Multiple trading relationships: Format for Submission

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Comment
Within the EA paper titled `Enabling Mass Participation' dated 4 October 2017, under paragraph 10, peer to peer trading platforms would be considered under the Multiple Trading relationships project. Within the modern context of an electricity network, (comprised of generators, transmission networks, distribution, distributors, retailers and customers), the days of significant capital investment in such networks has past. The focus now turns toward technological means to improve the efficiency of utilising existing infrastructure. Such technology includes consumer embedded battery storage or combined embedded generation and storage as means of reducing peak load on grid infrastructure. The majority of consumers are constrained to purchase power from retailers at fixed rates. Recently, retailers such as Flick have enabled consumer to purchase power at the wholesale rate and transfer the risks or benefits of such to those consumers. For consumers with the ability to export embedded generation, presently those consumers could only sell power through a handful of retailers for between $0.07 - $0.08 per kWh. Peer to peer schemes as discussed within the Multiple Trading Papers consultation paper could allow said consumers to sell excess electricity to potentially multiple retailers and/or directly to other consumers. However, a peer to peer schemes introduced in Victoria, Australia, in 2016 did not fundamentally provide consumers with the ability to sell their excess electricity directly to other consumers. Nor did the scheme allow consumers to export excess electricity at a wholesale rate. P2 power in New Zealand claims to be the countries only peer to peer provider, however consumers are only guaranteed to receive P2P electricity 7% of the time. Take for example the following scenario, where a consumer installs a Tesla 13.5 kWh battery powered grid tie inverter. The battery charges at 4 am and the wholesale rate is $0.056 / kWh (plus $0.084 / kwH distribution/transmission charges) and discharges to the grid at 7 pm and the wholesale rate is $0.18 / kWh, returning $0.04 / kWh. Without distribution and transmission charges the return would be $0.124 / kwh. However, at present the consumer receives only $0.08 / kWh for power exported and in principle the concept of consumer owned embedded battery grid support is a loss making exercise. P2 power is currently offering $0.16 / kWh for electricity exported and is charging $0.18 / kWh for electricity consumed. Here again, a consumer embedded battery grid support is a loss making exercise. Under a true peer to peer trading platform, the energy could be exported at the spot rate at a peak load time, providing a return which will vary depending on the day to day spot rate. This energy could also be exempt from transmission costs making it attractive to peer to peer consumers, should those consumers be located on the same distribution network as the embeddes generators. For embedded battery storage grid support to be implemented by consumer, it must have a reasonable return on investment. Take for example, a 13.5 kWh (7 kW) telsa powerwall which costs NZ$5000 (including GST). Given the return of $0.04 mentioned above, the return on investment is 25 years. With a return of $0.124 /kWh the return on investment is 8 years. Unless the charging cycle electricity rate excludes distribution and transmission costs there is practically no incentive to utilise embedded battery storage. In summary, for embedded battery storage grid support to be implemented by consumer, the

consumer must be able to access the wholesale market rates to both charge the battery and to also discharge the battery to the electricity network. Current proposed mass participation schemes and peer to peer scheme being considered by the Electricity Authority under this discussion are unlikely to provide such a platform for consumers to implement embedded battery storage.

Hence there would be no driver to implement embedded consumer embedded battery storage or combined embedded generation and storage as a means of reducing peak loads on infrastructure.

Within the Multiple Trading relationships project, the EA should consider further studies to investigate the feasibility, costs/benefits, and delivery platforms of such embedded storage schemes with respect to offsetting additional generation and transmission investment costs to cover peak loads.