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**Enlightened Energy.  
A New Way.**

30<sup>th</sup> June 2016

Mr John Pierce  
Chairman  
Australian Energy Market Commission  
PO Box A2449  
Sydney NSW 1235  
[aemc@aemc.gov.au](mailto:aemc@aemc.gov.au)

Dear John,

**Proposed Rule Change: To Have 5 Minute Settlement Pricing Instead of 30 Minute Average Settlement Pricing**

The purpose of this letter is to advise you of ZEN Energy Pty Ltd's support for the proposed rule change, and the reasons for that support.

ZEN Energy Pty Ltd (ZEN) provides services to assist the expansion of supply of renewable energy. It has invested heavily in recent times in knowledge of battery storage systems to underpin the expansion of supply of intermittent renewable energy in Australia. ZEN is working towards introducing into the Australian market equipment and services relating to both grid-scale and decentralised battery storage.

ZEN supports the view that the disparity between dispatch and settlement timeframes in the wholesale electricity market create market distortions that lead to inefficiencies in operation and composition (generation mix and demand response) of the market. Under current rules, there are circumstances in which bidding in response to market opportunities can maximise profit for private businesses while increasing market instability. At the same time, the averaging of market prices over a half hour period reduces incentives for introducing rapid-response battery storage technologies that have the capacity to contribute a great deal to maintaining continuing balance between supply and demand for electricity and stabilising market prices.

The variations in supply of intermittent renewable energy that can generate short term price spikes and slumps often operate over short periods—minutes rather than half hour periods.

Modern batteries with state-of-the-art software platforms can respond in a nano-second to variations in supply and demand for electricity in the wholesale market. That response will be strongly and reliably stabilising if price reflects market balances at the time of dispatch or withdrawal of electricity. However, the averaging of price over multiple 5 minute periods introduces the possibility that some profit-maximising market interventions will not be stabilising for the market. For example, a short price spike in the first of the 5-minute period within a half hour price settlement period creates incentives to introduce greater supply in the next 5 short periods, even though the imbalance that generated the price spike has passed or moved into reverse.

Market rules that provide incentives for private firms to act in ways that destabilise rather than stabilise the market are fundamentally flawed.

In summary, ZEN Energy sees two reasons for moving to 5-minute settlement periods. First, this will raise incentives for investment in fast-response technologies that support the balancing of supply and demand for electricity at all times as penetration of intermittent renewable energy increases. Second, the move to 5-minute price settlement periods will help to ensure that the introduction of fast-response technologies is reliably stabilising for the operation of the wholesale market, at all times.

Yours sincerely,

A handwritten signature in black ink that reads "Ross Garnaut". The signature is written in a cursive, flowing style.

Ross Garnaut  
Chairman  
ZEN Energy Pty Ltd