

1 September 2008

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SUBMISSION ON MARKET DESIGN REVIEW – OPTIONS PAPER

- 1 Orion welcomes the opportunity to submit on the *market design review – options paper* (the **options paper**).
- 2 Our submission addresses key points in response to each of the topic areas outlined below, which follow the chapter headings in the options paper:
 - 2.1 executive summary;
 - 2.2 background;
 - 2.3 competition and pricing issues;
 - 2.4 effectiveness of energy-only price signal; and
 - 2.5 demand-side participation.
- 3 Our submission is supplemented by the **attached** paper prepared by NERA on our behalf, which examines the investment incentive impacts of the Whirinaki reserve energy plant.

EXECUTIVE SUMMARY

Standardisation of network pricing structures and terms

- 4 We strongly disagree with *standardisation of network pricing structures and terms*. The evidence presented in the paper to support the standardisation

concept is weak and better supports the contention that economies of scale provided by larger, denser networks create a better basis for competition, as efficient marketing and other initiatives can be carried out.

5 Secondly, other considerations significantly outweigh the recommendation, such as:

5.1 undermining of innovation;

5.2 benefits of new initiatives being denied to consumers; and

5.3 other inputs dominate retail competition (e.g. non-availability of hedges).

Arguments against standardisation of network pricing

6 The arguments against standardisation are persuasive. They include:

6.1 retail competition is not an end in itself and at any cost;

6.2 the benefits to consumers of innovative distribution pricing leading to demand-side management opportunities far outweigh the administrative cost of such innovation;

6.3 as the options paper states in relation to demand-side participation:

While the size of the benefit will depend on particular circumstances, at times it can be significant. For example, the benefit from demand response in critical periods is estimated to be up to \$500 per kW¹, because it defers transmission or distribution investment.

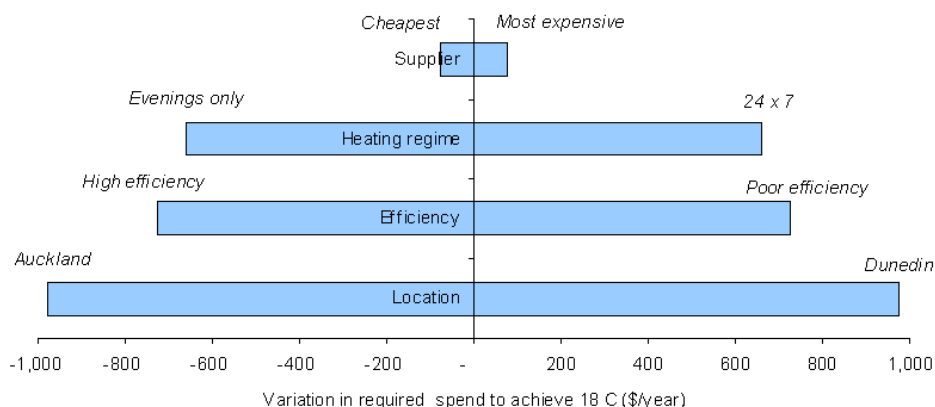
6.4 further it is clear that retailers' pricing structures have followed the leadership provided by distributors, even where the distributor's current pricing methodology is no longer based on consumer classes.

7 Figure 32 in the options paper (reproduced below) shows the relevance of retail competition in stark relief. That is, supplier price variations are a small factor in the cost of heating. Competition may save consumers tens of dollars a year, but more fundamental decisions linked to the choice of heating method dominate the warmth of consumers. These are more likely

¹ Electricity Commission, *Load Management Value and Pricing Report*, Appendix 1.

to be influenced by distributor pricing structures, such as off peak night rates.

Figure 32: Estimated spending required to achieve adequate warmth



Source: Price data derived from Consumers New Zealand Powerswitch site (www.consumer.org.nz) and usage information from household energy calculator (www.contactenergy.co.nz), which in turn uses Building Research Association of New Zealand (BRANZ) data. The supplier bar is based on retailer prices in Auckland and Dunedin in early 2008. The variation is higher in some other areas – however, the available data suggests that it was still likely to be a smaller source of variation than the other factors shown above.

Effectiveness of energy-only price signal

- 8 Orion has commissioned NERA to prepare the **attached** paper to consider the impact of the governance and operation of the Whirinaki reserve energy plant on investment incentives in peaking capacity.
- 9 The NERA paper notes a number of adverse issues related to the current offer strategy, as follows:
 - *Whirinaki's bidding strategy does not need to account for its fixed costs, as these are recovered via the annual security of supply levy. Whirinaki is therefore subsidised, and the effect of this will be to lower the electricity spot price below that which would exist in the counterfactual during peak and dry periods. (By counterfactual, we mean the scenario in which Whirinaki is bid on a commercial (non-subsidised) basis). In other words, the electricity spot price does not reflect the true opportunity costs of supply;*
 - *Furthermore, the evidence is that Whirinaki has been offered in at less than short-run marginal cost (SRMC). The correct SRMC is that which reflects the opportunity cost of the stored fuel (diesel), and given recent market conditions this is higher than the historical purchase price of diesel.*

Therefore the offer strategy of Whirinaki effectively dampens spot prices and acts as a deterrent to investment in peaking capacity. This problem is exacerbated by the difficulty for potential investors in predicting whether the Government and/or EC might contract other non-commercial reserve energy/interruptible demand.

The investment disincentive problem is also likely to become more of an issue in light of the Government's renewable energy target. As the New Zealand Energy Strategy to 2050 states:²

"Modelling projects a need from 2020 onwards for new peaking plant for security reasons to ensure that peak demand can be met as reliance on intermittent generation increases."

- 10 Orion considers that the changes required to address the current situation, such as a change to a capacity market, are beyond the scope of this review given that significant structural changes have been excluded. We therefore **recommend** that the Electricity Commission (**the Commission**) instigate a technical working group to further consider this issue.

Demand-side participation

- 11 We consider that as well as urgently consulting with the Commerce Commission on the 2009 threshold issues outlined below, the Commission should adopt the recommendations made in our November 2007 submission on load management value and pricing. These recommendations are more important than ever given:
- 11.1 customer cost expectations;
 - 11.2 increased use of wind generation;
 - 11.3 the tight transmission system; and
 - 11.4 larger (lumpy) thermal units.
- 12 As stated in our 2007 submission, we recommend that the Commission should:

² New Zealand Government (2007), *New Zealand Energy Strategy to 2050: Powering Our Future*, October, p.66.

- *provide that distributors have the sole discretion over when the ripple system should be used;*
- *progress the distribution pricing methodologies project, recommending that the value of interruptible load (IL) on an ongoing basis be determined using a 'Local Long Run Average Incremental Cost (LRAIC)' approach;*
- *consider the potential increased costs to consumers that could result from an un-coordinated and un-managed approach to the use of load management. We believe that if load management is fragmented between different parties, then the benefits of a centralised system could not be maintained. Rather than looking at additional fragmentation we believe that further centralisation may be beneficial to enable co-ordinated control for the entire upper South Island and also the entire upper North Island to improve the response to the transmission pricing signals that are now in place;*
- *reject any proposals that will result in fragmentation of the existing load management mechanisms;*
- *reject the recommendation that the Commission consider putting a value on AUFLS and determine whether beneficiaries of AUFLS should pay a levy to compensate the consumers affected by AUFLS for not being able to participate in any market for IL;*
- *bring together the work streams on frequency keeping and voltage management from the wind generation investigation and the common quality development planning into a single meaningful proposal that participants can consider in a meaningful way.*

BACKGROUND

Purpose of the market design review

- 13 The stated purpose of the market design review is to seek to improve the operation of the wholesale and retail electricity markets in New Zealand.
- 14 The review is being undertaken because:
- 14.1 most of the core elements of the current design have been in place since the mid-1990s;

- 14.2 there have been significant changes in industry structure, technology and fuel costs in the last ten years; and
- 14.3 the review provides an opportunity to look ahead, and consider whether the design needs modification to address potential future developments, such as increasing levels of intermittent generation.

Options paper

- 15 The options paper is the third paper that the Commission has released as part of the market design review. The options paper follows the Commission's market design-update (**the update paper**) which:

- 15.1 set out the Commission's views in light of submissions received on the market design review issues paper (**the issues paper**); and
- 15.2 described its intentions for the next stage of the review.

- 16 The update paper noted that submitters' views varied across the range of subjects covered by the issues paper, and some matters figured prominently in a substantial proportion of submissions. The recurring themes were:

- 16.1 competition and prices;
- 16.2 effectiveness of energy-only price signal;
- 16.3 availability of market information;
- 16.4 demand-side participation; and
- 16.5 energy poverty.

Limitations of options paper

- 17 The scope of the options paper is limited in the extent of options that can be considered to improve the New Zealand wholesale and retail electricity markets. As the review focuses on improving existing markets, rather than considering structural changes, many of the alternatives discussed in the

options are ruled out of contention from the start of the review. The Commission has indicated that it:³

...does not believe there is merit in pursuing structural options at this time. In part this reflects a decision by the Commission at the outset of the review to focus on improvements to the existing market, rather than consider structural options.

- 18 This matter was carefully considered by the Commission when it reviewed submissions on the issues paper. The update paper notes:

A range of other matters were raised, such as requests to expand the scope of the Market Design Review to include institutional design, distribution and transmission issues, and proposals to improve ancillary service provision.

The Commission has given careful consideration to these other issues. While these matters may be important, the Commission has concluded that they should not form part of the work programme for the next stage of the Market Design Review. This conclusion reflects a number of factors, including:

- (a) *the Commission framed the initial scope of the review in the context of the Government decisions on the sector announced in 2006, and the Commerce Commission investigation into industry competition¹. These considerations remain relevant. Consequently, while the Commission acknowledges that industry structure and conduct have important influences on sector performance, it does not consider it appropriate at this time to extend the scope of the review to formally encompass these issues;*
- (b) *there is a trade-off between the coverage of the review, and the pace at which the initiative can proceed. The Commission has sought to prioritise its effort and resources on to those matters that appear to be most significant. This helps to ensure that the Review can proceed at a reasonable pace. This is important, given the need to minimise unnecessary uncertainty for all stakeholders; and*
- (c) *some of the ‘supplementary’ issues raised by submitters are already being progressed by the Commission under the existing work programme. The Commission wishes to focus the Market Design Review on matters that are not being pursued in depth at present, or*

³ Paragraph 110 of the options paper and paragraph 14 of the issues paper.

where a clearer strategic approach to the issue may be particularly beneficial (e.g. provision of improved market information).

- 19 However we question whether the review, given its limited scope, can produce meaningful long term improvements to the New Zealand electricity markets.

Q1. Are there other key performance issues that should be considered in the context of the review of retail and wholesale markets – if so, what are they?

- 20 We consider that security of supply is a key issue that the Commission should consider as part of the market design review. To some extent this issue is related to the *effectiveness of energy-only price signal* (see above). However, the options paper considers that dry year security is an issue where the market is achieving satisfactory performance.
- 21 We, however, consider that security of supply must be included as a key issue, due to changes that have occurred since the market design review commenced, such as:
- 21.1 New Plymouth power station closing down;
- 21.2 pole one of the HVDC link being removed from service;
- 21.3 the Government releasing its renewables target of achieving 90% of all electricity generated from renewable sources by 2025; and
- 21.4 the limitations on building new thermal stations.

COMPETITION AND PRICING ISSUES

- 22 The Commission has identified the following options to ensure that competition acts as an effective discipline on total electricity prices:
- *ensure downward pressure on wholesale prices by undertaking periodic analysis to compare contract electricity prices with the cost of new supply;*
 - *place downward pressure on ancillary service costs by progressing initiatives to increase competition in the frequency keeping market;*
 - *improve hedge market operation by implementing the measures identified by the Hedge Market Steering Development Group, and further measures if required;*

- *facilitate retail competition:*
 - *improve retailers' ability to manage nodal price risk by progressing the development of transmission hedges;*
 - *support an appropriate level of transmission investment; and*
 - *encourage greater standardisation of network pricing structures by voluntary measures, backed by mandatory approaches if required, to lower retail entry barriers;*
- *reduce customer search and switching costs by working with Consumer New Zealand and the Ministry of Consumer Affairs to:*
 - *ensure Powerswitch data is accurate and comprehensive by requiring retailers to disclose price information to the Electricity Commission;*
 - *broaden Powerswitch coverage to all major tariff options, including prepayment meters; and*
 - *improve awareness of the Powerswitch website;*
- *ensure advanced metering infrastructure ('smart meters') does not become a competition barrier; and*
- *undertake periodic analysis to monitor trends in retail competition.*

23 Very little in this list, if any, is new and many of the options are subject to existing work streams that the Commission is currently engaged in.

24 We comment briefly on two of these proposed options and respond to the Commission's questions below. We then comment in more detail on the proposal to *encourage greater standardisation of network pricing structures by voluntary measures, backed by mandatory approaches if required, to lower retail entry barriers* which we consider is inappropriate and should be deleted as an option.

Ensure downward pressure on wholesale prices by undertaking periodic analysis to compare contract electricity prices with the cost of new supply

25 We agree that this is an issue that needs to be monitored, however we consider that as it is a competition issue, the Commerce Commission may be better placed to investigate and monitor the issue. We note that the Commission acknowledges that it has not sought to undertake deeper

analysis of prices at the wholesale level at this time⁴, and that the Commission is also mindful of the Commerce Commission's current Commerce Act investigation into participant conduct.

Improve hedge market operation by implementing the measures identified by the Hedge Market Steering Development Group, and further measures if required

- 26 We agree that hedge market operation is an important issue that needs to be considered. Transmission hedging is also an issue that has been contentious in the past, due in part to perceptions of inappropriate allocation of risk to participants.

Standardisation of network price structure/reconciliation terms

Q4. What steps, if any, should be taken to reduce variation in network pricing structures/terms?

- 27 Orion does not consider that any steps need to be taken to reduce variation in network pricing structures/terms.
- 28 We consider that standardisation of network pricing structures and terms would:
- 28.1 increase costs to consumers;
 - 28.2 require additional reserves;
 - 28.3 reduce system security; and
 - 28.4 remove existing demand-side management initiatives.
- 29 As mentioned earlier in this submission, we strongly disagree with the concept of *standardisation of network pricing structures and terms* and consider that the evidence presented in the options paper to support such an approach is:
- 29.1 weak at best; and

⁴ Options paper, paragraph 69.

- 29.2 better supports the contention that economies of scale provided by larger, denser networks create a better basis for competition, as efficient marketing and other initiatives can be carried out.
- 30 The options paper does not present any material arguments that support standardising network pricing structures and terms, and fails to present a cost-benefit analysis of such an action.
- 31 We are concerned that significant costs to consumers would occur if innovation in distribution pricing was prevented. For example, in responding to local issues, Orion has provided a number of pricing initiatives that benefit consumers. These include:
- 31.1 the support of day/night pricing to households with a night rate that commences at 9pm (that allows dishwashers and other appliances to utilise cheaper electricity without an investment in new technology). This approach reduces system security issues by allowing the switching of loads to be managed over a longer period of time and reduces costs of maintaining ancillary supplies to cope with large switching surges;
- 31.2 the introduction of demand-side management initiatives such as ‘interruptibility rebates’ for irrigation pumps that provide more secure delivery to dairy sheds by allowing the temporary shedding of irrigation loads; and
- 31.3 control period pricing to major customers (which has been in place for around 20 years) that has driven capital efficiency in our network, kept charges to customers lower and increased security of supply.
- 32 The options paper states that standardisation of pricing structures would not disadvantage network companies because network companies would still determine the level of charges⁵. We disagree – the structure of charges is essential to achieve the correct pricing signals, and therefore minimise investment needs for the benefit of the customer.
- 33 The options paper also suggests that standardisation should be consistent with moves to improve economic price signals⁶. However, it is precisely because of the need to improve economic price signals that standardisation should not be considered. Networks are different by

⁵ Options paper, paragraph 164.

⁶ Options paper, paragraph 168.

nature, have different economic drivers and therefore require non standard responses.

- 34 If the recommendation in the options paper is followed, standardisation would prevent these local initiatives, implying that benefits to consumers are not as important as competition between retailers.

Level of analysis

- 35 We have significant concerns about the level of the analysis carried out in the options paper, and the implied conclusions drawn from that analysis.

- 36 For example, the options paper states that:⁷

A number of parties have commented that the significant variation in price structures and reconciliation arrangements across distribution networks tends to act as a barrier to competition.

- 37 It also presents data that purports to indicate that:

37.1 incumbent retail margins reduce with the size of network⁸;

37.2 slightly more switching occurs on larger networks⁹; and

37.3 slightly lower incumbent margins occur on denser networks¹⁰.

- 38 Putting aside the fact that the scatter plots on which these findings are based can be interpreted in a number of ways, the key observation that can be made from the above stated findings is that they support an argument that economies of scale matter – but they do not support standardisation per se.

- 39 We also note that paragraph 58 of the options paper states:

A deeper analysis of the reasons for regional variations (in network pricing) falls outside the scope of this Market Design Review.

⁷ Options paper, paragraph 157.

⁸ Options paper, figure 26.

⁹ Options paper, figure 27.

¹⁰ Options paper, figure 28.

- 40 We therefore ask how the paper can recommend greater standardisation, particularly as:
- 40.1 there appears no attempt to quantify the costs and benefits of network pricing standardisation in the options paper; and
 - 40.2 there is no analysis of the relative benefits of certain actions. We assert that other factors (such as wholesale price risk) greatly influence network price variation.
- 41 We challenge the implied assertion that innovation in pricing by distributors is a bad thing. The paper does not inform the reader as to why the authors hold this view, as little evidence is presented.

Arguments against standardisation of network pricing

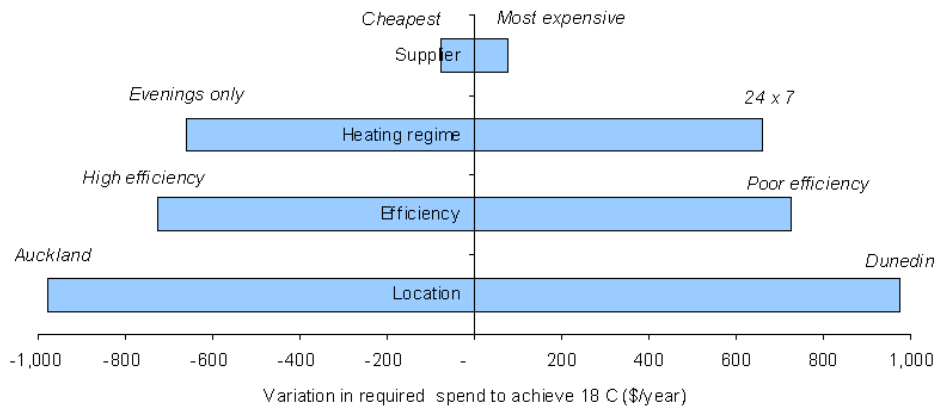
- 42 As mentioned above, the arguments against standardisation are persuasive. They include:
- 42.1 retail competition is not an end in itself and at any cost;
 - 42.2 the benefits to consumers of innovative distribution pricing leading to demand-side management opportunities far outweigh the administrative cost of such innovation;
 - 42.3 as the options paper states in relation to demand-side participation:

While the size of the benefit will depend on particular circumstances, at times it can be significant. For example, the benefit from demand response in critical periods is estimated to be up to \$500 per kW¹¹, because it defers transmission or distribution investment.
 - 42.4 further it is clear that retailers' pricing structures have followed the leadership provided by distributors, even where the distributor's current pricing methodology is no longer based on consumer classes.
- 43 Figure 32 in the options paper (reproduced below) shows the relevance of retail competition in stark relief. That is, supplier price variations are a small factor in the cost of heating. Competition may save consumers tens of dollars a year, but more fundamental decisions linked to the choice of heating method dominate the warmth of consumers. These are more likely

¹¹ Electricity Commission, *Load Management Value and Pricing Report*, Appendix 1.

to be influenced by distributor pricing structures, such as off peak night rates.

Figure 32: Estimated spending required to achieve adequate warmth



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Variation of network prices across the country

44 We are concerned about the analysis in the options paper in relation to network charges and their variability across the country. The paper states that:¹²

Network charges have fallen in nominal terms by 4% for residential users from 1999 to 2006. However, there is considerable variation in the network component of bills around the country.

45 We make the following points in regard to these observations:

45.1 given that the objective of this section of the paper is to “shed light on whether the (retail) price increases reflect a rising cost of supply or excess returns (i.e. competition is too weak to effectively discipline prices)...”, observations made should have a sound economic basis. We consider that the correct analysis should therefore be in real terms;

45.2 we note that retail price movements are shown in real terms in figure 1. When more accurately expressed in real terms, the network

¹² Options paper, paragraphs 5 and 47.

sector would receive the credit it is due for the significant real price reductions; and

- 45.3 the last sentence of the first bullet point in paragraph 47 appears unrelated to the first. Variations in the network component of bills (among companies) are not the same as changes in pricing level over time. It is unclear as to what is meant by this last sentence.

EFFECTIVENESS OF ENERGY-ONLY PRICE SIGNAL

Q 12. How effective is the current market design in ensuring appropriate capacity adequacy and resource commitment outcomes?

- 46 Orion has commissioned NERA to prepare the **attached** paper in the context of the above question, and in particular to consider the impact of the governance and operation of the Whirinaki reserve energy plant on investment incentives in peaking capacity.
- 47 The NERA paper identifies that, from a conceptual perspective, the offer strategy of Whirinaki would have a negative impact on investment incentives in peaking capacity.
- 48 This is of concern to Orion as we consider that small scale diesel generation (30 or 50MW) can provide a valuable tool to:
- 48.1 defer transmission investment; and
- 48.2 assist in providing security of supply and assisting in civil defence emergencies.
- 49 We consider that the potential improvements from changes to the Electricity Industry Reform Act (**EIRA**) may well be thwarted by a continuation of the current offer strategy.
- 50 The options paper notes several other adverse affects of the current offer strategy, such as its impacts on the Government's renewable energy target, which may require additional peaking capacity to offset the variability of wind.
- 51 Orion considers that the changes required to address the current situation, such as a change to a capacity market, are beyond the scope of this review given that significant structural changes have been excluded. We therefore **recommend** that the Commission instigate a technical working group to further consider this issue.

DEMAND-SIDE PARTICIPATION

- 52 Orion is extremely concerned and disappointed at the number of the issues that are repeatedly raised in different consultation documents by the Commission in relation to demand-side participation and load management.
- 53 The Commission is engaged in an ongoing work stream dealing with this issue. In November 2007 we submitted on the Commission's *load management value and pricing discussion paper review*. Many of the issues addressed in that consultation are reiterated again in the options paper.
- 54 We raised a number of issues in our November 2007 submission relating to the existing threshold regime administered by the Commerce Commission under part 4A of the Commerce Act, and we note that the Commission identifies three specific issues in relation to the threshold regime in paragraph 564 of the options paper.
- 55 The first bullet point of paragraph 564 states:

The use of capacity-based pricing can therefore increase the risk of a threshold breach in any given year.

- 56 We submit that that assertion is incorrect. The price threshold does not operate on the basis of actual charges in a given year. The threshold uses fixed base quantities that apply for the five years of the threshold. Therefore, variability of actual charges in a year does not lead to a threshold breach. Variations in CPI and local body rates are examples of inputs that do lead to such a risk.

- 57 It is extremely disappointing to see the Commission's comments about the three concerns it noted in relation to the thresholds, specifically:¹³

The Electricity Commission has not undertaken analysis to judge the extent to which these concerns have merit. However, it intends to raise the issues with the Commerce Commission. It also notes that the Commerce Commission is currently formulating its approach to the next threshold reset, and the Threshold Reset Discussion Paper published by the Commerce Commission in December 2007 commented on many of the issues noted above.

¹³ Options paper, paragraph 565.

- 58 We question when the Commission will raise this important issue with the Commerce Commission.
- 59 The Commerce Commission is currently preparing its initial decisions paper on the 2009 threshold for publication and consultation in September 2008. We note that the Commerce Commission has very limited time to finalise the 2009 threshold reset, as distributors will require an outcome by December 2008 to provide the necessary time to modify their prices to meet the new threshold requirements.
- 60 We therefore consider that the Commission has missed an important opportunity to raise these issues in any meaningful way.
- 61 We note for the record that our concern in relation to the threshold regime, as expressed in our November 2007 submission, is:

That additional fragmentation of control of load management will add considerable uncertainty to a distributor's ability to meet the Commerce Commission's thresholds. For example, loss of access to controllable loads will lead to:

- a requirement to increase capacity of both the transmission and distribution systems to meet the increased peak demand. This increased investment in additional capacity will require funding that can only come from increased distribution prices. This may lead to breaches of the price threshold and the uncertain consequences this may bring.*
- a breach of quality thresholds resulting from increased frequency and length of customers outages due to capacity constraints which could have been mitigated if load control was available.*

The Commerce Commission currently has a process underway to consider the thresholds prior to the 2009 reset. We consider that the Commission must consult with the Commerce Commission as set out in clause 7.2(b) of the 'Memorandum of Understanding between the Commission and the Commerce Commission 16 August 2007'¹⁴ prior to introducing or changing

¹⁴ The Electricity Commission will take into account the thresholds set from time to time by the Commerce Commission for the declaration of control in relation to large electricity lines businesses, and the information disclosure requirements imposed by the Commerce Commission on large electricity line owners and large electricity distributors. The Electricity Commission will also consult with the Commerce Commission where a new or changed rule under the Electricity Governance Regulations 2003 may have an impact on or introduce uncertainty surrounding the thresholds or the formation of future thresholds.

any rules or regulations pertaining to this area. This may lead some parties to take the view that it is better to invest in wires and cables rather than continue with load management. This is counter to the interest of consumers.

62 We suggested a way forward for the Commission in our November 2007 submission. We recommended that the Commission should:

- *submit its suggestions in relation to “load management value and pricing” to the Commerce Commission for its consideration of the:*
 - *potential issues that changes to the current levels of access to load control may have on distributors’ ability to meet thresholds;*
 - *potential conflicts between the Commerce Commission’s role in relation to the requirements of Asset Management Plans and the Commission’s role;*
 - *coordination of the Commission’s work streams with the Commerce Commission’s 2009 reset process; and*
 - *applicability of the rules in the event that a distributor is put under control by the Commerce Commission.*
- *request that the Commerce Commission allow costs associated with the use of load management to defer or reduce distribution investment to be outside the Consumer Price Index (CPI)-X cap (as a pass-through cost).*

Q18. What actions, if any, should be taken to improve shorter term demand-side participation?

63 We consider that besides urgently consulting with the Commerce Commission on the 2009 threshold issues outlined above, the Commission should adopt the recommendations made in our November 2007 submission as follows:

- *provide that distributors have the sole discretion over when the ripple system should be used;*
- *progress the distribution pricing methodologies project, recommending that the value of IL on an ongoing basis be determined using a ‘Local Long Run Average Incremental Cost (LRAIC)’ approach;*

- *consider the potential increased costs to consumers that could result from an un-coordinated and un-managed approach to the use of load management. We believe that if load management is fragmented between different parties, then the benefits of a centralised system could not be maintained. Rather than looking at additional fragmentation we believe that further centralisation may be beneficial to enable co-ordinated control for the entire upper South Island and also the entire upper North Island to improve the response to the transmission pricing signals that are now in place;*
- *reject any proposals that will result in fragmentation of the existing load management mechanisms;*
- *reject the recommendation that the Commission consider putting a value on AUFLS and determine whether beneficiaries of AUFLS should pay a levy to compensate the consumers affected by AUFLS for not being able to participate in any market for IL; and*
- *bring together the work streams on frequency keeping and voltage management from the wind generation investigation and the common quality development planning into a single meaningful proposal that participants can consider in a meaningful way.*

Distributors should co-ordinate and prioritise load management

- 64 Orion believes that distributors should co-ordinate and prioritise load management. We consider that there are real risks from fragmenting the control of load management to numerous other parties. These risks include:
- 64.1 reduced security of supply;
 - 64.2 increased infrastructure investment required;
 - 64.3 more frequent interruptions to supply; and
 - 64.4 increased costs to consumers and the New Zealand economy as a whole.
- 65 Load management is going on behind the scenes much of the time, usually in such a manner that consumers are totally unaware and unaffected. The ability of distributors to have the option to curtail load at any time is essential. It may be needed to alleviate the impact of faults or to reduce loads during maintenance on both transmission and distribution lines.

- 66 Transmission upgrades that have recently been carried out to enhance security of supply in the upper South Island relied on the ability of distributors to manage the load on their networks to specified limits. This was done primarily by hot water control.
- 67 Fragmenting control over a number of load aggregators will have an adverse effect on distributor's ability to provide line function services at current levels without significant additional expenditure on network assets.
- 68 It should not be forgotten that the existing ripple control systems are already providing alternatives to network investment. Networks are designed and planned with an underlying assumption of an ability to control load. Without control, the ongoing benefits to consumers of significant network investment deferral will be lost.

Distributors as load aggregators

- 69 Electricity distributors are load aggregators – we create economies of scale by gathering demands of thousands of consumers and delivering this to the transmission system and wholesale market. The substantial economic and social benefits of this activity primarily accrue to consumers and society in general.
- 70 In seeking to carry out this activity in the most effective and efficient way possible, for decades, New Zealand distributors have installed and utilised ripple injection plant and pilot-wire systems. New Zealand has been a world leader in this technology (as visitors to Australia and elsewhere will attest).
- 71 The primary use of ripple injection and pilot wire systems is to control electric hot water cylinders. Over many years, consumers have been advised to install well-insulated cylinders with 3kW elements so that they will receive a good standard of supply and not notice control of their cylinder. Older hot water cylinders have been retro fitted with additional insulation in projects initiated by both distributors and EECA.
- 72 Distributors also take responsibility for managing their region's transmission costs; a responsibility they take seriously.
- 73 In approximate order of importance to New Zealand, the uses of existing hot water load management are:
- 73.1 security of network supply (transmission and distribution);

- 73.2 managing costs of distribution and transmission capacity for consumers; and
- 73.3 other (including reserves market and energy price).
- 74 The use of managed load to reduce peak loads, and therefore reduce network investment, provides significantly more value than offering it into the reserve market or managing volatility in the wholesale market. We urge caution in assuming that interruptible load can be used in the reserve market and/or wholesale market whenever it is not being used during peak demand periods.
- 75 Importantly, it should be noted that distributors do not gain commercially from the existence of load management – consumers do. Distributors remain focused on delivering good value for money. Shaving peaks reduces the need for capital expenditure on networks (including transmission) – this activity lowers the future asset value of distributors and Transpower.

Pricing is not enough

- 76 Orion has been a strong advocate for pricing to encourage demand-side management. Our peak prices provide one of the strongest price signals in New Zealand. We continue to advocate this as an essential part of an overall mix to improve demand-side response.
- 77 However, we do not believe that pricing alone is sufficient – even with Orion’s pricing structure which has a strong peak price component, we still continue to control domestic loads to minimise the overall costs to consumers.
- 78 This direct control by Orion allows us to minimise the impact on any one group of consumers. We operate a sophisticated control system that manages 27 different ripple plants across Orion’s network area, with each ripple plant switching 16 separate ripple channels for peak (hot water) control and a further 50 ripple channels for other purposes (principally switching night loads and meter registers). It is configured to monitor and control both network loadings and the Transpower grid exit point loadings, while ensuring that our hot water service levels are met and that load shedding is equitably distributed.
- 79 Orion’s ripple system provides a level of reliability that cannot be matched by other systems that rely on SMS or similar communication methods. Sufficient flexibility is built into the overall ripple system to provide

coverage for ripple plant maintenance and/or network reconfigurations while meeting our obligations to switch street lighting and metering registers at the appropriate times. There are also physical engineering constraints on the operation of ripple plants that we also manage.

- 80 We believe that if load management is fragmented between different parties, then the benefits of a centralised system could not be maintained. We consider that value to the customer can be gained from a co-ordinated response to demand constraints. This could be regional control of peaks or in response to large events causing widespread supply issues.
- 81 Rather than looking at additional fragmentation, we believe that further centralisation may be beneficial to enable co-ordinated control for the entire upper South Island and also the entire upper North Island to improve response to the transmission pricing signals that are now in place.

CONCLUDING REMARKS

- 82 Thank you for the opportunity to make this submission. Orion does not consider that any part of this submission is confidential. If you have any questions arising from this submission, please contact Dennis Jones (Industry Developments Manager), DDI 03 363 9526, email dennis.jones@oriongroup.co.nz.

Yours sincerely



Dennis Jones
Industry Developments Manager

Memo

To: Dennis Jones, Orion
Date: 26 August 2008
From: James Mellsop and Kevin Counsell
Subject: The Investment Incentive Impacts of the Whirinaki Reserve Energy Plant

1. Introduction and Key Findings

The Electricity Commission (EC) has released a *Market Design Review – Options Paper* “to identify opportunities to improve the operation of the wholesale and retail electricity markets in New Zealand”.¹ Following an analysis of the effectiveness of the energy-only design of the wholesale electricity market, question 12 of the EC paper asks:²

How effective is the current market design in ensuring appropriate capacity adequacy and resource commitment outcomes?

In the context of this question, we have been asked by Orion to consider the impact of the governance and operation of the Whirinaki reserve energy plant on investment incentives in peaking capacity. In section 2 of this memo we outline the governance arrangements and operation of Whirinaki, and in section 3 we analyse, both conceptually and in practice, the expected impact of Whirinaki on investment incentives in peaking capacity.

We find that:

- Whirinaki’s bidding strategy does not need to account for its fixed costs, as these are recovered via the annual security of supply levy. Whirinaki is therefore subsidised, and the effect of this will be to lower the electricity spot price below that which would exist in the counterfactual during peak and dry periods. (By counterfactual, we mean the scenario in which Whirinaki is bid on a commercial (non-subsidised) basis). In other words, the electricity spot price does not reflect the true opportunity costs of supply;
- Furthermore, the evidence is that Whirinaki has been offered in at less than short-run marginal cost (SRMC). The correct SRMC is that which reflects the opportunity cost of the

¹ Electricity Commission, “Market Design Review – Options Paper”, 8 July 2008, p.9.

² *Ibid.*, p.116.

stored fuel (diesel), and given recent market conditions this is higher than the historical purchase price of diesel.

Therefore the offer strategy of Whirinaki effectively dampens spot prices and acts as a deterrent to investment in peaking capacity. This problem is exacerbated by the difficulty for potential investors in predicting whether the Government and/or EC might contract other non-commercial reserve energy/interruptible demand.

The investment disincentive problem is also likely to become more of an issue in light of the Government's renewable energy target. As the *New Zealand Energy Strategy to 2050* states:³

Modelling projects a need from 2020 onwards for new peaking plant for security reasons to ensure that peak demand can be met as reliance on intermittent generation increases.

2. The Governance and Operation of Whirinaki

Whirinaki is a 155 megawatt (MW) diesel-fired generation plant located in the Hawkes Bay. The plant, built and owned by the Crown, was opened in June 2004, and was developed in order to be able to offer reserve generation during dry years,⁴ to add to security of supply. The Crown has contracted Contact Energy to operate and maintain the plant, and Shell to supply, manage and deliver diesel to the plant.

Following amendments to the Electricity Act 1992 in October 2004, the EC became responsible for ensuring security of supply (including contracting for reserve energy). The EC's responsibility is set out in the October 2004 Government Policy Statement on Electricity Governance, which is to "use reasonable endeavours to ensure security of supply in a 1 in 60 dry year". The EC has established a security of supply policy setting out the approach it will adopt to ensuring security of supply:⁵

- The main focus is on providing information, analysing supply and demand, monitoring security of supply and reserve energy, etc, in order to maximise opportunities for market participants themselves to manage security of supply risks and make appropriate investment decisions; and

³ New Zealand Government (2007), *New Zealand Energy Strategy to 2050: Powering Our Future*, October, p.66.

⁴ See "Hawke's Bay site confirmed for new reserve electricity generation plant", New Zealand Government Media Release, 25 September 2003, <http://www.beehive.govt.nz/release/hawke039s+bay+site+confirmed+new+reserve+electricity+generation+plant>

⁵ Electricity Commission, "Initial Security of Supply Policy", June 2005, <http://www.electricitycommission.govt.nz/opdev/secsupply/policy>

- In addition, if the EC considers there are insufficient new generation or demand-side initiatives it can contract for reserve energy, with the decision to contract being delayed as long as possible to provide opportunity for other solutions.

As a result of the EC's responsibilities, on 1 April 2005 the Crown entered into an agreement with the EC which allowed the EC to instruct the Crown (and therefore Contact as the contracted operator of the plant) as to how Whirinaki generation would be offered into the wholesale electricity market.⁶ The agreement places some constraints on these instructions (such as that they cannot be inconsistent with the rules of the wholesale market), but in general terms the EC has relative flexibility in determining the offer strategy of Whirinaki, particularly in relation to offer prices. In addition, the agreement provides that the EC may amend or revoke these instructions at any time.

The EC's current "Instructions to Offer Electricity" from Whirinaki were issued on 2 November 2005. The instructions set out an offer strategy which we summarise as follows:⁷

- If storage is above the Minzone⁸ then:
 - Output from Whirinaki will be offered at \$1,000/MWh (which is sufficiently high that it is unlikely Whirinaki will be dispatched); or
 - If the average of dispatch prices⁹ for the next 4 hours at the Whirinaki node exceeds the reserve energy trigger price (RETP), then output from Whirinaki will be offered at the RETP. The RETP is \$200/MWh or the variable cost of Whirinaki, whichever is higher. The EC has currently published the variable cost as \$289/MWh, which is based on historic fuel costs (with the exact calculation discussed in more detail below);
- If storage is at or below the Minzone then output from Whirinaki will be offered at the RETP;
- If storage increases from below to above the Minzone then output from Whirinaki will be offered at the RETP until storage increases to a level 25GWh or more above the Minzone.

⁶ See "Reserve Energy Capacity Agreement", available at <http://www.electricitycommission.govt.nz/opdev/secsupply/resenagmts>

⁷ See "Whirinaki Power Station: Instructions to Offer Electricity", available at <http://www.electricitycommission.govt.nz/opdev/secsupply/resenagmts>

⁸ The Minzone is a storage level intended to provide a 1 in 77 security of supply standard. If storage falls to the Minzone line, it means that from that point there is at least one annual inflow sequence out of the last 77 years on record which, if repeated, could result in empty storage lakes if no action is taken (which presumably implies that generation strategies remain constant).

⁹ Dispatch prices are forecast prices calculated in the four hours before dispatch takes place. For the purpose of calculating the average, individual half hours are to be capped at \$500/MWh.

The instructions note that “[t]his condition is designed to ensure the offer is not changed continually if storage is fluctuating just above or below the Minzone”;

- If Whirinaki becomes fuel constrained where it would otherwise be expected to be running on a near continuous basis then output from Whirinaki will be offered at:
 - the RETP for periods where the EC expects it to provide the greatest contribution to security of supply, taking into account the fuel constraint; or
 - \$1,000/MWh at other times.

The outcome of the offer strategy is that when Whirinaki is dispatched it is done so at an offer price equal to the RETP (currently \$289/MWh). The RETP in theory represents the short-run marginal costs (SRMC) of the plant.¹⁰ However, in practice it appears that Whirinaki is being dispatched at below SRMC. The EC has acknowledged this in a recent consultation paper where it states:¹¹

On 30 May 2008, the Commission maintained the offer of Whirinaki into the market of \$289/MWh rather than increasing it in line with the cost of fuel at that time.

A calculation of the SRMC of Whirinaki based on current diesel prices confirms the current offer is below SRMC. The wholesale cost of imported diesel as at 1 August 2008 is \$1.38/litre.¹² Using an energy content for diesel of 38.1MJ/litre and a heat rate for Whirinaki of 11,000GJ/GWh,¹³ this corresponds to a cost of fuel of \$398.43/MWh. Parsons Brinckerhoff Associates (2006) assume variable operating and maintenance costs of \$6.4/MWh for Whirinaki, implying a total SRMC of \$404.83/MWh, well above the current offer price of \$289/MWh.¹⁴

We note that the calculation of the SRMC we have done here is based on the *current* cost of fuel, while the RETP itself is set based on the *historic* fuel cost. The approach taken to setting the RETP is to use a weighted average cost approach, weighting the purchase price of the fuel by the proportion of fuel purchased at that price and held in Whirinaki’s stocks.¹⁵ The effect of this is to misstate the RETP as a correct measure of SRMC. For example, an EC note dated 27 May

¹⁰ Or more if the SRMC is less than \$200/MWh.

¹¹ Electricity Commission, “Proposed Appropriation Change: Reserve Energy and Emergency Measures”, Consultation Paper, 24 June 2008, p.8.

¹² Source: Ministry of Economic Development, http://www.med.govt.nz/templates/MultipageDocumentPage_____20159.aspx

¹³ As stated in Parsons Brinckerhoff Associates (2006), “Draft Electricity Generation Database: Statement of Opportunities 2006”, Report Prepared for the Electricity Commission, 8 September.

¹⁴ *Ibid.*

¹⁵ Electricity Commission (2006), “Calculation of Whirinaki Reserve Energy Trigger Price”, Meeting paper for Security Advisory Group meeting, 21 September 2006, <http://www.electricitycommission.govt.nz/pdfs/advisorygroups/sag/21Sep06/6Whirinaki-Offer-Price.pdf>

2008 shows that as Whirinaki continues to generate, the lower cost fuel will be replaced by the higher cost fuel, leading to a potential¹⁶ increase in the RETP from \$289/MWh to \$301/MWh then to \$387/MWh.¹⁷ Even at the highest RETP this is still below the SRMC based on current fuel costs calculated above.

The correct SRMC is that which reflects the opportunity cost of the stored fuel; and while it need not be the spot price¹⁸ it is not historic cost. As is widely established in the economics literature, marginal cost includes all relevant opportunity costs, which in this case are represented by the price at which the diesel could be sold on the spot market or the expected future value of the stored fuel. For example, Baumol and Sidak (1994, p.178) state:¹⁹

Economic analysis emphasizes that the pertinent marginal cost as well as the average-incremental cost must include all opportunity costs incurred by the supplier in providing the product.

It is therefore the current fuel cost, and not the historic fuel cost, that is relevant in setting the SRMC.

The ability to offer Whirinaki below SRMC is a consequence of it being subsidised by an annual security of supply levy. While the EC retains any electricity spot price revenues obtained from the operation of Whirinaki to recover some of the costs of its operation, it also recovers costs through the levy. The security of supply levy is charged to electricity purchasers, and for the year to 30 June 2009 it has been set at \$1.6352/MWh.

While the costs of operating Whirinaki are incurred by Contact (as the agent of the Crown), the EC must reimburse Contact for these costs, which it does so through the levy and any spot price revenues. In particular, the EC reimburses the following costs:²⁰

¹⁶ That is, an increase that would have occurred if the EC had not maintained the offer at \$289/MWh.

¹⁷ Electricity Commission (2008), "Whirinaki Offer: Reserve Energy Trigger Price", 27 May, <http://www.electricitycommission.govt.nz/pdfs/opdev/secsupply/pdfssecurity/RETP-27May08.pdf>

¹⁸ Evans and Guthrie (2007) ("Commodity Price Behaviour with Storage Frictions", available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1003751), explain how "backwardation" (the amount by which the spot price exceeds the forward price) and a convenience yield (a flow of benefits accruing to the owner of a stored commodity but not the owner of a contract for future delivery of the commodity) can arise in efficient markets because of intermittent supplies and transactions costs associated with storage. These are associated with a separation between the spot price and the price of the stored commodity: however, neither of these is indicated by past prices.

¹⁹ Baumol, W.J., and J. G. Sidak (1994), "The Pricing of Inputs Sold to Competitors", *Yale Journal of Regulation*, 11, 171-202.

²⁰ See "Reserve Energy Capacity Agreement", available at <http://www.electricitycommission.govt.nz/opdev/secsupply/resenagmts>

- An “availability payment” to Contact (although it is not specified in the agreement between the Crown and EC what this payment represents);
- A fixed operating and maintenance fee to Contact;
- Contact’s costs in relation to the offer and dispatch of electricity from Whirinaki; and
- Contact’s costs in relation to purchasing diesel used by Whirinaki.

In 2007 the EC commissioned Castalia to review the reserve energy arrangements, which included consideration of, among other things, whether the existing levy arrangements should remain in place.²¹ The Castalia Review concluded (and the EC agreed²²) that the existing levy arrangements should be retained because:

- the alternatives are too complex;
- there is no signaling role for the levy as the costs of Whirinaki are sunk;
- recovering the costs of Whirinaki through general taxation is unwarranted as reserve energy is not a public good; and
- there is no clearly “fairer” arrangement than the current levy.

3. The Investment Incentive Impacts of Whirinaki

From a conceptual perspective, we would expect the offer strategy of Whirinaki to have a negative impact on investment incentives in peaking capacity (e.g., diesel peaking plants, which may have other benefits such as deferring investment in transmission and distribution infrastructure). Whirinaki’s bidding strategy does not need to account for its fixed costs, as these are recovered via the levy. Whirinaki is therefore subsidised, and the effect of this will be to lower the spot price below that which would exist in the counterfactual during peak and dry periods. (By counterfactual, we mean the scenario in which Whirinaki is bid on a commercial (non-subsidised) basis). In other words, the electricity spot price does not reflect the true opportunity costs of supply.

Joskow (2006, p.26) explains the key requirement to incentivise investment in electricity markets:²³

²¹ Castalia (2007), “Electricity Security of Supply Policy Review”, Final Report, May.

²² Electricity Commission (2007), “Review of Reserve Energy Policy”, Consultation Paper, September.

²³ Joskow, P. L. (2006), “Competitive Electricity Markets and Investment in New Generating Capacity”, Working Paper 06-14, AEI-Brookings Joint Center for Regulatory Studies.

...in order to attract investment to balance supply and demand with traditional levels of reliability, competitive wholesale markets must produce “rents” over and above the short-run marginal cost of operating generating facilities in order to provide compensation for the capital cost of these facilities.

Similarly, Kahn (2002, p.39) states:²⁴

...if energy prices were consistently limited to the short-run marginal operating costs of the least efficient generating unit, it is indeed highly unlikely that the economically optimum investment in peaking capacity would be forthcoming.

Kahn refers specifically to the operating costs of the least efficient generating unit because a more efficient generating unit is likely to have lower operating costs, and so the prices based on these operating costs would be lower. Kahn’s point is that even higher prices based on less efficient plants are unlikely to recover the capital costs of new (efficient) peaking plants.

Joskow (2006) explains how a lack of investment in new capacity is driven by spot prices not rising high enough to produce these rents. Thus the offer strategy of Whirinaki that effectively dampens spot prices will act as a deterrent to investment. Indeed, Joskow (2006, p.42) points to regulatory intervention as one mechanism that can limit spot prices from rising to the appropriate level:

...investors must be very concerned about actions by regulators or discretionary behaviour by system operators that might have the effect of constraining prices in exactly those few hours with very high prices when investors expect to earn most of the net revenues required to cover their capital investment costs.

Specific to the case of government contracting for reserve capacity, Neuhoff and De Vries (2004, p.265) state:²⁵

The open question is when and how to deploy such reserve capacity. If the market is to perform its regular task and invest in generating capacity, it should be able to rely upon periodical price spikes to finance its investment in peaking units. This means that the reserve should only be deployed at a high price, namely a price equal to the average value of lost load.

²⁴ Kahn, A.E. (2002), “The Adequacy of Prospective Returns on Generation Investments under Price Control Mechanisms”, *The Electricity Journal*, 15(2), 37-46.

²⁵ Neuhoff, K., and L. De Vries (2004), “Insufficient Incentives for Investment in Electricity Generations”, *Utilities Policy*, 12(4), 253-267.

The value of lost load for New Zealand is published in the Electricity Governance Rules as \$20,000/MWh.²⁶

More generally, for the same reasons Whirinaki would have an impact on investment incentives across the entire energy system. For example, lower spot prices may dampen incentives to invest in gas storage that would otherwise have been driven by higher spot prices resulting from shortages in readily available gas. As another example, by dampening incentives to invest in peaking plant, particularly local distributed generation, Whirinaki may also encourage potentially higher cost investment in transmission or distribution infrastructure that would otherwise be deferred by distributed generation.

In practice, the offer strategy of Whirinaki is likely to be even more of an issue for the economically efficient operation of the electricity market, because the evidence is that it has been offered in at less than SRMC (that includes all relevant opportunity costs). Appendix 4 in the EC's *Market Design Review – Options Paper* supports this view. The EC compares the actual spot price in each period Whirinaki was dispatched with the offer price of the generator 156MW above Whirinaki in the offer stack. The EC finds some periods when the next highest offer price is considerably greater than the actual spot price, and concludes that this:

lends weight to the view that Whirinaki may be dampening prices at times of MW capacity scarcity even though hydro storage is above the Minzone.

If so, it is inefficient in that Whirinaki is reducing the profitability of investment as well as being scheduled for dispatch based on subsidised variable cost. That is, on the evidence it may be dispatched at the expense of generation with a cheaper source of fuel. It remains to be seen whether Whirinaki's SRMC would be calculated differently if the price of diesel declined.

In Appendix 4 the EC also notes that offering Whirinaki into the wholesale electricity market at the avoidable cost of operation (including non-sunk fixed cost) may be efficient (although as discussed above this is not what is actually happening). This is true from a productive efficiency perspective, which requires that production is organised at least cost. However, there is a trade-off with dynamic efficiency. Ultimately firms require an expectation of recovering their quasi-rents – the rents Joskow (2006) refers to in the passage quoted above as being over and above SRMC (i.e., including compensation for sunk costs) – in order to invest. As noted above, Whirinaki's offer price is not sufficient to earn quasi-rents to recover its fixed (and sunk) costs.

Furthermore, investment incentives are undermined by the lack of predictability of Whirinaki's behaviour. If Whirinaki was operated in a commercial manner, it would not have bid at its current RETP of \$289/MWh, because this is lower than its SRMC. From the perspective of potential investors, Whirinaki's behaviour is irrational, and so difficult to predict. The 30 May

²⁶ Available at <http://www.electricitycommission.govt.nz/rulesandregs/rules>

2008 decision to maintain the offer of Whirinaki at \$289/MWh, for example, appears to have not been predicted by industry participants, or at least to have occurred without consultation.²⁷

The uncertainty is enhanced by the judgment about the offer strategy conferred on the EC, as illustrated by the offer strategy when Whirinaki becomes fuel constrained, requiring that it will be offered at:

the RETP for periods where the Electricity Commission expects it to provide the greatest contribution to security of supply, taking into account the fuel constraint;

It is also difficult for potential investors to predict whether the Government and/or EC might contract other non-commercial reserve energy/interruptible demand. Meade (2005, p.22) notes that the Government has stated that it will invest in new generation capacity if private investment does not occur.²⁸ He states that the effect of this is to:

make private generation investment less viable, and thus tilts the responsibility for new investment and adequacy back to government.

We note finally that the Government's renewable energy target (of achieving 90 percent of all electricity generated from renewable sources by 2025²⁹) may have a further impact. Renewable capacity such as wind or hydro is relatively intermittent, as generation capacity is only available when the wind is blowing or hydro inflows/lake levels are sufficient. Hydro and thermal generation can complement the generation available from wind, however the increasing reliance on renewables will increase the volatility of gas demand in peak periods, and the volatility of prices. There will be a need for thermal plants to start-up or shut-down quickly to meet changes in wind generation, and to cover periods of low inflows when hydro's role in complementing wind is limited. Accordingly, peaking plants are likely to become a more vital part of the electricity system, and so it is important to ensure the incentives for investment in such plants are

²⁷ This is evidenced in submissions on the EC's Proposed Appropriation Change which referred to the EC's 30 May 2008 decision to maintain the offer price at \$289/MWh. MEUG's submission states, "We are also interested in knowing if the Commission considered the views of any party prior to making its decision. As far as MEUG is aware, no end consumers were consulted". Mighty River Power's submission states, "Mighty River Power believes it would have been better for consultation on the change in offer strategy for Whirinaki to have occurred prior to the change being made and prior to the Government authorising any funding for the change". Submissions available at <http://www.electricitycommission.govt.nz/submissions/subscorporate/appr-change08>

²⁸ Meade, R. (2005), "Electricity Investment and Security of Supply in Liberalized Electricity Systems", in W. Mielczarski (ed.), *Development of Electricity Markets*, Series: The European Power Supply Industry, Available at: http://www.iscr.org.nz/f185,3908/3908_security_of_supply060505.pdf

²⁹ See New Zealand Government (2007), *New Zealand Energy Strategy to 2050: Powering Our Future*, October. The measures proposed to achieve this target include using the RMA to "provide greater leadership and guidance on consenting renewable electricity generation" and removing barriers to small-scale distributed generation.

clear. The Government recognises this in its *New Zealand Energy Strategy to 2050*, where it states:³⁰

Modelling projects a need from 2020 onwards for new peaking plant for security reasons to ensure that peak demand can be met as reliance on intermittent generation increases.

³⁰ *Ibid.*, p.66.