

TRANSPower NEW ZEALAND LIMITED

# Submission to the Electricity Authority on Capacity Offer for Whirinaki

*March 2011*





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## **1. Introduction**

### **1.1 Purpose of this document**

This is Transpower's submission in response to the Electricity Authority's 1 March 2011 consultation on the capacity offer for Whirinaki.

## **2. Executive summary**

### **2.1 Context**

The Electricity Authority (Authority) has reviewed the current Whirinaki offer and alternative options against the relevant principal objectives of the Electricity Commission (Commission) and specific outcomes, taking into account the current environment, and proposes to reduce Whirinaki's capacity offer to the plant's short-run marginal cost once it is confirmed that sufficient capacity will be available to the System Operator (SO) to meet demand.

### **2.2 Key points**

In summary:

- limitations to the existing market design were recognised in 2009, if not before;
- the Authority is seeking to address these limitations through its work on a scarcity pricing regime, and expects to have the new regime in place within 15 months;
- the Commission, industry, and SO identified a number of short-term measures, including changes to the Whirinaki offer strategy, prior to the winter of 2010 to mitigate limitations within the market design;
- the short term measures have been successful;
- the Authority's involvement in the Whirinaki offer strategy is likely to be limited to the next six months. A new owner would not persist with the Authority's proposed offer; and
- significantly, the outcome of any change now is far from clear and, from the System Operator's perspective, is certain to reduce security of supply through the immediate retirement of slow start thermal generation.

Such proposals, on the heel of regulatory change within the sector, and in parallel with the work on scarcity pricing, are a huge, unnecessary, distraction that creates considerable policy uncertainty. The focus should be on the design and implementation of the new scarcity pricing regime.

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If the Authority is to continue work on a possible change to the offer strategy, it should utilise the same analytical framework used to consider scarcity pricing with particular focus on the likely impact on retention and availability of existing generation.

### **3. Background**

#### **3.1 Unit commitment**

In October 2009, the SO expressed its concern to the CEO Forum about the frequent market forecasts indicating there were insufficient offers (generation and instantaneous reserves) for dispatch to restore the power system to a secure operating state following the incidence of the largest contingent event. Recognising the likely time it would take the Commission to conclude work on scarcity pricing, capacity and compulsory contract options, the Forum invited the SO to work with the Commission to find an interim means of mitigating the short term security risks.

At about the same time, the Commission published its initial draft of the 2009 Annual Security Assessment (ASA), which indicated the potential for adequate capacity to exist to meet the capacity standard, but also expressed doubt that the market design provided adequate incentive for such capacity to be offered in all instances.<sup>1</sup>

A Commission and SO initiated industry work stream identified a number of short-term options for implementation prior to winter 2010, including changing the Whirinaki offer strategy to act as a de facto scarcity price. The key change to the offer strategy was to increase the capacity component of the offer from \$1000/MWh (subject to downward revision if the forecast average price in the next four trading periods exceeded a predetermined value, always less than \$500/MWh) to \$5000/MWh irrespective of forecast price.

#### **3.2 Whirinaki**

The Ministry of Economic Development (MED), acting as the Crown's agent, is in the process of selling the Whirinaki power station.<sup>2</sup> Sales documentation:

- states that the plant will continue to be available under the reserve energy scheme, operated by the Authority, until the end of 2011;
- states that the Crown is seeking to conclude the sales process by July 2011; and
- acknowledges that the Crown may not achieve a sale.

On the basis that the Crown achieves a sale as planned, the Authority's involvement in the reserve energy scheme, including formulation of offers, will cease at the end of 2011.

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<sup>1</sup> <http://www.ea.govt.nz/document/4550/download/industry/ec-archive/security-of-supply/asa/>

<sup>2</sup> <http://www.med.govt.nz/upload/76187/Whirinaki%20Registration%20of%20Interest.doc>

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### **3.3 Scarcity pricing**

The Commission identified limitations in the energy only market design some two years ago and, amongst other initiatives, began designing a scarcity pricing regime. This initiative has been continued by the Authority, with a stated objective of implementing the regime by winter 2012.

### **3.4 Electricity Authority review of the Whirinaki offer**

The Authority has reviewed the current Whirinaki offer and alternative options against the relevant principal objectives of the Electricity Commission and specific outcomes (as required by the Electricity Industry Act 2010), taking into account the current environment, and proposes to reduce Whirinaki's capacity offer to the plant's short-run marginal cost (SRMC, approximately \$400/MWh) once it is confirmed that sufficient capacity will be available to the SO to meet demand. The Authority's intent is to ensure that Whirinaki is dispatched when it is lower cost than other plant without raising supply risks above current target levels.

The Authority recognises that such a change may reduce unit commitment from slow-start thermal plant, and may even lead them to exit the market before more efficient peaking plant can enter the market.

The Authority is seeking feedback on the proposal, in particular the likely impact on existing thermal unit commitment and on new entrants.

## **4. Discussion**

### **4.1 Unit commitment**

In short, there has been no change to the market design to address the unit commitment issues identified in 2009. Until changes have been made to the market design, such as the introduction of a scarcity pricing regime, returning to an offer strategy for Whirinaki similar to that which existed prior to March 2010 must be assumed to be accompanied by the return of the former unit commitment issues with an associated reduction in power system security.

Annual Security Assessments (ASA), whether authored by the Electricity Commission or the System Operator, have only ever been a commentary on installed generation capacity that may be offered for generation. The derivation of the security standards and assessment of capacity assume that the capacity is made available. For understandable commercial reasons this assumption is not always valid. Refer to the Electricity Commission's 2009 ASA for a discussion of this issue.

The comparative increase in capacity margins in this year's ASA does not compensate for the unit commitment issues identified in 2009.

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While the Commission commented on market design in its last ASA the SO has not contemplated that the ASA prescribed in the Code and Security of Supply Forecasting and Information Policy is or should be a vehicle for the SO to comment on market design. That said, the SO concurs with the comments about the market design expressed by the Commission in its 2009 ASA.

A paper presented to the Scarcity Pricing and Default Buyback Technical Working Group<sup>3</sup> demonstrated the additional incentive on the owners of slow start thermal units to offer these units arising from the current Whirinaki offer strategy and the introduction of scarcity pricing. The overall conclusions reached in the paper include:

“Recent changes in the Whirinaki offer price rules and pricing during IR shortfalls are expected to have significantly strengthened incentives for unit commitment, compared with the pre-existing position.

“If scarcity pricing during load curtailment (along the lines described ...) is introduced, this would be expected to further improve unit commitment incentives, and these should be sufficient to achieve the targeted level of security”.

#### 4.2 Exit of existing plant

A further paper presented to the Scarcity Pricing and Default Buyback Technical Working Group<sup>4</sup> undertook a static analysis of the impact of scarcity pricing in the event of capacity shortfalls and concluded that:

- “(a) prior to the introduction of the new pricing rules for reserve scarcity (and the new Whirinaki capacity offer), it would have been difficult to justify investment in (merchant) thermal peaking plant;
- (b) under any of the scenarios considered, it is difficult to justify investment in (merchant) thermal peaking plant if [Winter Capacity Margin (WCM)]  $\geq$  1000 MW;
- (c) it is not clear whether investment in new (merchant) thermal peaking plant is justified under status quo pricing rules, even once WCM falls to the security threshold<sup>5</sup> of 780 MW. It depends on whether one believes that the energy price is likely to collapse during energy scarcity. If investment is not justified at WCM = 780MW, this is a concern, as it means the standard may not be met as a result of market forces;
- (d) with VOLL = \$10K, investment is justified for WCM  $\leq$  850 MW (approx).”

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<sup>3</sup> <http://www.ea.govt.nz/our-work/advisory-working-groups/spdbtg/21Oct10/>

- Price floor during scarcity – Part 3

<sup>4</sup> <http://www.ea.govt.nz/our-work/advisory-working-groups/spdbtg/21Oct10/>

- Price effects of Scarcity Pricing.

<sup>5</sup> The Winter Capacity Standard specified in the Code.

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The 2011 ASA base case assessment of the Winter Capacity Margin, for existing plus committed new generation, is set out in the following table.

**Table: 2011 Annual Security Assessment: Base case Winter Capacity Margin**

Year	2011	2012	2013	2014	2015
WCM (MW)	1248	1186	901	799	445

Based on the paper presented to the Technical Working Group, given the excess margin in 2011 and 2012, even with the current Whirinaki offer strategy, a question must hang over the retention of the existing capacity let alone new investment. It appears that the Authority's own analysis suggests that a change to the Whirinaki offer price may have a "significant"<sup>6</sup> impact on the commercial viability of existing marginal slow start plant.

If the Authority were to adopt an SRMC based offer strategy for Whirinaki early (within 3 - 6 months), the SO would not be surprised to see retirement of existing slow start units.

#### **4.3 Timeframe**

The Authority's assessment of Whirinaki offer strategies is multi-year. The Authority's involvement in determining Whirinaki's offer strategy is either six or 18 months, inside the lead time for investment in open cycle gas turbine (OCGT) plant, optimistically about two years. Questions about dynamic efficiency, including barriers to entry or exit, need not be considered. Evaluation should focus on security and productive efficiency.

#### **4.4 Revenue adequacy**

The consultation paper acknowledges (paragraph 3.4.5) the need for generators to offer generation at prices above their SRMC to recover fixed costs. Given this acknowledgement it would be consistent for the Authority to recover all of Whirinaki's costs from spot revenue, and the possible sale of hedges. To rely on levy revenue to recover its fixed costs, a form of compulsory capacity contract not afforded to market participants, is an interesting position for the regulator to adopt.

#### **4.5 Feedback on System Operator Annual Security Assessment**

The SO has only received comment on the ASA from one consumer organisation.

The capacity offer consultation paper assumes that it was issued in sufficient time for participants to indicate the consequence of Whirinaki being offered at its SRMC in feedback to the SO on this year's ASA. This is misplaced, since such feedback would be speculative, as the

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<sup>6</sup> Paragraph 3.3.3.

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Authority's conclusion is unknown and asset management strategies are not made overnight (and almost always involve Board consideration).

#### **4.6 Policy reversal**

The NZ market has become capacity as well as energy constrained, evidenced by, amongst others, the inclusion of both capacity and energy margins in the Code. Attaining peak capacity requires both the installation and availability of assets. Analysis of the installed capacity indicates the capacity margin can be met.

Experience from 2009 indicated that, at times, generators lacked adequate incentives to make installed capacity available.

The industry and the Commission identified the limitations of the existing market design and the potential for Whirinaki to act as a de facto scarcity price floor, which, based on the experience of 2010, has demonstrated at least the need for some change to the market design. The Authority is currently pursuing the introduction of a scarcity pricing regime to deliver the desired security during peak demand periods.

The return to an SRMC based offer price for Whirinaki generation would remove the de facto scarcity floor for a brief period, to be replaced by a scarcity pricing regime in less than 15 months' time, which would seem to be a policy reversal for as yet unquantified gain, at the expense of increased regulatory uncertainty.

#### **4.7 Security and Reliability Council**

The Authority has now appointed the Security and Reliability Council (SRC). The installation, retention and availability of generation capacity to meet demand are key to security of supply. Given the role of Whirinaki's offer strategy in the delivery of security, the Authority should obtain advice from the SRC before moving away from the current offer strategy.

#### **4.8 Responses to specific questions**

Responses to the specific questions raised by the Authority are set out in the Annex.

### **5. Conclusion and recommendations**

Limitations to the existing market design were recognised in 2009. While the Authority is seeking to address these limitations through its work on a scarcity pricing regime it has yet to make any change to the market design. Analysis undertaken when designing the scarcity pricing regime has identified the compensating contribution made by the existing Whirinaki offer strategy for the existing market design to incentivise offers for slow start thermal generation.

Absent the existing Whirinaki offer strategy, by itself the existing market design does not readily justify investment in (merchant) thermal peaking plant.

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The new scarcity pricing regime is expected to be in place within 15 months. Further, the Ministry of Economic Development is in the process of selling Whirinaki and the Authority is only expected to have a role in setting the offer strategy for at most 18 months.

The SO would expect to see older thermal plant retired within 3 – 6 months if the Authority were to replace the de facto scarcity price floor afforded by the current Whirinaki offer strategy with a short run marginal cost (SRMC) based offer given the marginal economics of such plant. The policy uncertainty created by moving away from a proxy scarcity pricing regime to an environment without any form of scarcity price, and then to a new scarcity pricing regime in 15 months, must also cause generators to question the retention of such plant.

The SO did not receive any feedback on the impact of an SRMC based offer for Whirinaki on the planned availability of existing thermal generation in comment received on the ASA. The SO does not interpret the absence of comment as confirmation there will be no change in the availability of existing generation.

The System Operator recommends that the Authority:

- a) retain the existing offer strategy for Whirinaki; however
- b) if it were to propose to change the Whirinaki offer, before doing so it should obtain advice on the matter from the Security and Reliability Council.

## Annex: Consultation Questions

No.	Question	Response
Q 1	Do you agree with the Authority's view that the correct evaluation for changing the Whirinaki capacity offer is against the selected Electricity Commission's objectives and specific outcomes? Are there other relevant matters the Authority should consider?	<p>No.</p> <p>The Authority involvement in determining Whirinaki's offer strategy is either 6 or 18 months, inside the lead time for investment in an OCGT, optimistically, about two years. Questions about dynamic efficiency, including barriers to entry or exit need not be considered. Evaluation should focus on security and productive efficiency.</p> <p>(c) (iii) and (iv) should be excluded. The merits of including (c) (vii) are at best vague.</p>
Q2	Do you have alternative options for the capacity offer that should be considered?	No.
Q3	Do you agree with the rationale for option 1? If not, why not?	<p>We agree that the Whirinaki offer is acting as a de facto scarcity pricing price for reserve shortfalls. It is also acting in the same role in the event of peak generation shortfalls.</p> <p>We agree that reducing the Whirinaki offer price could have a material impact on the viability of marginal slower start thermal plant. Coupled with the price uncertainty created, should option 2 be implemented, Transpower would not be surprised to see generators retire units earlier than recently indicated in public statements an advised to the SO for inclusion in the ASA.</p> <p>The SO would expect the incidence of reserve shortfalls to return to at least 2009 levels if option 2 were adopted.</p> <p>Transpower considers it quite feasible to consider the risk of low probability high consequence events and these should be considered – refer to the October 2010 scarcity pricing technical working group papers.</p> <p>The capacity and energy margins set out in the Security of Supply Forecasting and Information Policy and the SO 's assessment of available assets against that standard assume that the market design creates sufficient incentive for installed generation to be made available to meet demand, including demand peaks. The standards and the assessment do not speculate on the adequacy of market design and resultant generator offer choices.</p> <p>The existing offer strategy should be retained.</p>

No.	Question	Response
Q4	Do you agree with the rationale for option 2? If not, why not?	<p>No.</p> <p>There is no price cap within the market design. The opportunity for the exercise of market power, if it exists, arises from the market design not the Whirinaki offer price. Paragraph 3.4.2 of the consultation paper could be seen to suggest that the Authority is seeking to use the Whirinaki offer price to cap spot prices. If this is the case, this initiative seems to be at odds with the choice of floor pricing in the draft consultation paper “Scarcity Pricing – Proposed Design” tabled at the 22 February 2011 Scarcity Pricing and Default Buy Back Technical Group.</p> <p>If the concern is that current Whirinaki offer price legitimises such prices, reducing the offer price now is very unlikely to change the legitimacy of such prices. Further, the Commission, and now the Authority, continue to discuss shortage prices in the region of \$10,000 – \$12,000/MWh in the proposed scarcity pricing design.</p> <p>The argument that SRMC (fuel and variable operating and maintenance costs) based offers, in a market in which final prices are formed from generation offer prices only is efficient is at best debateable. Unless there is a regulated means of recovering the fixed costs, including levies, for marginal plant such plant will be uneconomic and exit the market. Whirinaki’s capital cost, based on the current agreement with the Crown, is in the region of \$17,000/MW p.a. It is of concern that costs of this magnitude are considered “minimal” by the Authority, as possibly suggested by paragraph 3.4.3.</p> <p>Demand response prices do not yet feature in the formation of the New Zealand supply curve. Generation offers must be expected to reflect this aspect of the market design. Consistent with the market design it would be more efficient for Authority to choose an offer price that recovers all Whirinaki costs.</p> <p>If option 2 were adopted the System Operator would not be surprised to see slow-start thermal plant, in excess of the capacity of Whirinaki, exit the market inside 3 – 6 months.</p>

No.	Question	Response
Q5	Do you agree with the rationale for option 3? If not, why not?	<p>No.</p> <p>Annual Security Assessments, whether authored by the Commission or the SO, have only ever been a commentary on installed generation capacity that <u>may</u> be offered for generation. The derivation of the security standards and assessment of capacity <u>assume</u> that the capacity is made available. For understandable commercial reasons, this assumption is not always valid. Refer to the Electricity Commission's 2009 Annual Security Assessment for a discussion of this issue.</p> <p>The Authority contends that the ASA includes conservative assumptions. This contention suggests that asset owner strategies described in annual reports should not be relied upon, that partially dismantled assets can and will be returned to service, that generation will be made available at a commercial loss, hydro generation can generate more than that supported by hydro inflows, and that the provision of ancillary services required to attain a secure power system should not be factored into capacity assessments.</p> <p>The consultation paper assumes that it was issued in sufficient time for participants to indicate the consequence of adopting option 3 in feedback on the draft 2011 ASA. This is misplaced as such feedback would be speculative since the Authority's conclusion on offer strategy is unknown. Also asset management strategies are not made overnight, almost always involve Board deliberation and, therefore, are unavailable for inclusion in feedback on this paper or that of the annual security assessment.</p> <p>The System Operator does not view the lack of feedback on the annual security assessment as confirmation that indicated capacities will be available if there is a change to the Whirinaki offer strategy.</p> <p>The above response to Q4 also applies to Q5.</p>

No.	Question	Response
Q6	Do you agree that option 3 should be the preferred option because there will be sufficient capacity made available to the market if the Whirinaki offer is changed to the SRMC of the plant?	<p>No.</p> <p>The analysis in section 3.6 almost certainly assumes that the proposed offer strategy for Whirinaki extends beyond the lead time of new investment. While it may be possible to build an OCGT in about 2 years the Authority's involvement in determining Whirinaki's offer strategy is either six or 18 months. The analysis in this section should therefore focus on security and productive efficiency.</p> <p>The analysis also seems to overlook the fact that existing capacity can be withdrawn or retired with little or no notice. From the perspective of disinvestment or retirement there is no difference between options 2 and 3.</p> <p>Since costs and benefits should only be for the term of the Authority's involvement in the offer strategy, 18 months, the cost of demand curtailment arising from early retirement of existing plant must be significant. On the same basis arguments about entry of "efficient" and exit of "subsidised" "slow-start" plant should not feature.</p> <p>If nothing else options 2 and 3 will reduced capacity offers at peak times as the price consequence of a wrong decision is reduced by at least a factor of 10 (\$5000/MWh down to \$500/MWh), and possibly more if demand is shed. Further, it is far from clear that such mandatory demand shedding is an efficient use of resource. The SO contends that these options will lead to early retirement of plant increasing the incidence and depth of demand shedding required. Options 2 and 3 may put downward pressure on price, but it is far from clear that, once the cost of demand curtailment is taken into account, there is a net gain.</p>