Appendix A Format for submissions

Submitter	Wayne Parker

Question	Comment
Q1. What is your view of the potential competition, reliability and efficiency benefits of more participation?	Q1. The expectation that network reliability in terms of system load management will be facilitated entirely by competitive market forces alone must be unrealistic. While technological enablers such as remote control of consumer devices are becoming prevalent, it is unlikely increased spot pricing related processes could autonomously reduce network usage at times of excessive peak loadings to the extent required to maintain network reliability. At minimum such mechanisms would require access to absolute real-time consumption data and would be unlikely to be able to react to capacity variances within time frames unattainable utilizing market response drivers.
Q2. What is your view of the opportunities to promote competition and more participation in the electricity industry?	Q2. In the generation and retail sectors, further competition is realistic but dependant on the development of enhanced information and messaging systems allowing the near real-time interaction between energy suppliers and consumers. The current single contract model is limiting and the perceived complexity for consumers when changing energy supplier is still an obstruction. In regards to network competition, efficiency gains will need to be balanced against long term system reliability. The life of network capital investment is measured in decades and standards adhered to must facilitate long term network resilience balancing stringent safety compliance, future planned / unplanned capacity,

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	and be delivered adhering to socially acceptable environmental values both in system component renewability and visual aesthetics (i.e. underground vs. overhead). Competition driven by short term market cycles may be at odds with these obligations.
Q3. What other issues might inhibit efficient mass participation? Please provide your reasons.	Q3. The lack of consistent, uniform, real-time ICP consumption data is the primary limitation inhibiting mass participation. The current non aligned, infrequent, and in most cases manual means of gathering consumption information will be a primary obstruction in regards to providing informative and accurate analysis as to which pricing model is advantageous over another competitive offer. The metering model that has evolved to date is vastly inconsistent ranging from real-time, smart (bi-directional) through to two plus monthly manual readings. If energy tariffs are to respond to and become more aligned with market pricing movements, a robust, unified, standardised, accurate, and close to real-time energy consumption metering infrastructure must be mandated. The significance of this in light of developing technology that will likely be connected to the network (smart appliances and complex small scale generation infrastructure), it may be advantageous to adopt advanced metering concepts that as far as possible remain participant independent by comprising part of the distribution network.
Q4. What is your view of the opportunities for network businesses to obtain external help to provide aspects of the network	Q4. Many of the network businesses currently utilize competitive suppliers or the services of other network organisations for both ongoing capital

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service using competition or market mechanisms?	and unexpected emergency reticulation repair work following adverse weather or other major natural events. This is a normal practice in the current market.
Q5. What do you think are the main challenges to be dealt with to increase the use of competition in supplying network services? What are your reasons?	Q5. Given New Zealand's nature of extreme variances in terrain and economic urban diversity, it is unlikely all regions will be attractive to service providers operating in the competitive distribution sector. Network providers are currently mandated to provide services to such areas whether economically viable or not.
Q6. What is your view on whether open access is required and what would be the elements for an effective open access framework?	Q6. In any consideration regarding competitive access, long term system reliability, safety, compliance, and capacity delivered adhering to socially responsible principles must be a key determinant.
Q7. How effective are the existing arrangements for open access? What are the problems?	Q7. Current access to the network is providing consumers with the opportunities to invest in alternative forms of generation thus reducing their dependency on primary energy suppliers. Also provision to return unused generated energy to the network is evidence that the traditional distribution service providers are adopting to the technology challenges and that the current model is satisfactory. The small generator model fails economically but this is unrelated to network access.
Q8. What type of distributor behaviours and outcomes should the Authority focus on to understand whether changes are required to support open access?	Q8. The authority needs to engage with distributers in a partnership role to address issues around aspects of network provision that in a developing competitive market would likely be overlooked. Due to the disparate nature of New Zealand's distribution system, the cost of providing service to some nodes of the network will never be recovered and comprehensive

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	strategies need to be found to address this issue.
Q9. What changes to existing arrangements might be required to enable peer-to-peer electricity exchange?	Q9. Peer-to-peer energy transaction facilitation in concept would provide buying / selling options not currently available especially for smaller scale generators. Even though described as a P2P arrangement, in practice an intermediary broker would be necessary to facilitate the message exchange, provide a repository for the contract, manage the transaction, and convey actual usage data between parties.
Q10. What are the costs and the benefits of enabling peer-to-peer electricity exchange?	Q10. An intermediary broker would be necessary to facilitate the message exchange, provide a repository for the contract, manage the transaction, and convey actual usage data between parties. Extensions to / upgrade of EA systems could provide the necessary B2B (business-to-business) integration services gateways providing a predefined set of transactional services allowing the establishment of energy contracts between parties. The use of an industry data schema such as FIXML would further standardise contract services. Block chain mechanisms have been proposed for P2P and all other energy trading but in reality based on the current standard of usage charge interval (half hour), the sheer quantities of data would impact the practically of such an implementation. While the decentralised and distributed nature of the transaction ledger is attractive as it eliminates the requirement and cost of a trusted centralized data manager but as the size of the ledger chain grows, the reconciliation process (which must

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	occur concurrently on all copies of the ledger held by every participant) becomes extremely cumbersome and processing intensive. The effect of this will be the entrance to the market of ledger delegation services acting on behalf of the participants thus reducing the distributed security aspects of the block-chain concept. Establishment of smart contracts that execute automatically that are legally secure would be one of the many challenges faced when commissioning such an implementation.
Q11. What is your view of the possibility for, and impact of, any current or future blurring of participant type? What are your reasons?	Q11. Rather than blurring current participant types, the assignment of a designated set of formalized roles may be more appropriate to clearly define a participant's involvement. While many participants may hold multiple roles, some roles may be mutually exclusive and not be permitted to be held by a participant concurrently ensuring conflicts of interests are managed. Assigned roles would be the determination in providing access to specific P2P / B2B message exchange services thus limiting the range participation activity.
Q12. What types of participation are or might be prevented because the party is not recognised as a participant? What are the potential impacts?	Q12. All types of participation will need to be reviewed in light of a mass participation review. There are many anomalies including those cited in the discussion document (visibility of consumption data, ancillary services). The restriction imposed on the distribution sector denying direct access to consumer contact information can also be a safety issue in both the management of ongoing of network maintenance, during distribution systems failures, and in times of natural emergencies.
Q13. What challenges might new forms	Q13. The obvious issue is the current single

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of generation, such as virtual power plants, or small and dispersed generators, face in entering the market?	contract model where for most consumers their opportunity to sell to the market is determined by their contract of supply. The P2P considerations as discussed in Q10, in association with an appropriate role designation as outlined in Q11, could form the basis of a methodology to address a more active participation in the generation market. To maintain the reliability and safety of the network, comprehensive and stringent standards will be required to ensure new forms of generation do not adversely affect the operation of the distribution network. As this sector evolves, the importance of network distributers providing a principle supervisory role will need to be recognised. This includes the management of long term capital investment due to the added network complexity required to support the large number of energy insertion points arising as small scale generators connect to the network. A funding model that adequately supports such an overview role will need to be ascertained.
Q14. What changes might be required to the rule book to facilitate the emergence of virtual power plants or demand response?	Q14. Virtual power plants (the consolidation of disparate small scale generators) could be conceptually accommodated in the form of peer-to-many (P2M) transaction arrangements as could be provided by the central message / contract broker as outlined in the Q10 response above.
Q15. Would the functioning of the	Q15. Clearly such financial instruments offer

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market for hedges and PPAs and the availability of finance be improved if there were greater transparency of long-term prices and greater standardisation of terms and conditions for long-term contracts?	a long term visibility not only for generators in terms of investment but also will provide transparency and with it, market confidence and certainty flowing through to all participants. In the past the spot market has had detrimental effects on many of the industry sectors and with the current prevalence of contracts now being offered that expose uninformed consumers to the extremes of competitive pricing, mechanisms and safety nets need to be in place to maintain a minimum standard of energy product offered to the public in terms of both cost and reliability. Transparency and greater standardisation across all areas of the electricity sector hopefully will provide the basis of an enduring electricity market beneficial and fair to all participants.