TRANSPOWER

Transpower House, 96 The Terrace,
PO Box 1021, Wellington,
New Zealand
Telephone +64-4-495 7000
Facsimile: +64-4-495 7100
www.transpower.co.nz

Richard Fletcher
richard.fletcher@transpower.co.nz

26 April 2010

Submissions Administrator
Electricity Commission
PO Box 10041
WELLINGTON 6143

Dear Sir/Madam

Re: Wind forecasting and market integration: options

This is Transpower New Zealand Limited's submission on the Electricity Commission's 17 March 2010 consultation paper *Wind forecasting and market integration: options*.

To accommodate the uncertainty attached to wind generation in the scheduling process, the consultation paper investigates the merits of a centralised versus a decentralised forecast. Although the issue of which party should perform forecasts is important, it should be clearly understood that forecasts are made for two main reasons:

- market scheduling, to encourage efficient competition in the wholesale market;
- security scheduling, including to ensure that sufficient generation capacity will be available in real time to meet demand.

The consultation paper focuses on the market scheduling forecast, with respect to which we agree with the conclusion that decentralised market forecasting should continue. Each forecast type should be driven by appropriate incentives, with a view to incentivising the party that can best achieve improvements. As such, a decentralised market forecast would appear to be the most efficient.

The system operator's focus is on the need for a security forecast. In our view, adequate security forecasts with associated error and correlation estimates will not be able to be produced with sufficient certainty simply by aggregating every wind farm's market forecast. Consequently, the system operator will need to provide a separate, centralised security forecast. In practice, this centralised forecast is likely to be based on an ensemble forecasting approach, that uses and adds value to the information in the decentralised market forecasts.

Thus, the issue is not whether we should have a centralised or a decentralised approach, but rather how best to combine the two to achieve the objectives of both market and security forecasting.

We disagree with the consultation paper's implication that the system operator will be able to develop an adequate wind security forecasting capability from within baseline funding. However, this is not something that needs to be decided at this stage. Rather, over time, it

can be managed through the provisions of the system operator's service provider agreement with the Commission.

Forecasts require monitoring so that improvements can be made. Monitoring should be timely and reflect the accuracy of the inputs and the forecast output.

Transpower's responses to the consultation questions are attached as an appendix.

Yours sincerely

Richard Fletcher
Regulatory Strategy Manager

APPENDIX – Consultation questions

No.	Question	Response
1	Do you agree that wind generators are likely to have insufficient incentive to improve their own wind generation forecasting to the point that would be optimal from an overall system perspective?	For market forecasts, yes. For security forecasts, no. For market forecasts, it is important for the market as a whole to have the correct incentives to encourage improvement. Wind generators should provide forecasts that provide as much information as reasonably possible to the market, whether through financial incentives, reputational incentives or the introduction of standards. For security forecasts, wind generators will not have sufficient incentive to improve their own wind generation forecasting to the point that would be optimal from an overall system perspective, because, even if expected forecasts by wind farm are adequate, the information they contain on overall uncertainty and correlation is unlikely to be adequate.
2	Are concerns about cost pressures a significant issue in making the decision about whether to form a centralised forecast for wind generation?	The industry should seek to deliver value for money with costs balanced against benefits. Given decentralised market forecasts, the term centralised forecast should be understood to include an ensemble forecasting approach, rather than necessarily a full and independent central forecast. This is because the decentralised market forecasts will provide useful, if not complete, information, so the purpose of the centralised approach will be to add value to them for the purposes of assembling a security forecast. A centralised forecast, or ensemble forecasting approach, should only be developed where the costs exceed the benefits. These benefits include the degree to which the centralised forecast can add value to decentralised market forecasts to enhance system security. These benefits can be expected to increase with additional wind penetration. It is reasonable to expect that the development of a centralised security forecast, or ensemble forecasting approach, will become increasingly cost-effective over time. While overall cost-benefit is the key issue, if costs are incurred, then the allocation of those costs could be used to incentivise more accurate decentralised forecasting, thus reducing the costs of a centralised “value adding” approach. Non-wind generators and demand-side participants also need to be able to see the forecasts, as they are also affected by inaccurate wind forecasts.
3	If a centralised forecast was formed, what arrangements would you like to see in place for managing costs?	The purpose of a centralised forecast, or ensemble forecasting approach, should be to add value to the decentralised forecasts in the form of improved security. The centralised forecast should therefore be provided by (or on behalf of) the system operator. The costs of developing such a capability can be managed through the provisions of the system operator’s service provider agreement with the Commission.
4	What are the key pros and cons for decentralised and centralised approaches to wind generation forecasting?	The pros and cons discussion in the report does not recognise that forecasts have multiple purposes. For security purposes it is essential that a centralised security forecast be focussed on the system as a whole. The decentralised market forecasts would provide important – but not the only – inputs to the centralised security forecast. Centralised and decentralised forecasts should be regarded as complementary approaches, not strict alternatives.

No.	Question	Response
5	Are there any other overseas jurisdictions that might provide a particularly useful insight into consideration of wind forecasting arrangements for New Zealand?	Undoubtedly there will be useful insights from overseas jurisdictions, both now and as they evolve over time. The system operator has been discussing wind forecasting issues with our colleagues for a number of years, especially with regard to security (rather than market) forecasts.
6	Do you consider that it is appropriate to retain decentralised wind generation forecasting arrangements while allowing scope for the system operator to prepare its own informal wind generation forecast? Do you consider that the system operator's informal forecast could potentially evolve over time into a more formal centralised forecast?	Yes, except that the system operator forecast will not be an "informal" forecast as described by the report, but an essential part of security management. This question assumes that the system operator forecast is a market forecast for scheduling and pricing needs. The system operator will always need to perform a separate forecast for security management. The system operator's security forecast is not a substitute for a market forecast and will not evolve into one. This distinction needs to be made clear.
7	Do you agree that the Commission should contract with the WITS service provider to publish the quantity of wind generation (and the quantity of generation from other fuel types) in each "look ahead" schedule to improve information about wind generation quantities, and therefore wind risks, for scheduling purposes?	The quantity of wind generation by island is to be published as part of the "Winter Initiatives" release. For such information publication, the Commission should not simply contract with the WITS service provider, as there may be cheaper and/or better means of providing that information to market participants and other interested parties. In particular, EMS may be able to provide such services more efficiently through its em[6] portal.
8	Is publication at the national level appropriate, or would it be better to publish at a more detailed level (e.g. by island or even by wind farm)?	The greatest market benefits would probably be achieved by publishing the information at a wind farm level. As all wind generation is utilised (except in cases of constraints on the system) and no marginal price is offered, no commercial position would be threatened by doing this. The only concern would be reputational, if the forecasts were not a good reflection of actual generation – this in itself acts as an incentive for wind generators to get it right.
9	Do you agree that the Commission should request the system operator to prepare for quarterly publication a report on the accuracy of the forecasts for each wind farm?	The system operator would seek to publish such information as close to real time as possible, to encourage improvement to forecasts. This could easily be aggregated into quarterly reports. The production of this new service may require payment through the system operator's service provider agreement with the Commission. We note that a mere request by the Commission would not override rule 3.3 of Technical Code A, which prevents the system operator from publishing forecast accuracy information about particular, identifiable wind farms. A rule change or the consent of all wind farm owners would be required.
10	What priority should the Commission give to a review of gate closure?	There have been a lot of changes to the market since the 2 hour gate closure was formulated. Therefore, the system operator has no problem with the conceptual issue of a review to take these changes into account. From the system operator's perspective the key consideration is ensuring a

No.	Question	Response
		minimum time for security checks, which will be reviewed once SFT becomes operational. We do not consider a review of gate closure to be a higher priority than other items currently on the market development programme.
11	Do you agree with the Commission's proposal not to provide for group dispatch of wind generation, at least until changes to gate closure have been considered?	There are a number of conceptual issues with group dispatch of wind, including that: • due to constraints present on the grid, group dispatch should not be considered unless the wind generator connects at the same GIP as the other form of generation; and • ring-fencing firming generation for the purposes of balancing a particular wind generator is not as effective as balancing the unpredictability on a system wide basis. Ring fencing firm generation for a particular purpose means it is unavailable for other uses and hence less efficient for the system as whole. Neither of these issues is directly related to gate closure, so gate closure is not an essential precursor to consideration of group dispatch of wind generation. However, we agree that – as the above issues would significantly limit the potential for group dispatch of wind generation – its consideration is not a high priority.
12	Please comment on the significance of each of the following potential problem areas, indicating whether the Commission should treat the problem as a high priority: (1) The lack of a locational MRDA price signal; (2) Inefficient scheduling of generation with negative marginal costs; (3) Inefficient scheduling of wind with positive marginal costs; (4) RTD lacks information about wind potential; (5) Governance of runback arrangements; (6) Final pricing schedule cannot curtail wind; and (7) The absence of constrained on payments for wind.	The comments below are limited to items where an opinion is expressed: (1) Resolving the issue of the lack of a locational MRDA price signal needs to have a high priority, as there is always the potential for generation in a constrained region to all be successful in the MRDA and leave the system operator without a market basis for deciding who should not be dispatched. (2) SPD cannot currently use negative offers as this causes problem with loss calculations. The method of calculating dynamic losses in SPD would have to change to enable this, which would be a significant change. The MRDA is in effect the "work-around" for this. (3) Allowing wind to offer at marginal cost while retaining the right to be scheduled for all generation would provide wind with an unfair advantage. (4) RTD takes a snapshot of the current SCADA readings. (5) Runback schemes should apply on a willing buyer / willing seller basis with the system oeprator having a right of veto for schemes that would put security at undue risk. (6) Including wind as a generator and not as negative demand should address this issue in the optimisation. (7) There seems no reason for a generator that is neither controlled nor priced to be granted constrained-on payments.
13	Do you agree with the Commission's proposal not to pursue (at this time) rule changes (1) to introduce a locational element to the MRDA, or (2) to allow generators to offer at negative prices, or (3) to allow wind generators to offer at flexible prices?	Yes, as other items on the market development programme are more important.

No.	Question	Response
14	If the Commission were to seek to address one or more of the problems related to scheduling during excess demand conditions (namely: (1) the lack of a locational MRDA price signal; (2) inefficient scheduling of generation with negative marginal costs; and (3) inefficient scheduling of wind with positive marginal costs), what approach should be used?	Locational MRDA is the highest priority of the three issues raised.
15	Do you agree with the Commission's proposal to treat wind generation as "offered" in final pricing, rather than treating it as "negative demand"?	Yes – the system operator endorsed this position in a submission in February 2009: *"Transpower agrees that the proposed use of metered data from intermittent generators as an offer in the calculation of final prices is worth investigating further.* *Any changes should relate to 'offered' intermittent generation (whether directly connected or embedded). This will require changes to the demand half-hour metering calculations in Part G Section V Rule 3.3.2.1, and will also require embedded intermittent generators to supply MWh information. Treatment of 'unoffered' intermittent generation should remain unchanged."* With regard to the rule change proposal in Appendix 2 of the consultation paper: • Rule 3.2.1 appears to have been substantially changed in relation to embedded generation requirements to submit metering information. For example, 3.2.1.1 now relates to generating plant configuration instead of meter configuration and could be interpreted in such a way that electricity need not actually have to flow, and 3.2.1.1 refers to submission of offers rather than receipt of a dispatch instruction which are not necessarily the same thing. The reference to unoffered generation, which is a defined term, has also been removed and not been replicated elsewhere. Are these changes intended to alter the meaning of the existing rules? • Rule 3.2.1A is drafted so that an intermittent generator has to provide metering information if it is configured to inject electricity and makes an offer. For an intermittent generator, this does not mean it is generating and therefore it would be required to provide metering information for times when it may be doing nothing. Is this intended? • Rule 3.2.2 does not appear to mean the same thing as 'unoffered generation'. Is this the intent? Rule 3.3.2.1 – UGG refers to unoffered generation. Is this intended to be bold and if so, why not reinstate the term in earlier rules?