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Jenny Walton
Electricity Commission
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By e-mail

Dear Jenny

Developing Emergency Security of Supply Provisions

This submission sets out Transpower's response to the Electricity Commission's Consultation document "Developing Emergency Security of Supply Provisions". It was requested that feedback be provided against specific clauses contained in the consultation document and Transpower, in considering the principal issue, has focused primarily on the overview section (section 2) which summarises the balance of the consultation document. Appendix A contains a table providing comment and recommendations based on specific clauses in the consultation document as requested. Please note that much of the comment contained in the body of this submission is re-iterated in the table.

General Comments

In general Transpower supports the development of more robust emergency procedures, whether required for a dry year emergency or for the sudden and sustained loss of critical electricity infrastructure requiring prolonged demand management.

Current supply rationing arrangements were developed by Transpower and are now codified in Part C of the rules and the Policy Statement. The rules, policies and codes upon which the System Operator relies to adequately manage an event where the rapid restoration of the total power system is possible after an event or where no supply can be restored to an area or region until assets are returned to service. As highlighted in the consultation document these procedures have not been intended to apply to cases where sustained rationing of the available supply, either due to insufficient generation or transmission capacity, is required.

Transpower agrees that an Emergency Response framework needs to be developed by the Commission including an Emergency Response Plan (ERP), to ensure emergency measures can be easily initiated in the event of a worse than 1 in 60 dry year emergency situation occurring. It is imperative that significant input is sought

from industry participants in developing these initiatives; an example of the consultative process working successfully was, the formation of the Winter Task Force and resulting initiatives established during the 2003 crisis. This demonstrates how developing such a framework can be approached.

Transpower notes that an extreme dry year event having national or regional impact involving the Ministry of Civil Defence and Emergency Management (MCDEM) should not be ruled out. Arrangements and general industry interaction in a power system or civil emergency and the roles and powers of both the Commission and MCDEM need to be clarified. Transpower's experience is that the MCDEM's expectations of Transpower's powers and authority exceed those it is required to exercise by virtue of its role as System Operator.

Security

Transpower notes that the relaxation in security standards in 2003 and 2001 was only the reduction of security of supply at three specified connection points. Subsequent work by Transpower to modify equipment at two of these connection points in the lower North Island means that any interruption to supply at these two locations should only be momentary when the grid is reconfigured. If the proposed ERP identifies other locations where grid reconfigurations will increase transfer over the grid, similar measures to minimise any interruption should be considered.

It is Transpower's view that the Commission should formally declare when a "Pre-Emergency" condition exists to provide a basis for Transpower to reduce connection point security at specific locations where this permits greater energy transfer over the grid. The mandate for such emergency procedures would need to be established in the rules or at least in the ERP.

Specific Emergency Measures

The consultation document identifies a range of pre-emergency and emergency measures that seem to reflect those available from past experience and as a short term reaction to a supply shortfall. Further study of the potential for some specific measures to help alleviate a potential shortfall and the interaction between specific measures would be beneficial prior to developing specific rules or markets to enable the provision of specific measures on a consistent basis.

An example is the use of diesel generators; from recent experience, Transpower notes contrasting responses from distributors to the use and availability of "standby" diesel generators. In the case of the upper South Island winter 2004 response, distributors already had contracts in place and there were few impediments to facilitating the use of existing and connection of additional generators. By contrast in the upper North Island for summer 2005 there are apparent resource consent issues along with little interest from owners of standby diesel plants in operating their plant to assist in resolving security of supply issues. Most standby generation plant identified in the Auckland region cannot be synchronised to the grid. Plant owners do not want to risk business interruption from the starting and stopping of their standby

plant. Clearly the potential role standby diesel generators can play in a security of supply emergency needs to be identified. Incentives and codes may be required to make standby diesel generation more accessible to assist in a supply emergency (both in term of ability to connect to the grid and commercial and resource consent issues).

Transpower notes the attention given to the use of ripple controlled water heating in the consultation document due to the focus on this resource in the GPS. There seem to be many claims to the ownership and use of this resource within the industry and the uncertainty of ownership appear to be acting as a deterrent to the maintenance and extension of this resource. The use of mandated requirements with regards to ripple control water heating may not be a sustainable way of ensuring the availability of this resource despite being stated in the GPS as a potential way of doing so. A study as to the wider benefits of having a range of “controllable” loads within distribution networks, and whether this is best incentivised via markets or regulation, would seem to be required.

The Commission should also note (as highlighted in the consultation document) that water heating cuts will reduce the amount of Interruptible Load for reserves, potentially requiring more generation reserve (at least in the North Island). Measures such as relying on AUFLS for a contingent event may have to occur in concert with such a move. Further, the System Operator would always ensure sufficient reserves are dispatched to ensure an Extended Contingent Event was covered.

The Commission should further review the impacts and interrelationship between emergency measures in conjunction with quantifying the benefits some emergency measures actually provide. For example, there may be little saving from full water heating cuts or enforced rolling blackouts. Other measures including conservation may be more effective and minimise disruption to end use consumers. Measures that might apply for other than a dry year emergency should be identified (i.e. for when there is a sustained shortage of peak capacity only).

It is Transpower’s view that the Commission should formally declare that an “Emergency” condition exists to provide a basis for Transpower as System Operator to take action such as reducing reserves dispatched outside of the Grid Emergency criteria in Part C.

Implementation Times

Transpower also notes that in the paper the issue of ‘delay’ before emergency measures in a dry year is acted upon does not seem to fully consider the implementation lead time of different types of measures. If additional assets are required, the delay before the measures take effect will have to take into consideration the procurement and installation durations of the project. While the Winter 2003 measures were mainly centred around the reconfiguration of existing transmission assets, they were also influenced by the time frames for procurement and installation of implementing a high voltage technical solution (Line reactor). The lead time for technical solutions can be 12 to 18 months in some cases.

Need for Formally Mandated Requirements

Many of the current processes to manage a supply shortfall in Part C were refined following the “Grid Emergencies Forum” in 2003 and flow from the former Common Quality Obligations. This forum helped develop a better appreciation by distributors on the demand shedding response required in a Grid Emergency.

Formal rules to mandate actions and accountabilities under a sustained supply shortfall are still required. This Commission with its rule making ability and existing provisions to suspend and direct the market seems to be the logical conduit for developing the framework with Participants.

Recommendations

Transpower recommends:

- That the Commission review the role of ripple control water heating and the many claims to ownership and use of this resource and its provision by participants. The rules should be amended accordingly.
- That appropriate linkages are developed between the provisions of Part C for managing the immediate response to a Grid Emergency and the enacting of Commission developed emergency measures.
- That part of the proposed ERP scope should be to identify low cost initiatives and any pre work required to allow these to be rapidly deployed in a pre emergency or emergency condition.
- That a formal criterion should be set for a declaring a “pre emergency” condition. This to signal that security of supply risks are sufficiently high that measures such as grid reconfigurations should be deployed.
- That there is further study between the interdependencies of emergency measures. Moreover, that an attempt is made to quantify the benefits of measures before mandating requirements. Further work on measures applicable in other than a dry year emergency is identified.
- That a formal criterion should be set for declaring an “emergency” condition. This is to signal that security of supply risks are such that measures, usually only used by the System operator under the Grid Emergency provisions of Part C, should be deployed.
- That a formal criterion should be set for declaring an end to pre-emergency and emergency conditions. This is to signal when measures taken to address such situations are to be halted and normal procedures resumed.

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- That a clear distinction exists between Minzone, Pre-Emergency and Emergency triggers and respective measures available in each situation. There needs to be clarity within the industry, especially if certain emergency measures are specific to one situation only
 - That the scope of the Commission's role, authority and the interaction with MCDEM and industry participants be clarified, as part of delivering the emergency plans required by the GPS.
 - That the Commission identify the potential role standby diesel generators can play in a security of supply emergency and consider what incentives or codes are required to facilitate making standby diesel generation more accessible to assist in a supply emergency (both in terms of ability to connect to the grid and commercial and resource issues).

In summary

Transpower would like to thank the Commission for the opportunity to comment on the consultation paper. Transpower's System Operations division will be further developing processes for managing Grid Emergencies during 2005 with the objective of holding an industry based simulation exercise by the end of 2005. This will be intended to further build the awareness of participant actions under the existing rules, including independent actions in a Grid Emergency. The prime focus will be on events involving stabilising the power system and restoration.

There is scope for the Commission and participants to work collectively to establish a robust emergency framework. Transpower both as Grid Owner and as System Operator is committed to playing its part in this work.

Yours sincerely



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Appendix A

Paragraph	Comment	Recommendation
2.6 and section 7	Transpower supports the need for contingency arrangements, but notes the undue emphasis on ripple control water heating reflected by the GPS	That the Commission review the role of ripple control water heating and the many claims to ownership and use of this resource and its provision by participants. The GPS and rules to be amended accordingly.
2.7	Transpower supports the need for emergency measures for other than extreme dry year scenarios	That appropriate linkages are developed between the provisions of Part C for managing the immediate response to a Grid Emergency and the enacting of Commission developed emergency measures including sustained supply rationing.
2.11 Table 1, 6.19 and section 7	<p>Aside from the specific dry year responses the benefits pre emergency measures have not be quantified</p> <p>Note the relaxation in security standards in 2003 and 2001 was only the reduction of security of supply at three specified connection points. In subsequent work at the two connection points in the lower NI Transpower has modified equipment so that any interruption to supply at these two locations should only be momentary. If the proposed ERP's identifies other locations where grid reconfigurations will increase transfer over the grid these similar measures to minimize any interruption should be considered</p> <p>The Commission should formally declare that a "Pre-Emergency" condition exists to provide a basis for Transpower to reduce connection point security at specific locations where this permits greater energy transfer over the grid</p>	<p>An attempt is made to quantify the benefits of some pre emergency measures further prior to developing mandated or market responses.</p> <p>Part of the proposed ERP scope should be to identify initiatives to ease a security of supply shortfall and any pre work that can be economically justified to allow these to be rapidly deployed in a pre emergency or emergency condition.</p> <p>A formal criteria should be set for a declaring a "pre emergency" condition. This to signal that security of supply risks are such that measures such as grid reconfigurations should be deployed.</p>

Paragraph	Comment	Recommendation
2.11 Table 2, 6.20 and section 7	<p>The benefits of some emergency measures have not been quantified. There may be little saving from full water heating cuts or enforced rolling blackouts. Other measures including conservation may be more effective and minimize disruption to end use consumers. Measures that might apply for other than a dry year emergency should be identified (i.e. for when there is a sustained shortage of peak capacity only)</p> <p>Note that water heating cuts will reduce the amount of IL for reserves potentially requiring more generation reserve (at least in the North island). Measures such as relying on AUFLS for a contingent event may have to occur in concert with such a move. Further the System Operator would always ensure sufficient reserves dispatched to ensure an Extended Contingent Event was covered. The Commission should review the impacts and interrelationship between emergency measures further.</p> <p>The Commission should formally declare that an “Emergency” condition exists to provide a basis for Transpower as System Operator to take action such as reducing reserves dispatch outside of the Grid Emergency criteria in Part C.</p>	<p>An attempt is made to quantify the benefits of measures before mandating requirements and further work is on measures applicable in other than a dry year emergency identified</p> <p>Further study the interdependencies between the emergency measures identified</p> <p>A formal criteria should be set for a declaring an “emergency” condition. This to signal that security of supply risks are such that measures usually only used by the System Operator under the Grid Emergency provisions of Part C should be deployed.</p>
2.22 and 8.5	<p>The possibility that an extreme dry year event does require a national or regional impact that involves the Ministry of Civil Defence and Emergency Management should not be ruled out. Arrangements and general industry interaction in a power system or civil emergency and the roles and powers of the both commission and MCDEM need to be clarified. Transpower’s experience is the MCDEM’s expectations of Transpower’s powers and authority exceeds that of its statutory role or provisions of the EGRs as System Operator.</p>	<p>The scope of the Commissions role, authority and the interaction with MCDEM and industry participants be clarified as part of delivering the emergency plans required by the GPS</p>
6.15	<p>Barriers to the use of diesel generators, from recent experience Transpower notes contrasting responses to the use and availability of “standby” diesel generators. In the case of the upper South Island winter response distributors already had contracts in place and there were few impediments as side from technical or commercial issues to facilitating the use of existing and connection of additional generators. By contrast in upper North Island resource consent issue meant that additional generation could operate only in if emergency situation occurs without going through resource consent. There seemed to be little interest in from owners of standby diesel plants in operating their plant to assist resolve security of supply issues. Most plant cannot be synchronized to the grid and owners did not want to risk business interruption from the starting and stopping of their standby plant.</p>	<p>That the commission:</p> <ul style="list-style-type: none"> - identify the potential role standby diesel generators can play in a security of supply emergency - consider what incentives or codes are required to facilitate making standby diesel generation more accessible to assist in a supply emergency (both in term of ability to connect to the grid and commercial and resource issues)

Paragraph	Comment	Recommendation
7.23 and discussion from 7.19 on	Agreed the 2003 Winter task force is a starting point, however this was a reactive approach. Clearly the Commission needs to take a proactive approach thus ensuring appropriate tools are in place and issues resolved prior to the need for emergency measures.	Proactive response required to set up the emergency framework by the EC ahead of any event.
2.28 to 2.30 and section 8	<p>The comments in these sections are generally supported. Measures for a security of supply event requiring potential supply rationing from other than a dry year are seen as a higher priority given the robust work already done for a 1 in 60 dry year.</p> <p>Further work on possible power system failure scenarios outside of a dry year is required</p>	<p>The EC set up an extended ERP with its prime focus on any emergency requiring sustained supply rationing. The dry year response to be a critical subset of this overall ERP.</p> <p>Co-ordinated identification on possible emergency supply risks and contingency plans noting recent power system failures elsewhere.</p>