Dear Folks

Thank you for the opportunity to comment on the latest submission.

Firstly, of all the submissions, this organisation is the one with the clearest description of an end-game, although this end-game arises because of a reason they have not referenced anywhere within their submission, or strangely, that I have found on their website.

Their unstated fact is that the present resource consenting processes mean that the only generation technology that can be rapidly deployed and ramped up is rooftop solar (which is most useful when combined with storage). They have the only answer presented for the supply side problem of where all of this additional energy is going to come from.

Regardless of incentives from distributor pricing, being the only way to feasibly add generation means that the vision described in the submission is quite likely. The challenges then become how to manage it; if most parts of most networks could have two way flows (e.g. makes sectionalisers redundant), inverter-sourced harmonics can be found throughout, the portion of the generation capable of maintaining frequency by itself is reduced, and in an AUFLS event, the aim would be to try to keep the DG on.

There is little in the submitter's website regarding how this utopia might be managed. This would need to be resolved before we had our first black grid restart, and the time to resolve this is just as tight as the urgency to add the generation.

Regards
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Rodney

Starting from the same incomplete premise as everyone else

This submission approaches the issue starting from the same incomplete premise as most of the submissions, commencing from an incomplete premise from the Electricity Authority.

That premise is that cost-reflective Time of Use price signals from distributors to retailers will effect change in consumer behaviour and cause them to shift demand away from, or introduce DG/storage to mitigate, significant increases in peak network congestion as a result of de-carbonising energy, thereby delaying or removing the need entirely, for expensive network upgrades.

Let's dismantle that premise.

"price signals from distributors to retailers"

The only signals being sent at present are the other way, from retailers (whose business is, after all, to sell electricity) to distributors, to ensure their networks have sufficient capacity to handle "hour of power" initiatives, regardless of the congestion on the network at the time.

"will effect change in consumer behaviour"

This will happen only if there is something in it for the consumer:

(i) The shift is across a distributor time-block boundary. If the distributor has a price for "day" volume and this price is from 9am to 9pm then

load shifting within that time range (e.g. 8pm free power) has no impact on the cost to the retailer although the level of network congestion could be radically different across that timeband

(ii) The retailer passes the price signal through. It is already known from several submissions that retailers wish to treat distributor charges as overhead with no visibility on the resulting bill.

"significant increases in peak network congestion"

This is less if new load (e.g. EVs) is ripple-controlled, or if other green vehicle options are available e.g. biogas, hydrogen

"delaying or removing the need entirely, for expensive network upgrades"

If a district is tooled up to rely on solar DG and batteries within its realm and the sun does not shine for a day, then the energy that should have been generated needs to be shipped in from outside the district. There needs to be sufficient available generation elsewhere to plug holes where solar generation is not running to expectation. A transmission/distribution network is still needed to move this generation from where it is to where it is needed, and the local network still needs to be sized to be able to handle the load.

The question is who pays for it. TPM has one answer; the embedded generators pay a levy based on the amount of "behind the meter generation" they can provide to ensure there is sufficient capacity in front of the meter for when the "behind the meter" generation is not running.

Be that as it may, if the majority of houses generated and stored the majority of the electricity they needed, distribution channels would not need to be as large. The same observation can be made of the food chain; if most houses grew most of their own vegetables, kept a handful of chickens and had some fruit trees, the supermarket fresh food and egg distribution chains would not need to be as elaborate. People would simply need to accept that in the event of a poor growing season, vegetables would be a little scarce and prices would be high. One cannot invent new cool stores and distribution chains at short notice.

Also, if the majority of houses could be self-sufficient in electricity for several hours, this brings into question the relevance of present SAIDI/SAIFI reporting requirements. If the power went off and no-body noticed, has there been an interruption to supply?

Some other comments

1. The submission describes a Tesla as 60 x $1000/kWh batteries with a free car attached. The value is in the batteries; when they reach the end of economic life you would throw the car away if your replacement comes with a free car. If I owned one of these; I would be mindful of how I treated the batteries, as that is where the value is. I may not appreciate my car getting deep-cycled each night to prop up the local grid.

   I also note that if other vehicle technologies are available e.g. biofuel, hydrogen, they are not a lot of use for V2G.

2. The submission states "New Zealand has energy system advantages (strong hydro, geothermal) that will further support this direction, but we are well behind our neighbour Australia who has 1 in every 3

homes benefiting from rooftop solar - the lowest cost delivered energy on earth. New Zealand has rooftop solar on just 2.5% of homes."

Australia also has a lot more experience in black restart of the grid following frequency/voltage issues causing all the DG to shut down.

3. The submission states "the Cromwell home and farm example is charged a network fee of $21/kWh at peak, and yet is rewarded $0/kWh to contribute energy back to the network at peak from the properties batteries."

   I am not aware of any EDB charging $21 per kWh so I assume this is a mixture of the per-kWh volume price, and the daily connection charge spread over the volume used. Connected capacity is a pipe, through which energy flows sometimes one way, sometimes the other. The value of the pipe suddenly does not go negative should energy start flowing the other direction. The comment about not being rebated for volume at peak is however fair.

4. The submission ends with a suggestion to turn EDBs into finance companies "Finance through fixed daily rates from the EDB".

   It is likely the Commerce Commission would take a dim view of this suggestion. Tt takes what should be a contestable supply and puts it in the hands of natural monopolies. There are already businesses operating in this space (e.g. Harrisons Solar). There is also the question of whether EDB balance sheets have sufficient capacity to take on a significant financing role.