ELECTRICITY RETAIL: BLOCKCHAIN IS NOT THE FUTURE.

Decentralised blockchain technology (as used successfully in bitcoin and other cryptocurrencies) is touted as a potential 'disruptor' of electricity markets, with much discussion (and some investment) focusing on peer-to-peer (P2P) electricity trading.

A blockchain is a mechanism for reaching consensus regarding the state of a robust, shared database between multiple parties *who don't trust each other*. This disintermediation and robustness comes at a cost: a blockchain is less efficient at managing and storing data than a centralised relational database, because every node in a blockchain must independently verify and process every transaction.

But the electricity sector is a long way from removing trusted intermediaries. In addition to transaction data, a fully developed P2P retail system must depend on trusted:

- Meter data (both standing data and consumption data); and
- Network flow data (to account for losses and congestion).

Consensus is not relevant to the truth of these data. Electricity is generated whether or not it is recorded on the blockchain. Losses and congestion happen regardless of what the blockchain says. They are what they are, and transactions must proceed from this objective ground truth.

We can already generate trusted, cryptographically secured meter data, without requiring a consensus mechanism. Coordination on the network side of the meter is a bigger challenge.

Today, retailers take responsibility for all matters past the household meter. They are a trusted central agent, with authority to net off bills against each other, based on network flow data calculated (or measured) by another trusted agent. P2P trials are yet to deal with this issue. P2P pilots to date have either involved a middleman who verifies meter and network flow data and has the power to net off prosumer bills (e.g. PowerPeers, PowerLedger); or off-bill payments where a net consumer pays a prosumer for the feel-good factor alone, with no effect on retailer electricity charges (e.g. LO3 Energy's Brooklyn "microgrid").

Until we have a decentralised automated distribution system that can calculate and optimise losses, congestion, and DER dispatch in real time, with authority to net off bills across metering points, we still need a middleman. If we still need a middleman, then the disintermediation blockchain allows is moot. Just use a traditional, more efficient, centralised relational database.

We believe platforms enabling household-level participation *are* the future of energy markets, we just don't think blockchain is the right foundation.

We'd love to help you shape a practical P2P platform pilot – please get in touch.

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