Morrison, Natural Gas Corporation, Network Tasman, Sinclair Knight Mertz, Brian Tolley, Transpower, TrustPower, Wallace Corporation, WEL Networks

- In its cross-submission, Transpower disagreed with suggestions that transmission constraints were a frequent occurrence. Transpower explained that it is inefficient to construct a grid free from constraints under all dispatch scenarios, because this would involve providing excess capacity in some sectors of the grid that, most of the time, would not be utilised.

- Transpower also argued that grid constraints did not necessarily create market distortion, provided market participants had the information and ability to decide whether to relieve the constraint or not.

- On a related matter, there was criticism of the time it took during 2001 to reconfigure the grid in order to allow the transfer of power from north to south and out of Taranaki. This delay, it was argued, contributed to falling southern lake levels and increasing prices.

- Meridian argued that Transpower lacked "incentives to dynamically reconfigure the transmission system to respond to changed market conditions."

> "The solution could have, and should have in our view, been implemented much earlier, enabling Taranaki generation to operate at capacity" – *Infratil*.
>
> "Discussions between the Minister and Transpower were needed before enhancements were made to the grid to relieve constraints in the middle to lower North Island" – *Fletcher Building*.

- In response, Transpower's cross-submission explained that the process of reconfiguring the grid was complex, complicated by the commercial sensitivity of the decisions involved, and involved a process of consultation with industry and other stakeholders. NZEM's cross-submission also said this.

Transmission losses

- The national grid is affected by widespread loss problems, with significant costs in terms of wasted energy. According to Todd Energy, these losses are worth approximately $250 million per year (assuming a price of $100/MWh). It is therefore important that impediments are not placed in the way of reducing costs (*Todd Energy, Sinclair Knight Mertz*).

Transmission rentals

- Under current market arrangements, large price differentials between different parts of the country can arise when the transmission system is constrained. When this occurs there is an excess of funds paid by wholesale purchasers over the amount that generators receive

(the excess is referred to as transmission rentals).

- Under present arrangements this money is collected by Transpower and rebated to lines companies and wholesale purchasers. Some lines companies rebate the payment to their customers while others retain it.

- The amount involved is significant – Contact estimated the value of transmission rentals between January and October 2001 submission at $80 million.

- The discrepancy between the rebate distribution policies of different lines companies creates inequities among electricity consumers and gives a competitive advantage to those lines companies that retain the money.

- Todd Energy argued that the rentals result from the marginal loss pricing (see section 2.7 (Marginal vs. average cost pricing).

> "The first issue is whether distribution companies have passed all of the transmission rentals through to either retailers or consumers. If they have not or are using this windfall as working capital before rebating some time in the future at their discretion, then those distribution companies have exercised their market power to control the flow of transmission rental rebates to retailers and end users" – *MEUG*.

Business NZ, Contact, Infratil, MEUG, Todd Energy, Brian Tolley, TrustPower

Adequacy of investment / incentives

- A range of submissions said significant threats existed to the security of supply because of shortcomings in the transmission network. Several submissions considered there had been insufficient investment in reinforcing or adding to the network in recent years. This was seen as a issue requiring urgent attention, given the impacts of grid constraints on the operation of the market (see section 2.4 – Transmission constraints).
- It was suggested that spot prices have not provided an adequate signal for new transmission investment.

AICon, Business NZ, Grey Power, MEUG, NZEM, Sinclair Knight Mertz, Brian Tolley

- A criticism made by several submitters was that Transpower's focus is on maintaining systems security rather than on enhancing the efficiency of the grid by, for example, relieving transmission constraints. It was argued that Transpower is reluctant to invest in new transmission infrastructure.

> "In many cases, fixing the constraint will not add to Transpower's asset value so it is difficult for Transpower to recover the cost… Transpower will fix the problem only if someone else carries the commercial risk" – *Sinclair Knight Mertz*.

Business NZ, Fletcher Building, Grey Power, Meridian, Network Tasman, Sinclair Knight Mertz, TrustPower

- Transpower agreed that the current market structure had failed to address persistent loss, constraint and security problems in transmission. Transpower said investment in

transmission to cover abnormal operating conditions such as a dry-year event will not always be economically justifiable (because, like reserve generating plant, this capacity may lie idle for most of the time).

Concerns about monopoly in transmission

- Several submissions raised concerns about the fact that the transmission side of the industry is not subject to competition and suggested that Transpower should be required to act in the interests of the public.

Grey Power, Sinclair Knight Mertz, TrustPower

- In its cross-submission, Transpower argued that a single interconnected grid is the most efficient solution for NZ (as it is in other countries). Transpower explained that it operates within its Statement of Corporate Intent which requires it to act in a manner consistent with electricity being delivered in an efficient, fair, reliable and environmentally sustainable manner.

- M-co suggested that greater transparency of information regarding transmission is needed, and expressed support for Transpower's efforts to improve the transparency of transmission system operating decisions and its moves to differentiate the management of each arm of its business.

2.5 Risk management instruments

Summary of key points

- Submitters had widely varying perceptions of whether adequate hedges were available during 2001.
- Some (principally consumers) argued that hedges were in short supply.
- Generators argued that hedges were available, but at prices higher than buyers were prepared to pay. High prices reflected the risk faced by suppliers during a dry winter.
- Some said that favourable market and environmental conditions during the preceding few years had led to a low level of risk preparedness.
- It was pointed out that no effective tools currently exist to hedge against transmission loss and constraint risks.

Hedge availability

- A range of submitters argued that the primary hedge market lacks liquidity, especially during Autumn, making it difficult for wholesale purchasers to manage risk. This was cited by many as a contributor to developments during winter 2001.

- The thin hedge market was blamed for the financial exposure of some energy retailers and consumers to unexpectedly high prices on the spot market (either because they were not hedged at all or because their hedge contracts expired part-way through the winter).

- A shortage of hedges was also said to contribute to the lack of competition in the retail sector.

- Some submitters blamed a lack of competition among generators for the non-availability of hedges. Others suggested that the lack of hedge market liquidity encouraged opportunistic behaviour among generators, who were seen to benefit from purchasers being exposed to the spot market.

- MEUG argued that if the market was genuinely competitive, then hedges would be available even during a dry winter, and that competitive pressures could be expected to cap winter hedge prices at the cost of existing thermal generation.

> "Approximately 60% of Pan Pac's electricity consumption was hedged (note that this was the maximum level of hedging that could be obtained in the market place at the beginning of the year) with the remaining 40% purchased from the wholesale electricity spot market. Pan Pac was forced to cut production by up to 40% because of unprecedented high wholesale spot prices" – *Pan Pac*.
>
> "Gaining liquidity in the contracts market is perhaps the greatest impediment to a vibrant wholesale and retail market operating in NZ" – *Alliant International*.

Alliant International, Business NZ, CHH, Fletcher Building, Health Sector EBG, MEUG, Network Tasman, Norske Skog, Pan Pac, Trustpower

- On the other hand, generators Mighty River Power and Contact argued that they did continue to offer hedges throughout the winter, though not at prices secured one year earlier. Contact pointed out that some major consumers declined the hedges they offered even though, they argued, these were priced at competitive rates.

- However, Fletcher Building pointed out that because of the high price of hedges available during the winter, and the unavailability of short-term hedging during that period, purchasing the hedges on offer would have been uneconomic for their business. Business NZ agreed with this sentiment:

> "…many [electricity consumers], coming off fixed term contracts, found there was an unwillingness to supply them with electricity or, where there was, it was on terms that saw their projected monthly accounts increase by very large percentage points" – *Business NZ*.

- Pan Pac's cross-submission reiterated the view that hedges were not available during the period in question, and provided details of the company's experience in endeavouring (unsuccessfully) to secure hedges during January.

- In its cross-submission, Contact argued that even if hedges had not been available during the winter, this could not be considered a 'failure' of the hedge market:

> "Hedge is an insurance product. Once an event is occurring, it is usually hard to obtain insurance for it. This phenomenon is not peculiar to the electricity hedge market. Insurance markets work in a similar manner. Indeed, we know of cases in insurance markets where even after an adverse event has passed, it is not possible to obtain insurance for similar events in the future… The existence of these issues does not lead people to conclude that insurance markets don't work" – *Contact*.

- Several cross-submissions highlighted the difference in interpretation of the availability of hedges by the supply and demand sides. Meridian and NZEM made the point that the real issue appears to be differences in perception of what is a fair price for hedging risk, and differences in risk appetites among different market players.

Meridian, MEUG, NZEM

Ineffectiveness of the secondary hedge market

- Comalco, Business NZ and MEUG pointed out that there is no secondary hedge trading market. Business NZ suggested this was mainly because the development of such a market "is dependent on retailers offering flexible contracts, and these are not in evidence." MEUG argued that the lack of secondary market activity reflects a lack of competition in the primary hedge and spot electricity markets.

Unavailability of transmission risk hedging instruments

- It was pointed out that during winter 2001 there were no effective tools available to hedge nodal price risk, leaving electricity buyers disadvantaged because of supply conditions and grid constraints.

- The inability of retailers to manage constraint risks was said to limit retail competition.

> "Buyers of wholesale energy had no effective tool to hedge nodal price risk across the grid at a time when regional market power of generators was enhanced through supply conditions and grid constraints" – *Network Tasman*.
>
> "The high priced exposure to the spot market was accentuated for retailers by failure in the transmission market [due to] the absence of instruments to manage the risk arising from constraints" – *Alliant International*.
>
> "Existing suppliers have little ability to manage transmission constraint risk leading to suppliers retailing only in regions where they have a 'natural' own generation hedge. This creates a barrier to nation-wide retail competition" – *MEUG*.

Alliant International, Business NZ, Infratil, Meridian, MEUG, Network Tasman, Sinclair Knight Mertz, Transpower, TrustPower

2.6 Retail competition / market power / vertical integration issues

Summary of key points

- The vertical integration of generator/retailers was seen by many to limit market competition and restrict the availability of hedges. Vertical integration was regarded as a barrier to entry to the retail market.
- Many submitters argued that the market is dominated by a relatively small number of generators, with limited opportunity for demand side influence. Some suggested the high spot prices of winter 2001 may have reflected the market power of generators.
- NZEM disagreed that market power had been demonstrated. M-co said that if they did, then this was a matter for the Commerce Commission to deal with.

- *Note that section 2.4 (Transmission constraints) contains discussion of the impacts of constraints on the effectiveness of competition.*

Lack of effective retail competition

- A number of submitters argued that limited competition in the retail market (including the absence of competition in some areas) has greatly disadvantaged consumers. According to MEUG, for example, there are no retailers prepared to accept new residential customers in Christchurch. The demise of On energy as a retailer has exacerbated this problem.

- Vertical integration (combined with regional consolidation of the energy market) presents a barrier to entry for new retail competitors (see below).

> "The range of [retail] alternatives available is very low due to the poorly functioning contracts market, and the absence of demand side responsibility for volume" – *Alliant International*.
>
> "One contributing problem suggested is that lines company contracts are widely divergent and require national standardisation to facilitate competition in retail electricity provision" – *Contact*.

Alliant International, Contact, MEUG, Network Tasman

Vertical integration

- A wide range of submissions argued that the vertical integration of generator/retailers limits market competition. This is because of the "natural hedge" strategy adopted by vertically integrated companies (whereby they generate all of the energy requirements of their retail arms, thus effectively protecting their retail arms from the spot market price). As a consequence, these companies have greater market power than companies that only retail electricity.

- Vertical integration exacerbates liquidity and informational problems within the hedge market.

"Vertical integration [reduces] competition by locking in the resources of one supply side participant to its matched demand side company, thus reducing the resource available for competitive bid to other counter parties" – *Mark Pickup*.

"[Under vertical integration it is not in generators' interests] to provide low price contracts or hedges to retailers in competition with their own retailing arm" – *AICon*.

"New entrant retailers have to rely on existing vertically integrated suppliers to negotiate a hedge or otherwise build their own generation" – *MEUG*.

AICon, Alliant International, Business NZ, CHH, Energy Link, Federated Farmers, Grey Power, MEUG, Natural Gas Corporation, Network Tasman, Norske Skog, Pan Pac, Mark Pickup, Transpower, TrustPower, Waikato DHB, WEL Networks

- It was also suggested that vertical integration limits energy conservation:

"We suspect generators would rather encourage consumption and build power stations than have consumers respond. It takes standalone retailers to want to see products that allow consumers to help the retailer manage its purchasing risk" – *Infratil*.

Regionalisation – exacerbating competition problems associated with vertical integration?

- Concern was expressed that competition is being and/or will be further reduced by a trend towards regional domination by integrated generator/retailers. In some cases this regional strength is exacerbated by transmission constraints. The departure of On energy from the retail market was seen to have exacerbated this problem. Infratil predicted the following outcomes from this trend:
  - Reduced choice available to end consumers; and
  - Rising retail prices.

"The market has now collapsed to a few vertically integrated regionally dominant suppliers. This has reduced choice to most consumers" – *MEUG*.

Fletcher Building, Grey Power, Infratil, M-co, MEUG, Natural Gas Corporation, Network Tasman, Mark Pickup, TrustPower, Wallace Corporation

- The Health Sector EBG and Robbie Morrison pointed out that the unavailability of hedges and exposure to high spot prices have made suppliers reluctant to enter new contracts with customers. For example, the Health Sector EBG had difficulty securing bids from suppliers to replace its expired contract with Meridian:

"In quite a few cases, retailers with newly inherited customers carrying former TransAlta or On energy contracts were given little or no warning at expiry that their prices would rise to spot levels several times higher than their existing prices... This climate made suppliers reluctant to enter into new contracts."

Generator domination of the market

- A range of submissions argued that a fundamental flaw in NZ's electricity market is the limited number of participants, particularly on the supply side. This, it was argued, limits the effectiveness of competition so the market cannot operate efficiently.

- The wholesale price is strongly influenced by generators as there is limited opportunity for demand side bidding. The lack of influence that energy purchasers can have on the market limits its effectiveness in terms of rationing by price.

- Transpower and Sinclair Knight Mertz pointed out that the short-term elasticity of demand for electricity is very low – it is a necessity without a readily-available substitute. This, they argued, creates a significant market advantage for suppliers.

> Alliant International, Fletcher Building, Grey Power, Infratil, M-co, MEUG, Network Tasman, Plastics NZ, Sinclair Knight Metz, Todd Energy, Brian Tolley, Transpower, TrustPower, WEL Networks

Did high spot prices reflect generators' market power?

- Some submitters raised questions about the market power of generators in relation to the high spot prices reached during winter 2001. They argued that the current pricing system, coupled with the small size of the market, creates opportunities (and incentives) for anti-competitive behaviour (e.g. reducing or inhibiting competition or reducing supply to force prices up).

> "It was alleged that one generator, on seeing the shortage develop, refrained from making a sizeable proportion of their output available for hedge so as to exploit the rising spot prices" – *Health Sector EBG.*

> AICon, Alliant International, Comalco, Energy Link, Grey Power, Health Sector EBG, MEUG, Robbie Morrison, Network Tasman, Transpower, Wallace Corporation

- However AICon said despite the accusations, there was no clear evidence that generators had taken advantage of their position to over-inflate prices.

- Contact argued (and provided graphs to support the assertion) that there appeared to be:

> "…reasonable evidence to indicate that spot prices (at least in average terms) broadly reflected the costs of providing additional increments of generation or demand reduction" – *Contact*.

- In its cross-submission, NZEM rejected the notion that the high spot prices had reflected an imbalance of market power, because if market power was being used in this way, high prices could be expected to occur over the long term, rather than simply as short term fluctuations.

Effects of market power in the industry

- Transpower listed the following risks to efficient market outcomes (and therefore

consumer interest) arising from market power in the electricity industry:

- In generation through withholding supply to profit from localised monopoly conditions created by grid constraints or drive spot prices higher, or offer behaviour that leads to prices set above economic cost;
- In retail by reducing incentives to offer competitive tariffs, or developing new retail products, especially those that reward demand side participation; and
- In the hedge market by limiting the availability of contracts, and creating barriers to retail market entry (largely through vertical integration).

Market power issues – a matter for the Commerce Act

- M-co's submission argued that, to the extent to which concerns exist over market power, there are already legal mechanisms in place to deal with these. M-co suggested that if these mechanisms are not considered effective, then the fault lies with the design of the Commerce Act, not the wholesale market rules.

2.7 Other market arrangement / design issues

Summary of key points

- A wide range of submissions said market efficiency is hampered by the inability of participants to make informed decisions because of limited access to key information.
- The system of rewarding cleared bids at the marginal clearing price was criticised as inefficient. Others disagreed, and said the alternative, "pay as bid" pricing, would result in higher prices overall and out-of-merit order generation.
- It was suggested that current nodal pricing (including the use of marginal losses and constraints to determine prices) limits market efficiency. Other submissions explained that using marginal losses was the most efficient option.

Access to market information

- A wide range of submissions said the efficient operation of the market is hampered by the inability of participants to access key information in order to make informed decisions. This includes consumer decisions about purchasing and demand reduction, and generator decisions about new investment.

- It was suggested (e.g. by Business NZ) that a lack of market transparency in a number of areas (including pricing) advantages generators. Network Tasman suggested that a lack of public information about generator bidding behaviour encouraged the abuse of market power by generating companies. Many submissions called for more transparency in the operations of generators, especially vertically integrated ones.

- NIWA suggested that demand side management during winter 2001 was hampered by a lack of clearly understandable, publicly available information on climatic conditions.

> "Buyers of electricity, consumers with demand they could conserve and buyers of risk management products both prior to and during winter 2001 were frustrated in making informed decisions by the lack of appropriate and timely information" – *MEUG*.

"A possible cause of the delayed entry to the market of reserve thermal capacity was that the hydro generators had to guess at the price the backup thermal plant would actually run, and they found this difficult to do since the bids into the market are all confidential. This lack of transparency weakens the market's functioning and even encourages opportunistic bidding" – *Infratil*.

AICon, Alliant International, Business NZ, Comalco, Federated Farmers, Grey Power, Infratil, Health Sector EBG, MEUG, Network Tasman, NIWA, Orion

Transmission costs and dispatch methods

- Several submitters argued that transmission costs and dispatch methods have prevented least-cost dispatch, thereby limiting the effectiveness of the market. According to Todd Energy, the problem stems from the use of marginal losses in calculating wholesale market prices, which creates market distortion. Todd's description of the problem is summarised below:

  The way the NZEM has bundled market supply and demand forces with the transmission of energy is to include non-market elements in its price determination. These non-market elements relate to losses. By using marginal losses, as opposed to average losses, significant market distortion is created, including:
  - in periods of drought, South Island hydro is encouraged to generate more by being given higher marginal prices than would be the case if actual losses were used. Then in periods of high rainfall, or flood, the South Island is given too low a marginal price and dispatches less than is optimal;
  - the average market price is higher than the competitive price so consumers and retailers are disadvantaged;
  - competition between generators is reduced; and
  - NZEM is currently dispatching more costly generation ahead of cheaper generation (*Todd Energy*).

CHH, Natural Gas Corporation, Todd Energy

Marginal vs. average cost pricing

- Criticism was made of the current wholesale market system of rewarding all cleared bids at the marginal clearing price.

- Network Tasman argued this system provides an incentive for generators to bid up the price during conditions when shortages make dispatch highly probable (such as during a drought).

Health Sector EBG, Network Tasman, Pan Pac, Plastics NZ, Sinclair Knight Mertz, Todd Energy

- In response, NZEM's submission argued that the current pricing model is based upon minimising the total cost of delivering the required amount of energy at the correct nodes. Nodal pricing establishes unique prices at each point of injection into, or off-take from, the national grid that reflect the differences in terms of marginal losses and transmission constraints between nodes.

- Marginal cost pricing is inherent in nodal pricing. This means that electricity is priced at the cost of the next unit to be produced. NZEM said that average pricing, in which output is priced at the average price of its production, will tend to result in more output being produced than is efficient, and in the inefficient use of resources.

- Contact's cross-submission explained that the use of offer price for payment had been considered during the initial design of the market rules, but this had been rejected on the grounds that it would encourage base-load generators to 'guess' what the market clearing price would be, to ensure that they were not receiving less for their generation than other competitors.

- Todd Energy argued that marginal loss pricing creates an incentive for generators to act anti-competitively:

  > "… each incremental unit of generation frequently results in a sharp fall in the marginal price received so that generators make more profit by cutting back on incremental generation. By cutting back generation the marginal price on all units of generation can be increased. The marginal increase in price more than compensates for the marginally lower level of generation. Thus the generator increases profits by cutting back generation due to marginal loss pricing" – *Todd Energy*.

- In their cross-submissions, Transpower and Contact disagreed that using marginal losses created market distortion. Contact said that marginal losses had been chosen for the calculation because of their "superior economic efficiency characteristics."

  > "There really is no economically efficient option but for generators to be paid, and purchasers to pay, their local (nodal) clearing price. The nodal prices signal the market cost of system losses and constraints and provide the efficient signals for investment decisions in generation, transmission or demand side management" – *Transpower*.

2.8 Ownership issues

Summary of key points

- Several submitters were concerned that the Government's involvement in the industry exposed the public to unnecessary market risk, and created market inefficiencies.

- Several submissions expressed concern that the Government's involvement in generation (through the SOE companies) exposed the public to unnecessary market risk and created imbalances in the market.

- Federated Farmers argued that state involvement may create a disincentive to potential investors in generation, who may fear that pricing decisions will be subject to political influence.

- The Business Roundtable argued that state domination of the industry restricts its development and impairs competition.

- MUEG suggested there was a risk that SOE generators lacked the same capital market disciplines as private and listed companies.

Business Roundtable, Federated Farmers, Infratil, MEUG, TrustPower

3. What changes should be made to market arrangements, why are these changes recommended and what are the costs and benefits?

3.1 Overview

Summary of key points

- Suggested solutions ranged from relatively small adjustments (such as improving access to information) through to radical redesign of the market or doing away with market arrangements altogether.
- A key debate was over the need for greater or lesser regulation of the market in the public interest.
- A number of submitters opposed greater regulation and argued that the market provides the best means of managing risk and sending signals to suppliers and consumers.

Greater market regulation in the public interest?

- A range of submitters argued for greater regulation of the wholesale market in recognition of the essential nature of a secure electricity supply to the wellbeing of the economy and the public.

- Some submitters suggested that supply and demand should be better co-ordinated in the public interest.

- Several suggested that the regulator (be it the Government or another body) should manage supply and demand to protect the public interest and prevent opportunistic behaviour by generators. For instance, Grey Power and Sinclair Knight Mertz argued that during shortages the Government should take control of the market in the national interest.

- Transpower argued that the concept of industry self-governance is likely to fail and that regulatory intervention is likely to be required if the full intent of the Government Policy Statement is to be realised.

- Network Tasman argued that SOE generators have greater 'public good' responsibilities than pure private sector companies, and that this should be a consideration in dry year situations to ensure that the public interest is protected.

- Network Tasman also pointed out a potential conflict of interest in market regulation by the Government, given the significant SOE stake in the generation market, and suggested that regulation should therefore be devolved to an independent body.

- Sinclair Knight Mertz recommended abandoning the market altogether, and appointing a system operator/trader to manage system security and shortages, purchase power from generators at agreed prices, tender out for new capacity and sell to consumers on a cost recovery basis. Grey Power's cross-submission said that, unless the Government was prepared to change the role of the SOE generators in the public interest, then they would support the SKM recommendation.

"The market must be managed from a resource perspective rather than as a revenue generator" – *Waikato DHB*.

"The Government has to decide whether generation should be done in the best interests of consumers or investors… The generation industry no longer works as a co-ordinated whole with strong points propping up weak points… SOE generators should be amalgamated and required to act in the interest of ensuring low cost reliable electricity supplies to consumers. This will counter the parallel behaviour of larger generators in driving prices and restore a measure of co-ordination in generation" – *Grey Power*.

CC93, Fletcher Building, Grey Power, Robbie Morrison, Network Tasman, Sinclair Knight Mertz, Transpower, Wallace Corporation, Waikato DHB

- Other submitters argued that greater regulation is not required, and that Government intervention to manage supply and/or demand would be inappropriate. They said that the market provides the best means of managing risk and sending signals to both suppliers and consumers.

- NZEM's cross-submission argued that it has a track record of secure and reliable operation of the electricity system, coupled with efficient pricing, and that regulatory intervention often involves higher economic costs than self-governing arrangements.

  "The NZEM price discovery mechanism will continue to deliver the optimal outcome through time. Short-term dislocations such as have been experienced recently have been fully signalled and market participants in response have already made many decisions about the way in which they manage their exposure to spot prices" – *NZEM*.

  "NZ hydro storage is small in comparison to other countries, and subject to considerable weather variability. We have had tight supply in the past and we will again in the future. Our past experience has strongly suggested that market mechanisms are a preferred way to manage that variability" – *Meridian*.

AICon, Business NZ, Business Roundtable, Federated Farmers, Infratil, Meridian, NZEM

- The idea that regulation was required to protect participants from market risk was countered by the argument that risk management was the responsibility of the participants themselves.

- Meridian commented that market risks are inherent given the volatile nature of NZ's electricity industry, and argued that market mechanisms are the best way to manage that variability. Those who choose to take risks must face the consequences of doing so. This was reiterated in the Government Policy Statement – Management of Dry Year Risk[1].

[1] The Government Policy Statement, issued in December 2000, made it clear that the NZ system is inherently volatile and subject to dry year risk, that it was up to market participants to protect themselves against these risks, and that the Government was not expected to step in and protect those who had not protected themselves.

- NZEM pointed out that risk management is the responsibility of each member of the industry, each of whom has a view on the best approach:

> "The various approaches to managing spot market price risk may, over time, enjoy varying rates of success. The approach taken within NZEM has always been to rely on members managing their exposure through their own risk management processes" – *NZEM*.

3.2 Supply side

Summary of key points

- Various approaches were suggested to increasing the supply of reserve generation, including creating market incentives for generators, establishing various insurance schemes and imposing legislative requirements on generators. The importance of ensuring the market provides genuine incentives was noted.
- The need for incentives to facilitate investment in new renewables (particularly geothermal) and distributed generation (and to remove market barriers) was noted.
- The further break-up of generating companies to increase competition was suggested.

Encourage new generation (general)

- Grey Power's cross-submission suggested that, if the wholesale market price is insufficient to encourage the construction of new generation capacity, then the Government should either provide new generation or generators should be forced to.

Diversify generating capacity

- The development of new non-hydro generation capacity was recommended, in order to provide greater stability in the generation market.

- The NZ Geothermal Association submission supported the greater use of geothermal energy, arguing that this is a sustainable and reliable energy source with environmental advantages over natural gas.

- David MacClement suggested the construction of wind turbines throughout the country.

Encourage new renewable generation

- The Government needs to act upon its commitment to reducing greenhouse gases and constructively encourage, promote and assist in the development of renewable electricity generation plants (*TrustPower*).

- Provide an incentive to encourage the development of reliable generation that produces low greenhouse gas emissions, such as through a carbon emission regime (regulated, tradable or taxed), a mandated renewable target, a subsidy on renewable generation, or a penalty on non-renewable generation. In this context geothermal and hydro should be classified as "renewable" following the Australian model (*Geothermal Assn*.).

- According to the Geothermal Association,

> "Electricity from geothermal energy is [currently] more expensive that that from natural gas. The difference is relatively small and could be offset by a relatively small change in the relative cost of hydrocarbons… For these reasons we strongly support the development of a National Policy Statement under the RMA covering sustainability and balancing of environmental effects, and the imposition of some form of positive incentive regime."

- The Association recommended changing "Section 46A 'Exemption for new distributed generation from new renewable energy source' clause subsection 4(b) of the Electricity Industry Reform Amendment Act 2001 to allow a greater threshold for new geothermal and hydro plants," thereby making them more competitive with gas generation.

Encourage new reserve generation

- Develop a system to reward generators for maintaining low capital/high operating cost reserve plant. This could involve an agreed levy on all market volumes to support capital holding and maintenance costs for reserve plant and an agreed offer price in the event that the plant is dispatched (*Network Tasman*).

- Change the rules to force generators to provide reserve plant to cope with hydro shortfall. This cost would then be incorporated into the price of hydro electricity (*Peter Kammler, Grey Power*).

- Require hydro owners to hedge their dry weather risk by paying owners of reserve plant (*Network Tasman*).

- The Electricity Governance Board should develop a dry risk insurance scheme, whereby thermal generators are invited to tender for provision of reserve generating capacity to mitigate against dry year risk. The benefit would be to define the cost of dry year insurance well in advance, facilitating the incorporation of risk management cost into electricity charges (*Fletcher Building*).

- Make the security of supply a commodity which consumers can opt to buy. Consumers would have the option of buying electricity at a low tariff, and facing the prospect of a shortage, or paying a higher tariff in exchange for a guarantee of supply. This would suit consumers who need electricity so badly that they have their own backup anyway (e.g. hospitals, cool stores, isolated dairy farms). This allows the market to find the lowest cost for security of supply because it can be tendered out (*Peter Kammler*).

- The Sustainable Energy Forum suggested reconfiguring the market to provide a series of "frontline" power stations (including some new ones) which are the most efficient and which can compete with one another on price, backed up by "reserve" power stations for use in times of hydro shortage.

- The owners of these reserve stations would be paid a subsidy to cover maintenance costs. An overall controlling authority would be responsible for determining the level of reserve capacity required. Suggested advantages of this proposal included:
  - older thermal power stations would not need to be decommissioned;
  - the controlling authority could set a wholesale power price threshold to "trigger" the

entry of reserve stations into the market; and
  - taking the "reserve" power stations out of the market during intervening years would give developers of renewable generation more confidence to invest.

- This idea was supported by Pan Pac's cross-submission.

- Contact's cross-submission said the company was not opposed in principle to the payment of a reward for providing reserve capacity, but would wish to ensure that any payment mechanism was sufficiently robust to create genuine incentives to invest in reserve plant. Contact suggested that a similar mechanism might evolve de facto in the hedge market, whereby buyers purchase contracts that cap the price of their wholesale market purchases, in return for a fixed up-front payment.

Signals to prompt entry of reserve generation

- Several submissions commented on the need to establish triggers to prompt the entry of reserve generation. Mighty River Power said the market must ensure that thermal capacity competes within the market to provide an early response to low hydro capacity. MEUG's cross-submission agreed with this, but suggested MRP should be asked for suggestions as to how this might be facilitated.

Review behaviour of thermal generators

- Noting the level of disagreement between submissions as to whether thermal generation had responded appropriately during winter 2001, MEUG's cross-submission recommended an investigation of thermal generators' behaviour, to determine whether they had acted anti-competitively.

- Comalco's cross-submission also recommended an independent review of thermal utilisation from January 2001 forward.

Increase competition among generators

- Pan Pac and Infratil recommended that the break-up of generation companies to increase competition.

- Pan Pac suggested the Government should separate the thermal generators from the SOE Genesis, and either privatise or establish separate SOEs for them. Pan Pac argued that greater competition between thermal generators would improve the incentive to dispatch more thermal generation, and reduce dependence on hydro generation.

Facilitate distributed generation

- Market barriers to the introduction of distributed generation need to be addressed. Benefits of distributed generation would include the alleviation of grid constraints, line losses and harmful emissions (*CHH, Todd Energy*).

- As a means of encouraging the provision of distributed generation, Pan Pac suggested that generators could be required to cover all of Transpower's costs, based on the extent of their demands on Transpower's network.

- Pan Pac argued that because the cost of supplying local retailers would be lower, this would provide an incentive for distributed generation. Generators would be less inclined to withhold supply to drive up the wholesale electricity price. Consumers would benefit because the variable wholesale electricity price would include Transpower costs, thus consumers would be charged higher variable costs and lower fixed costs.

Relax RMA constraints on hydro generation

- Mighty River Power argued for more flexible hydro resource consent conditions in order to increase the competitiveness of hydro generation relative to thermal generation at times of peak demand. This would increase daytime competition, leading to lower end user prices.

- MEUG's cross-submission also recommended the Government explore options for greater flexibility of resource consents for hydro generators.

Reduce waste in generation and delivery (including hydro-spill)

- The efficiency of supply and delivery needs to be improved, along with the reduction of waste. The Electricity Governance Board should have a research capacity dedicated to improving the efficiency of generation, transmission and distribution. The Electricity Governance Board should co-ordinate with EECA on this matter (*Brian Tolley*).

- Hydro generators should be required to disclose all hydro spill information. This would ensure efficient management of hydro resources (*Mighty River Power*).

- Spill should be regulated to ensure that it is not done wastefully (*David Renouf*).

- Cost penalties should be imposed for hydro spill to prevent it happening (*Sustainable Energy Forum*).

- If there is a need for hydro spill in the Waitaki hydro system, it should be done in such a way that it benefits the overall storage capacity of the Waitaki River system (*John Blakeley and Bruce Hunt*).

- The Government should request an explanation from Meridian Energy as to why 1.85 metres was spilled from Lake Tekapo over January and February 2001 (*MEUG*).

3.3 Demand side

Summary of key points

- Many submissions recommended that all end consumers be exposed to some degree to wholesale price volatility in order to improve demand side response. Others cautioned that domestic consumers were not well-placed to respond to short term price rises and would prefer price certainty over volatility.
- Some support was expressed for real time pricing as a means of facilitating demand side management. Others said the effectiveness of a real time market would be limited by consumers' limited ability to respond.
- It was suggested that significant advances in demand side management would be made possible by updating local distribution technology and better management of load through local lines networks.

Improve price signals to consumers

- Market reform is needed to ensure price signals are felt across the entire market. Retail prices should include an element of spot price exposure.

- The benefit is that consumers would be charged an overall lower price at times when the floating rate (spot price portion) is low but would see a signal to conserve when the hydro lakes are falling and the floating rate increases. Savings would be encouraged by a higher variable cost component in retail tariffs.

- Drawbacks include:
  - the risk of considerable additional administrative complexity and some additional costs; and
  - an inherent conflict arising from the fact that system responsiveness requires price volatility whereas customers prefer price stability.

  Business NZ, Fletcher Building, Genesis, Robbie Morrison, Network Tasman, Bill Heaps (Transpower), Waikato DHB

- The Government should examine how price setting occurs in the market in times of shortage, and whether this price signal translates into an efficient demand control mechanism (*Mark Pickup*).

- In response to the above suggestions, Grey Powers' cross-submission argued that domestic consumers were the least likely to respond to short term price increases, because of the significant delay between consumption and billing. In addition, they argued that exposing domestic consumers directly to spot prices would cause considerable domestic hardship and political dissatisfaction.

- Grey Power argued that industrial consumers were better placed to respond quickly to spot prices. As an alternative to exposing domestic customers to wholesale prices, they suggested that in crisis conditions, bilateral hedge contracts with large industrial consumers could be cancelled, thereby achieving significant savings by encouraging demand reduction by a few very large consumers.

- In its cross-submission, Meridian argued that consumers (particularly domestic consumers) should be allowed to choose financial incentives to conserve energy during dry years. Such measures, it argued, should not be forced on them.

A Real Time Market (RTM) to improve demand side participation

- Transpower, Mighty River Power, the Health Sector EBG, and Bill Heaps (Transpower) expressed support for an RTM. They argued that an RTM could potentially improve demand side participation by allowing wholesale purchasers to respond quickly to high prices, and this would increase competitive pressure on generators by creating more elastic demand.

- Transpower said in its cross-submission that it is pursuing the development of Real Time Pricing through "appropriate industry working groups."

- In response, Contact's cross-submission argued that had an RTM been in place prior to winter 2001, this would not have significantly changed the outcome for the industry as a whole.

- NZEM identified a number of possible limits to enhancing demand side participation through use of an RTM:
  - increasing the number of consumers that can participate in the market would involve more consumers being exposed to the spot market;
  - the ability of consumers to respond to prices may be constrained due to the physical characteristics of plant or operational requirements; and
  - real time pricing would not improve consumers' ability to react in times of prolonged high prices.

The 2 hour rule

- Several submitters criticised the 2 hour bid rule (whereby demand side bids into the market cannot be changed within 2 hours of real time), saying it impeded access to timely market information and therefore demand side management.

- MEUG recommended that the Government request that Transpower reply in writing to MEUG's suggestion (27 June 2001) that the 2 hour rule be changed to align with the recommendations of the Demand Side Participation Sub-group to facilitate effective demand side management.

- In its cross-submission, Transpower argued in favour of the 2 hour rule, because allowing parties to change their bids at short notice would create problems for the system operator in terms of accurately predicting demand response and identifying security management issues.

- Contact's cross-submission also argued in favour of the 2 hour rule, saying the rule's rationale is to promote grid security. It pointed out that demand side participants are currently permitted to alter their demand in response to price changes within the 2 hour period, provided they do so in accordance with a demand bid they have previously made.

Better management of load through local lines networks

- Several submissions advocated better use of 'ripple control' to manage peak load demand.

- Genesis suggested that "commercial arrangements should be structured to allow the retailer to shift load to time periods which can be covered by thermal generation, or else scarce hydro resources will be used to provide this generation in peak times."

- Carter Holt Harvey argued ripple control would help to "reduce volatility and overall prices".

- MEUG's cross-submission recommended that the Government examine whether there are any barriers to the efficient use of ripple control by retailers and lines companies, and if so, how those barriers can be removed.

- WEL Networks said the capacity of line companies to monitor and predict load in their supply areas should be utilised. For example, some lines companies have data management systems that allow them to compare consumption with historical trends on a feeder-by-feeder basis.

Update local distribution technology

- Bill Heaps (Transpower) said that increased availability of time of use meters at residential and small commercial sites would improve opportunities for customer response to spot prices.

- Brian Tolley suggested there is a need to update frequency, load management, communication and metering arrangements for local distribution in order to improve efficiency and demand side influence on the market. Specific points made included:
  - Overcoming technological limits to domestic electricity profiling would improve options for demand side management;
  - Time of use metering for 3 phase should be required; and
  - Responsibility for metering, switching, registration, billing, reconciliation and demand side load management should be separated from the retailers and be offered as a service in each network to retailers competing in that network.

- Brian Tolley's cross-submission explained how making the above changes would facilitate many of the improvements advocated by other submitters, including the change from marginal to average loss pricing advocated by Todd Energy.

3.4 Transmission

Summary of key points

- Many submitters recommended upgrading the national grid to remove constraints and improve security.
- It was suggested that better incentives are needed for transmission investment and a long-term strategic approach to investment should be taken.
- Transpower recommended developing contingency plans to cope with constraints in times of supply shortage, and also noted that a constraint-free grid was not a realistic proposition.
- A review of the treatment of transmission rentals by lines companies was recommended.

Address transmission constraint / security risks

- Constraints should be removed to ensure that reserve capacity can be utilised when supply problems arise, to improve competition and reduce opportunities for regionalised markets to develop (*NGC, Mighty River Power, Sustainable Energy Forum*).

- Processes are needed to ensure that appropriate investment in transmission is undertaken (*Fletcher Building*).

- There is a need to establish a process to examine and remove grid constraints where this is shown to be in the national benefit (*Network Tasman*).

- Transpower have released a discussion document (*System Protection Schemes for Transmission Capacity Enhancement*) which considers how the System Operator might in future be able to more actively manage the grid and security parameters. MEUG agrees this should be a focus for Transpower. Steps should be taken before winter 2002 to ensure grid enhancements are assessed and implemented in a robust and timely manner (*MEUG*).

- The Government should ask Transpower to consult with stakeholders and the Grid Security Committee on how the existing grid capacity can be enhanced for winter 2002. In addition, Transpower should report on new forward grid investment for the period winter 2002 – winter 2007 (*MEUG, Business NZ*).

- Transpower should be empowered to develop the grid to ensure the lowest cost transmission without the current impediments that have precluded grid development since the market was implemented (*Pan Pac*).

- Recognising the potentially significant economic consequences of grid operating decisions, the NZEM Rules Committee expressed support for greater transparency surrounding Transpower's decision making.

- Transpower recommended the development of industry-supported contingency plans for grid reconfiguration, temporary relaxation of security standards, etc.

- Transpower also noted that making significant grid changes, such as to relieve constraints to supply from Taranaki, were not a simple matter and would require significant technical analysis and planning.

Facilitate transmission investment

- Introduce a financial instrument that sharpens Transpower's incentives to maximise the ability of the transmission system to transfer energy, as opposed to focussing heavily on achieving a specific level of transmission system reliability (*Meridian*).

- Meridian pointed out that the intent of Part F of the proposed rulebook is to address the problem of insufficient grid investment. Meridian argued, however, it is essential that the transmission investment rules developed are practical, and that the resulting pricing methodology does not undermine market efficiency.

- Energy Link stressed the need to examine whether the right objectives or incentives are in place to ensure that reasonable trade-offs are made between transmission capacity, short term and dry year local and national security of supply, spot prices, and the cost of measures to increase grid capacity.

- Sinclair Knight Mertz suggested the Electricity Governance Board should be authorised to allocate transmission rentals to fixing constraint, security and loss problems.

- Transpower identified the need for a long-term, strategic approach to transmission investment, with the goal being to achieve an efficient level of transmission investment in the future. This, they suggested, would require occasional "regulated" enforcement of investments where such investment was demonstrated to be in the public interest but where commercially agreed investment decisions are not forthcoming (as signalled in the Government Policy Statement).

- In its cross-submission, Transpower explained that a number of new grid investments and other performance upgrades were planned prior to summer 2001 (to ease security or supply problems into Auckland) and in preparation for any possible repeat of the conditions seen in winter 2001.

Investigate inequities in transmission rental rebating

- The Government should investigate whether lines companies' treatment of transmission rentals had any equity or competition affects (over the winter 2001). If so, steps to remedy problems identified should be explored (*MEUG*).

- The Government should review the treatment of loss and constraint rentals and if necessary regulate their removal or the allocation process (*TrustPower, Contact's cross-submission*).

Ownership / governance of transmission

- The Government should convert Transpower into a Crown Owned Company, and clearly establish its responsibility "to deliver electricity in an efficient, fair, reliable and environmentally sustainable manner" (in other words, to deliver least-cost system solutions to the industry). This would be consistent with the Guiding Principles of the

Government Policy Statement.

Alliant International, Pan Pac's cross-submission, TrustPower

- Sinclair Knight Mertz recommended appointing an Independent System Operator (ISO) to manage transmission and fix constraints. This would help to ensure an economical and reliable supply of power.

- In its cross-submission, Transpower said that the present reform process provided an opportunity to review the incentives under which it operates. Transpower said, however, that it is important to ensure that any changes to Transpower's regulatory framework, and any resultant changes to its incentives, occur in a manner that ensures:
  - Consistency between these various regulatory mechanisms; and
  - Consistency with the efficient functioning of the wholesale physical market.

3.5 Risk management instruments

Summary of key points

- Many submissions advocated greater liquidity in the hedge market and greater availability of hedges.
- The mandatory offer of hedges was suggested by some to improve retail competition.
- Opponents of mandatory hedges said that denying companies the full benefit of internal hedging would lead to increases in spot prices and less overall system security.
- Support was expressed for the development of financial transmission rights (FTRs) as a means of hedging against transmission loss and constraint risks.
- A number of reservations were expressed regarding the introduction of FTRs, particularly in terms of their potential to exacerbate generators' market power. Market competition issues should be addressed before FTRs are introduced.

Mandatory hedges (countering the 'natural hedge' strategy)

- A range of submissions argued that vertically integrated generators should be required to offer a proportion of their hedge volumes to third parties at the same price as they offer to their retail businesses. This would help to boost liquidity and place all retailers on a more even footing.

Alliant International, Business NZ, CHH, Comalco, Fletcher Building, MEUG, Network Tasman, Transpower

- On the other hand, the Natural Gas Corporation said that careful analysis was needed as to whether mandatory hedges would reduce the benefits from hedges tailored to specific circumstances, or remove the opportunity for vertically integrated companies to internally manage wholesale price risk.

- Contact's cross-submission argued against mandatory hedges. It said that denying vertically integrated companies the full benefit of internal hedging would increase the cost of risk management (leading to increased prices for consumers), and increase the likelihood of domestic and small business consumers becoming directly exposed to spot

prices.

Develop long-term contracts

- AICon suggested that a long-term contracts market should be developed. This would improve price stability for consumers, improve information and incentives for new investment, and improve generators' ability to handle the risks of shortages.

- According to Infratil, regional market fragmentation creates a major barrier to the effective operation of the contracts market. "Emphasis needs to be placed on ensuring as much competition in the contracts market as possible and that means as much tradability and liquidity as possible" – (*Infratil*)

Financial Transmission Rights (FTRs)

- Support was expressed for the proposed FTRs. Suggested benefits included:
  - protection of market participants against the costs of transmission constraints;
  - improved competition;
  - FTRs are entirely funded by and reliant on rentals, and without rentals cannot be offered by Transpower or any other party; and
  - the revenue from sales of FTRs is used to reduce charges for the sunk and fixed costs of transmission in order to minimise distortion to market efficiency.

- Transpower suggested that FTRs represent the most efficient means of using transmission rentals.

> "Transmission risk management tools such as physical capacity rights, or financial transmission rights are absolutely vital to promoting competition, and the continued inaction in implementing them serves no one but generators intent on creating regional monopolies with captured retail customers" – *Alliant International*.
>
> "The benefit of a competitive FTR market is that it will facilitate more competition across constraints and thereby reduce the tendency for regionalisation in the primary hedge and retail markets. The costs… are that a wide range of other changes are needed to the energy market to improve competition and the [associated] cost of software and administration" – *MEUG*.

Alliant International, Infratil, Meridian, MEUG, Network Tasman, Sinclair Knight Mertz, Bill Heaps (Transpower),Transpower, TrustPower

- A number of reservations were expressed, however, and a range of adjustments to the design of FTRs were suggested.

> "The current design proposal for FTRs sees Transpower assuming little or no risk. [The industry's preferred option] would involve Transpower having incentives to maximise the ability of the transmission system to transfer energy in response to changes in market conditions. The current FTR proposal where Transpower scales back payments following a reduction in rental income caused by circuits being removed for maintenance, or unplanned outages, fails to achieve such incentives" – *Meridian*.

> "The effectiveness of FTRs… will depend on… whether the lack of generation competition within specific constrained regions will enable the FTR market to work properly" – *TrustPower*.

- In its cross-submission Transpower agreed that FTRs alone would not solve the industry's investment problems, but stressed their relevance as part of an integrated solution. FTRs provide the only means of mitigating the problem of preventing one party from free-riding on another party's grid investment, and also assist with signalling the need for new investment.

- Two submissions (CHH and MEUG) expressed concern that the proposed FTRs would create the potential for generators to abuse their market power and profit at consumers' expense. MEUG said the Government should direct Transpower not to commence an FTR market until policy changes are first made to ensure market competitiveness, otherwise an FTR market will exacerbate the market power of suppliers. MEUG also said it was important that policies to implement enhanced use of grid and new grid investment for next winter are not affected by resources diverted to implementing FTRs.

- Carter Holt Harvey would prefer a system whereby purchasers take out hedges across constraints (with a party other than the parent generator) rather than being able to purchase FTRs.

> "Given the significant market power of individual generators at various times and all generators collectively most of the time in the energy market, allowing those parties to also participate in an FTR market would exacerbate their market power" – *MEUG*.

- In its cross-submission, Transpower argued that in the long term, the solution to market power imbalances was to relieve transmission constraints and increase competition on both the supply and demand sides. Given that, FTRs would not, in the long run, have a distorting effect on market power.

- Contact's cross-submission cautioned against the introduction of FTRs as a mechanism to resolve the rental allocation issue. Contact argued that FTRs may simply reallocate rentals away from the current participants to a new set of recipients.

- Contact and Mark Pickup recommended that transmission rentals be rebated to lines companies' customers on the same basis as the rebates were accrued.

3.6 Retail competition / vertical integration / market power issues

Summary of key points

- A large number of submissions recommended the separation of the generation and retail arms of vertically integrated companies, to improve competition and liquidity in the hedge market.
- Generators and M-co argued that vertical integration was a legitimate risk management tool, allowing companies to internalise market risk, provide greater price stability to customers, and enhance backing for new generation investment.

Address problems with vertical integration

- It was commonly suggested that there is a need to address the market power of vertically integrated companies. The most common suggestion for improving competition was to require the separation of generation and retail.

- This could be achieved by changing the SOE's Statement of Corporate Intent to require accounting ring fencing of the generation and retail businesses, to ensure that the costs, risks and financial performance of each business are separately accounted for. Benefits would include:
  - Improved liquidity of the hedge market;
  - Improved competitiveness in the contracts market;
  - Improved incentives for new entrants to the retail market; and
  - Improved retail innovation.

- Predicted costs would include Commerce Commission input and possible public reaction to any upward price change to remove cross-subsidisation.

- Alternatively, generation and retail could be split into separately owned corporate entities. This would have similar advantages to the option above, but with greater certainty and clarity, and would not require Commerce Commission oversight.

- Disadvantages would include a requirement for legislation, separation costs and an increase in overheads. It would take a long time to implement and may create political problems for the Government and expose participants to legal, Treaty of Waitangi and other challenges.

AICon, Business NZ, Comalco, Federated Farmers, Fletcher Building, Infratil, Network Tasman, Plastics NZ, MEUG, Norske Skog, Mark Pickup, TrustPower, Waikato DHB

- In response, Contact and Meridian argued against separation of the generation and retail arms of vertically integrated companies. They said that vertical integration provides companies with an important risk management tool. M-co also considered vertical integration to be a legitimate commercial response to managing market risk (M-co did point out, however, that this was an area requiring policy analysis by Government).

> "The risks in the NZ electricity system stem from physical causes; a high degree of hydro dependence, with variable inflows and very limited storage; a long

'stringy' transmission system that is prone to constraints and faces a risk of loss of major circuits; and a relatively small generation fleet with some large single units making it vulnerable to loss of major generators or ancillary equipment... Integration allows some of the risks to be 'internalised' within a firm. This balancing of generation capacity and retail demand keeps the cost of risk management to a minimum" – *Contact*.

- Meridian argued that vertical integration:
  - allows for greater price certainty for customers; and
  - provides certainty for investment in generation, transmission or in demand management options.

- Grey Power's cross-submission also expressed concern about the proposed separation of vertically integrated companies because of the price stability offered by vertical integration to consumers.

- Meridian argued that vertical integration does not constrain the wholesale market, saying that the extent of NZ's hydro variability (leading to mis-matches between generation and retail contracts) means that a proportion of generation will always be available to sell on the spot market.

- M-co's submission stressed that vertical integration is a structural issue, not a market rules issue (NZEM's cross-submission also made this point). It was argued that any perceived vertical integration concerns should not be addressed by intervening in the wholesale market rules because of the lack of "quality information on whether a policy problem in fact exists," and because "intervention in the wholesale market is likely to be the least effective solution if any real problem exists."

- *Note that section 3.5 (Requiring mandatory hedges) includes discussion of mandatory hedges, which were suggested in the context of addressing problems with vertical integration.*

Competition – pricing issues

- Price setting in the electricity industry needs to be subject to the same rules as any other competitive industry, including the same potential for scrutiny by the Commerce Commission and penalties for anti-competitive practices (*Plastics NZ*).

- Pricing methods should be developed that restrict the potential for participants to provoke conditions which lead to regional market power imbalances and to limit their ability to rent-seek if, and when, such situations arise (*Robbie Morrison*).

3.7 Other market arrangement / design issues

Summary of key points

- A comprehensive review of the NZEM rules and/or the structure of the market was recommended. The importance of taking an holistic approach rather than dealing with specific problems in an ad-hoc manner was stressed.
- Others argued against significant reform at this early stage of the market's existence, and said urgent matters such as the development of new generation capacity should take priority.
- A review of the marginal clearing price system was recommended.
- Replacement of the ex-post wholesale market with an ex-ante market was recommended.
- Some suggested imposing price caps to reduce consumer price volatility. Others strongly opposed this on the grounds that price signals would be retarded.
- A range of changes were recommended to the Electricity Governance Board and proposed rule book to ensure the market is able to deliver the outcomes required by the Government Policy Statement.
- Submitters identified a wide range of market information which, if more readily available to market participants and the general public, could improve market efficiency, demand side management and generator bidding behaviour.

Review / reform NZEM rules / electricity market structure

- A range of submissions recommended a comprehensive review of the NZEM rules and/or the structure of the market, in order to avoid a repeat of the winter 2001 experience. Submissions stressed the importance of taking an holistic approach rather than dealing with specific problems in an ad-hoc manner.

- Comalco argued that the proposed Electricity Governance Establishment Committee arrangements do not go far enough, and recommended that a comprehensive and independent review of wholesale market arrangements be undertaken, including an assessment of the approach to price setting.

- MEUG and Business NZ recommended an amendment to the Government Policy Statement requiring the Electricity Governance Board to carry out a "comparative and in depth review of the NZ electricity market within 18 months of its (the Board's) establishment."

- Pan Pac suggested that all electricity consumers should be billed via a central organisation such as M-Co at the wholesale electricity price. Advantages would include:
  - incentives to consumers to conserve electricity in response to wholesale electricity price rises;
  - potential reductions in costs for consumers by eliminating duplication in billing systems, meter reading and switching costs;
  - incentives for generators to offer hedge contracts to larger consumers, thereby improving liquidity in the hedge market; and
  - as a consequence of generator pricing being exposed to a much broader range of consumers, generator pricing behaviour would be under much greater scrutiny.

- Infratil and Transpower suggested that the market design itself is not fundamentally flawed, but that further structural reform is nevertheless needed in the interests of competition, liquidity and efficient response to dry-year events. "The alternative to further structural reform is an approach of ad hoc regulatory interventions, which are in Infratil's view likely to fail and prolong the structural problems of the market" – *Infratil*.

Business NZ, Business Roundtable, CC93, Comalco, Energy Link, Fletcher Building, Infratil, MEUG, Robbie Morrison, Norske Skog, Pan Pac, Transpower, WEL Networks

- M-co, MEUG, and Robbie Morrison pointed out the need to carefully consider a wide range of factors in developing policy options to improve the market's performance, including:
  - The impact of the Government Policy Statement's proposals on the market;
  - The implications of any climate change policy introduced in line with the Kyoto Protocol; and
  - The outcome of the Commerce Commission's investigation into retail acquisitions by Meridian and Genesis Power and the Commission's treatment of the proposed combined rulebook.

- Several submissions argued against significant reform of the market's structure and/or rules.

- WEL Networks argued that changes to the structure and processes of the market should not be made until the market has had the opportunity to gain some maturity.

- Contact's cross-submission strongly opposed the idea of a comprehensive review of the market rules, believing it to be unnecessary, and because it would delay the provision of urgently needed new generation.

Suggestions about the Electricity Governance Board (EGB)

- Alliant International suggested that the EGB currently under development should comprise equal representation from buyers and sellers of electricity.

- Transpower, TrustPower and Fletcher Building argued that the new EGB, as currently proposed, will not be effective in improving functioning of the market – the Board, they suggested, needs more teeth. TrustPower submitted that, because any rule changes proposed by the Board will have to be passed by the members who are party to the part of the rules being changed, the EGB will lack the power to significantly improve market efficiency and address problems with, for example, generator market power. Fletcher Building argued the need for a regulatory EGB with strong rule-making powers, rather than an industry body.

- TrustPower suggested that the Government should review the EGB process and the proposed rulebook in detail and consult with industry participants and consumers' representatives to ensure that the market will deliver the outcomes required in the Government Policy Statement.

- Transpower also argued for a single, common and mandatory governance body to

oversee market operation and future rule making in the public interest. This, they argued, would facilitate the introduction of real-time pricing and Financial Transmission Rights, further measures to improve demand side participation, and retail competition. It would also improve the industry's ability to efficiently manage dry-year risk. Transpower argued that a mandatory governance body would be preferable to the current industry proposals for self-regulation. Transpower suggested that the Government should consider legislative options for providing a workable and efficient means of ensuring that all industry participants comply with a set of mandatory market rules.

- Transpower said that, where changes to the market rules are required, these should occur within a governance framework that, while able to utilise the expertise of the industry, is explicitly designed to introduce changes in the public interest. Transpower suggested that enforcing the mandatory governance arrangements and implementing the measures envisaged in the Government Policy Statement should be the primary approach to enhancing the ability of the market to manage dry-year risk.

- Transpower favoured the concept of legislative enforcement of the market governance arrangements, though it recognised the potential risks of implementing a regime that is not responsive to technological and other changes, and which fails to draw on the expertise of the industry. Other costs would arise from an increased level of administration.

- Transpower argued that the benefits would include:
  - More rapid development of improved means of demand side responsiveness;
  - Assurance of effective processes for efficient multi-lateral decision-making;
  - An informed and independent source of ongoing advice to the Government on the progress of the industry;
  - Any consequential improvements to industry efficiency that would accrue from policy or regulatory changes based on this advice;
  - Savings from any avoided delay in the establishment of an effective EGB;
  - Savings in compliance and enforcement costs; and
  - Providing certainty required for industry, consumer and investor confidence.

- The Consumer Coalition on Energy (CC93) said that, whatever policy changes the Government decides on, it is essential that an effective and unbiased means of implementing those policies is chosen. CC93 said the Electricity Governance Establishment Committee and EGB were both unlikely to take sufficient account of consumers' interests.

> "CC93 would object to any policy implementation being delegated to the Electricity Governance Establishment Committee or being held over for the EGB to act upon. The Electricity Governance Establishment Committee has proven to have the same flaws as NZEM by entrenching supply side biased solutions because the supply side dominates the decision making processes. The EGB may have independent directors but the rule making and rule changing process will continue to be in the hands of the four major generators" – *CC93*.

Market information (general)

- Submitters identified a range of areas where better access to information for market participants and the general public would improve market efficiency, demand side

management and generator bidding behaviour.

- Information should be readily available (e.g. through the internet) and, if intended for public consumption, needs to be in a form appropriate for this purpose, rather than being highly technical. If software programmes and market tools are needed in order to analyse the data then these should also be made readily available.

- Specific areas where more information was said to be needed included:
  - historic and day-to-day NIWA inflow and hydrology data;
  - information on the state of national fuel resources (e.g. through undertaking and publishing an external review of hydrology and other fuels);
  - storage, inflow, production and forward price estimates from generators (including data on generators' hydrology management and supply strategies);
  - historic load flow and price data;
  - details of hydro spill;
  - generator offers and purchaser bids into the NZEM (some suggested these should be disclosed within 24 hours, others suggested one or three months);
  - wholesale dispatch information;
  - primary hedge information, including future prices (e.g. generators could be required to disclose hedge contracts they have entered into);
  - spot prices and their derivation;
  - retail contract pricing;
  - details of line and energy charges (these should be clearly explained in electricity accounts to allow consumers to distinguish the best deals); and
  - financial statements of integrated generator/retailer companies, in particular the details of internal hedge contracts.

- AICon noted that there is no provision for an overview of generation capacity and supply capability across the market as a whole. The move to have better, more freely available short and medium term projections of system adequacy (as per the Government Policy Statement) was supported.

- The Health Sector EBG expressed support for the Government Policy Statement's intent to achieve the public release of wholesale market information after three months, and to provide forward price information based on aggregate information on hedge prices.

> "Improving the availability of information should help to ensure that parties make more informed decisions in the future and should as a consequence increase the demand for risk management products" – *Meridian*.
>
> "[Making] all NIWA historic and day-to-day hydrology information available on a public website… would allow greater demand side awareness and in turn lead to earlier and better demand side management… Greater transparency in pricing decisions to reflect the costs associated with generation, cost of transmission, and finally, retail margin [would help to avoid] opportunistic behaviour on the part of both lines companies and generators" – *Federated Farmers*.
>
> "EECA and other non-market participants should have access, at no cost, to market information that enables it to monitor 'market conditions', including lake levels, inflows and market prices" – *EECA*.

The Consumer Coalition on Energy said that consumers should receive detailed information on the key components of their power bills. Both households and small-medium businesses would benefit from having the major charge components detailed on invoices, so that these can be monitored and challenged.

Comalco recommended, in order to "restore confidence in the NZEM" following winter 2001, a one-off disclosure of generator receipts from the NZEM from January to September 2001, and ongoing disclosure of all NZEM generator offers and re-offers from January 2001 forward.

AICon, Business NZ, CC93, Comalco, Contact, EECA, Federated Farmers, Fletcher Building, Grey Power, Health Sector EBG, Meridian, MEUG, Mighty River Power, Robbie Morrison, Natural Gas Corporation, Network Tasman, NIWA, Orion, Pan Pac, Brian Tolley, Transpower, WEL Networks

- In its cross-submission, NZEM expressed support for enhancing the transparency of the market through the disclosure of relevant information, provided the release of information was consistent with the provisions of the Commerce Act, and did not undermine the ability of market participants to act competitively (Meridian's cross-submission expressed similar sentiments).

- Contact's cross-submission expressed concern about increasing the transparency of hedges by identifying deals – this, it suggested, is the equivalent of exposing any financial transaction that impacts on profitability and may reduce a company's competitive position.

- Further, Contact suggested the release of hedge prices would be of little practical benefit because the majority of hedges are written to reflect customers' specific requirements.

- Contact also queried the assumption that disclosure of hedge prices would lead to more hedges being available at prices that suit purchasers.

- Contact suggested that encouraging greater use of the futures contract market would be more useful than requiring the release of hedge prices.

- NZEM pointed out that its Rules Committee is currently pursuing options to improve the availability of information to the public.

- In addition, NZEM and Transpower noted that the Government Policy Statement contains many references to the desire to make information available, including offers by generators, information relating to hydro-spill, and forward price information.

Climate information (specific)

- NIWA made several recommendations regarding the need for better availability of hydrology information:
  - an independent review of hydrology/climatology over winter 2001, focusing on climate variability due to cyclic processes, and the long term effects of climate change;
  - a review of the existing market hydrological information system provided through M-Co with a view to making it more accessible and comprehensive; and
  - NIWA could extend its services to provide a monthly or seasonal service for the

electricity industry, which would benefit energy efficiency projects (demand side) as well as generators. If all market participants had access to information on hydrology and climatology risks, this would facilitate more informed supply and demand decisions.

Review the marginal clearing price system

- Consider rewarding generators with their cleared bid price instead. This may encourage generators to bid closer to true marginal costs and reduce excess returns in dry years (*Network Tasman*).

- If generators were only paid their offer price, the average wholesale electricity price would be lower (although not significantly lower than the price set by the current formula) and would certainly be less volatile (*Pan Pac*).

- AICon suggested that the marginal clearing price system should remain, and should not be changed simply in order to address problems with lack of competition.

- Contact and NZEM argued in favour of the marginal clearing price system, and said the alternative, using the average price, would be economically inefficient. NZEM said that average pricing would tend to result in more output being produced than is efficient. (*Refer to section 2.7 – Marginal vs. average cost pricing – for a wider discussion of this issue*.)

Establish an ex-ante wholesale market

- The ex-post market should be replaced by an ex-ante wholesale market, with trades achieved prior to dispatch to allow demand side reductions to be achieved (*Alliant International, Brian Tolley*).

- Wholesale prices should be set 4-24 hours in advance to ensure that price signals can provide for workable demand side management (*Fletcher Building*).

- In its cross-submission, Contact argued that the adoption of an ex-ante market prior to winter 2001 would not have significantly changed the outcome for the industry as a whole.

Cap prices

- In response to the high spot prices seen in winter 2001, three submissions argued that price caps should be imposed on the market, either during “crisis” conditions or as a matter of course (*Grey Power, David Renouf, CHH*).

- CHH argued that, if generators’ spot market offers were capped at a certain level then those generators not prepared to offer at that level should not offer at all. The resulting supply shortage would serve to send a signal to end consumers to conserve.

- Other submissions, however, strongly opposed the idea of price caps because this would reduce the impact of price signals on both sides of the market.

- NZEM’s cross-submission explained that a price cap would run counter to the efficient use of resources, and could lead to a real risk that generation capacity would not be available when needed.

"… a price cap would dampen the signal for retailers to negotiate with customers, or to introduce tariffs to incentivise customers to save power in these types of unusual circumstances. Secondly, it would remove the longer-term incentive for customers to contract with private sector and SOE generators. More critically, the prices in contracts would be lower that they should be and the market would inevitably fail to invest in the new [generating] capacity necessary to ensure that, despite growing loads, future dry year events can be adequately managed" – *Infratil*.

AICon, Business NZ, Business Roundtable, Federated Farmers, Infratil, Meridian, NZEM

- Contact's cross-submission said that any move to cap spot prices needs to be considered with great care, lest price caps destroy the incentives to maintain reserve plant.

3.8 Ownership issues

Summary of key points

- Two suggestions regarding Crown involvement in the industry were made:
  - the Government should divest its retail and generation interests; and
  - SOE generators should be converted into Crown Owned Companies.

- Federated Farmers and Infratil recommended that the Government should divest its retail businesses (given that this market does not involve ownership of strategic national assets) and also its generation assets (to minimise the potential for political interference and encourage new investors to enter the market).

- The Business Roundtable stressed that options for increasing competition through reductions in state control of the industry must be considered.

- In contrast, Grey Power's cross-submission argued that SOE generators should be removed from the SOE Act and converted into Crown Owned Companies, with the primary responsibility of providing lower electricity prices rather than profits (in the interests of the public).

- MEUG's cross-submission suggested the SOE suppliers could publish quarterly reports like private and listed companies, to better mimic the market disciplines of private and listed companies.

- *Refer to section 3.6 (Addressing problems with vertical integration) for further discussion on ownership issues.*

3.9 Contingency planning / establishing 'triggers'

Summary of key points

- There is a need to develop contingency plans for dealing with extreme circumstances. This would speed up the response of suppliers and consumers.

- A range of submitters said there is a need to develop contingency plans to deal with extreme circumstances. Planning for events such as cold, dry winters would help reduce the time it takes suppliers and consumers to respond.

- Contact and Transpower said areas where contingency planning would be valuable included:
  - temporary changes to grid configuration to relieve transmission constraints;
  - interruptible contracts with large and medium-sized customers to allow generators to buy back some of the power they had contracted to supply;
  - retail consumer campaigns; and
  - setting triggers for Government intervention in the market, if necessary.

- Early warning flags or triggers should be developed to signal impending shortages/dry year conditions. The industry could then go into an agreed crisis mode in timely manner (*Network Tasman, Transpower*).

- Establishing procedures for implementing future conservation campaigns would result in a more prompt response by conservation authorities and reduce delays in achieving savings. Advance preparation of "off the shelf" conservation campaigns for retailers should also be promoted (*Energy Management Assn., EECA, Contact*).

- The Government should request the Ministry of Economic Development and EECA to prepare a basis for charging generators for any future costs of Government or EECA intervention required to appeal to the public's goodwill to save energy (*MEUG*).

4. What changes to the energy efficiency and conservation campaign should be considered in case the need arises in future for a similar campaign?

Summary of key points

- Analysis of the 2001 campaign and its results to identify where effort should be directed in future was recommended.
- Improve access to demand information for consumers and those charged with encouraging conservation.
- Problems with the measurement of savings need to be addressed.
- A range of specific energy-saving measures were suggested.
- There is a need to focus on achieving long-term energy consumption savings.

Support for the savings campaign

- Several submissions expressed support for the Government-initiated savings campaign. They argued that such campaigns offer the only viable demand side strategy under the current pricing system, and therefore the Government's role in the 2001 campaign was warranted given that no other sector has an economic incentive to do so.

Alliant International, Contact, Federated Farmers, Infratil, Robbie Morrison, Network Tasman

- Three submitters said they considered the campaign was effective and no significant changes would be needed in future (*Alliant International, TrustPower, M-co*).

Explore the lessons of 2001

- The results of the 2001 campaign should be analysed to identify successful demand reduction initiatives, and the reasons for their success.

- Factors to consider include which market sectors responded best and which market sectors had the best opportunity to respond.

- Also to be considered is the extent to which demand reductions resulted from the use of embedded generators. This should help determine where the real savings occurred and which specific users could be the focus of future campaigns.

- *Refer to section 3.9 (Contingency planning). The recommendations to develop contingency plans and establish early warning triggers were made in light of the lessons from winter 2001.*

Energy Management Assn, Health Sector EBG, Robbie Morrison, WEL Networks

Improve quality of demand information available

- Access to better demand information (for consumers and those charged with encouraging conservation) would help organisations such as EECA and retailers with managing

demand. EECA reported difficulty in targeting demand side management (DSM) strategies because of a lack of appropriately detailed and sector-specific electricity use and savings data.

> "The M-co data on energy use patterns over the campaign was not able to distinguish patterns of electricity demand by sector. This information would have been useful in targeting specific sectors to reduce demand" – *EECA*.

> "Improving access to demand information would help to manage demand. Internet-accessible time of use metering should be installed on all Government electricity supplies" – *EECA*.

> "Most people have a lack, or distorted view, of information on their energy use. Time of day monitoring and actual use data for each part of a site would lead to more effective decision making. More information on the likely consequences of not reducing demand may have motivated more users to make savings" – *Energy Management Association*.

- *Refer to section 3.7 (Market information) for more discussion on this issue.*

Problems with the measurement of savings during winter 2001

- Several submissions highlighted problems with the measurement of energy savings. For instance, energy use was compared with equivalent weeks in previous years but no adjustment was made for temperature differences between years (which would have affected electricity demand). It was suggested that many of the "savings" reported in the media actually occurred as a result of the natural decline in demand associated with the arrival of warmer weather.

- The calculation of savings was done on a regional basis, rather than looking at individual demand sectors, which made it impossible to tell which consumers were actually making savings. Once again, this raises the need for better information on demand patterns.

> "The M-Co [savings calculation] methodology… failed to account for differences between different customer types. In Waikato, for example, residential customers achieved their 10% target, industry was virtually on budget, the commercial customers made a significant contribution to their target and the farming customers were significantly over the target" – *WEL Networks*.

Energy Management Assn., Network Tasman, Pan Pac, WEL Networks

Specific energy saving suggestions

- Improve access for consumers to advice, e.g. use an interactive advice-based call centre, as opposed to a simple electronic "mail box" system as was used in 2001 (*EECA, engenius solutions*).

- Offer greater energy or fuel conservation incentives to consumers (similar, for example, to Australia's has "green fuel" programmes) – (*Norske Skog*).

- Encourage consumers to produce some of their own energy (*David MacClement*).

- Reduce the hours of street lighting (*engenius solutions, David Renouf*).

- Large energy-buying groups could use their size and geographic spread to co-ordinate efficiency strategies possible only on a larger scale, e.g. bulk buying. This might enable some evening of loads between different generators (*Health Sector EBG*).

- Higher energy prices are required in order to encourage conservation and alternative power use. Pricing mechanisms that provide more incentives for those willing to achieve savings are needed (*Health Sector EBG, David MacClement*).

- In some commercial buildings, the owners control heating, ventilating and air-conditioning while the tenants are responsible for electricity costs. If those who bore the costs had control over these services this would encourage energy efficiency (*Energy Management Assn.*).

- The Government should request all retailers to demonstrate that they have market products that encourage specific groups of consumers to conserve energy (particularly in dry years). If those proposals are not forthcoming or will not remove the risk of the need for future Government intervention, then the Government should explore structural policy changes to ensure all consumers are encouraged to conserve energy in dry years (*MEUG, Business NZ*).

- Contact's cross-submission argued that all retailers have a strong financial incentive to prepare themselves for a dry year situation, and thus regarded the foregoing suggestion as unnecessary.

Need for a long-term focus

- The goal of energy conservation initiatives should be to achieve long-term savings rather than just focusing on emergency responses. For example, new buildings should be constructed to an energy efficient standard. Basic energy management practices need to become the norm in NZ culture, rather than being seen as a one-off response to emergency situations.

Energy Management Assn., Health Sector EBG, David MacClement, David Renouf, Waikato DHB

Appendix 1: List of Submitters

Initial Submissions

Sub. Number	Organisation	Signatory
1	Individual	David MacClement
2	Todd Energy Ltd	Rodney Deppe
3	engenius solutions	Ian Bywater
4	Sinclair Knight Mertz (SKM)	Bryan Leyland
5	Carter Holt Harvey (CHH)	Russell Longuet
6	Network Tasman Ltd	Colin Starnes
7	Brian Tolley Corporation	Brian Tolley
8	Pan Pac Forest Products Ltd (Pan Pac)	Stuart C. McKinlay
9	Norske Skog Tasman Ltd (Norske Skog)	Mark Oughton
10	Plastics NZ	Alistair Rowe
11	Individual	John Blakeley and Bruce Hunt
12	Business NZ	
13	Energy Link Ltd	
14	NZ Geothermal Association Inc	Jim Lawless
15	Transpower NZ Ltd	Bill Heaps
16	Major Electricity Users' Group (MEUG)	Ralph Matthes
17	Orion	Rob Jamieson
18	WEL Networks Ltd	Mike Underhill
19	Infratil	Matthew Civil
20	Consumer Coalition On Energy (CC93)	David Russell/David Harmer
21	Alliant International Ltd	Chris Lindell
22	National Institute of Water and Atmospheric Research (NIWA)	
23	Health Sector Electricity Buying Group (EBG)	
24	NZ Electricity Market (NZEM)	Toby Stevenson
25	NZ Business Roundtable	
26	Contact Energy Ltd	
27	The Sustainable Energy Forum	John Blakeley
28	Comalco	Jason Franklin
29	TrustPower	
30	M-co NZ Ltd	
31	Fletcher Building	Alan Beeston
32	Individual	Robbie Morrison
33	Energy Management Association	John Rutherford
34	Mighty River Power	William Meek
35	Waikato District Health Board (DHB)	
36	Genesis	Murray Jackson
37	Grey Power	D.W.H. Berry
38	Individual	David Renouf
39	Meridian Energy	
40	Natural Gas Corporation (NGC)	
41	Energy Efficiency and Conservation Authority (EECA)	
42	AICon	Brian Brown / Dave Winthrop
43	Federated Farmers of NZ	John Pask
44	Individual	J.R.L. Baxter
45	Wallace Corporation Ltd	Neville K. Cross

46	Transpower	
47	Individual	K.H. Peter Kammler

Cross-submissions

Sub. Number	Organisation	Signatory
X1	Individual	Brian Tolley
X2	Pan Pac	Stuart C McKinlay
X3	Transpower	
X4	Individual	Mark Pickup
X5	Comalco	Jason Franklin
X6	Contact Energy	
X7	Energy Billing Services Ltd	Alistair Price
X8	Grey Power	D.W.H. Berry
X9	Meridian Energy Ltd	
X10	NZ Electricity Market	Toby Stevenson
X11	Major Electricity Users Group (MEUG)	Terrence Currie
X12	Consumer Coalition on Energy (CC93)	David Russell