

Hello Folks

Please find below additional thought and commentary, having reviewed a number of the submissions for both commonality and contradiction.

As last time, I submit as an interested member of the public, who has an IT involvement with industry participants, and on whose desk the need for any software changes will arrive; my vested interest being that I will have to deliver software changes are required for whatever it is that comes out of this process.

There are a small number of over-arching comments:

1. A number of submitters have made observations that maybe the Authority does not know as much as it thinks it does
2. Rushed regulation is bad regulation. The fact that the Minister put a four month limit on resolving a number of issues is not the same as these issues being resolvable within 4 months
3. The EDB industry would like to make its pricing cost reflective. For Capital Contributions, it seems guidance over how to calculate this e.g. what is the official LRMC calculations.
4. It is not helpful for berating the industry for low progress when (i) there are limitations on the rate of change allowed to adopt the new TPM (ii) EDBs have previously with the encouragement of the Authority entered into social contracts with their consumers over the permitted limits on bill shock (iii) reviews of the latest scorecards appear to be overdue.
5. The entire work stream is based on the premise of ToU volume. A number of submitters have raised questions over data accuracy; the largest retailer not owned by the Government (so has a Board less susceptible to GroupThink) went further and said that not enough of the meters were accurate enough to be useful. It may pay to get to the bottom of the meter problem first; I personally think it is "wrong meters".

As before, the consultation feels rushed, and there was insufficient time to give all submissions a fair appraisal. I note that EDBs would need to staff a submissions response business unit, to have the resources necessary to fully engage with the Authority for work packages such as this. None of those staff would be involved with keeping the lights on, building better networks, finding ways to reduce line losses or designing better switching plans or LV circuit configurations or "greener" transformers. I wonder how this relates to encouraging efficiency in the industry.

Regards
Bruce Palmer
Rodney

GXP Level Pricing and Contact's elephant in the room

I quote directly from Contact's submission.

We urge caution in fully adopting half-hourly meter data. Currently there are significant quality issues in that data, which weakens the price signal and can make reconciliation challenging. We recommend further work is undertaken to improve data quality before half hourly data use is mandated.

This is something I have known for a number of years. The Authority must rue the day it allowed Part 10 to head in the direction it did. The outcome could instead have been a specification for a "KiwiMeter" which could have contained aspects such as:

- HHR metering
- Over-current protection, variable on demand
- Control of sockets/appliances for graceful degradation in the event load is to be shed
- Wifi communication to control devices plugged into sockets to reduce the need to retrofit wiring
- Instantaneous volts, amps, frequency and PF
- Auto-alert to EDB if volts, amps, frequency or PF drift outside pre-set parameters
- Communication via internet (IOT), reverting to 4G or mesh only when internet is not available
- Etc i.e. something we all could have used

plus tenders to supply 2.5 million of these and related operating software for retail and distribution, and to operate that business for a ten year period. There are already precedents for sole operators; NZX for Reconciliation Manager, Jade for Registry. With such metering, EDBs would also be able to meet their AUFLS requirements by selectively shedding load, rather than the present method of dropping feeders, which also disconnects the DG on those feeders that may be needed to recover from the event. All of the hooks would be present for value-add services such a timed appliances, ripple control by others than the EDB, and an easy way to make capacity a variable component with a believable way to monitor it. In fact, if the industry had found a low-cost way to make capacity variable, the LFC issue would not have needed solving and it would never have been an impediment to pricing reform¹.

Instead, the metering rationalisation process was driven by retailers who had only two requirements – remote reading and kill switch – so we now have what amounts to an almost monopoly supplier and manager of the world's dumbest smart meters. And for which Contact had just confirmed what I've known all along; **not enough of them work correctly.**

The Authority has based most of its preferred outcomes on ToU data, in particular the aggregation of this into timebands priced in terms of average network congestion during the timeband. It has assumed that TOU "must" be accurate because it produces 48 measurements per day and the meters have been through a certification programme.

¹ I was involved in a project, trying to find a legal interpretation that allowed capacity to be variable within the definitions of the LFC regulations. 15c per day was a fair price for actual connection if variable c/kVA could be charged on top. We could not find an economic way to constrain capacity (e.g. change pole fuse size? MCB on the board?) that could be relied up by the EDB. A smart meter that provided overcurrent protection would have been ideal and the LFC problem would have been buried 5 years ago.

This summary is from an EU investigation into metering inaccuracy:

With a rollout of 200 million digital smart meters across Europe, the new wireless technology should give users real-time, accurate measurement of electricity consumption. Some meters, however, have been in error by hundreds of percent, with electrical interference identified as the cause of incorrect customer billing. Given that all such meters had passed inspection under the EU Measuring Instrument Directive (MID), there is a clear need to improve meter test methods, update existing standards and restore consumer confidence.

Smart meters may test fine in the lab. However, in the real world, they are subject to electrical interference, harmonics, interference from domestic wifi etc. Maybe all that is needed is to wrap each meter in a faraday cage. It is a bit unfortunate that the communication technology decided on precludes this.

The Reconciliation Manager (RM) is faced with the same set of dodgy data, and is tasked with working out the most probable truth, in half hour increments, for industry settlement. The RM has access to data across the retailer base the EDB does not, can see data on a regional basis, sees the profiles and knows what the answer has to add up to. Reconciliation is the mechanism through which the industry handles dodgy data.

I have discussed GXP billing (that form of billing where the quantity billed matches balanced reconciled GXP-level totals) with a number of retailers over the years. Responses have always been one of three:

- “Yeah, whatever”. For these retailers, ICPs are not cost centres, Gross Margin is not expressed on a per-ICP basis and allocating the EDB invoice to ICPs has as much relevance as apportioning their payroll, vehicle lease costs, airfares or audit fees to each connection. Energy is the direct cost; everything else is overhead. This is not to say that overhead is not managed, there is a budget, an awareness of TOU pricing, and initiatives are provided to larger customers for shift load away from higher priced periods (although more in terms of energy than EDB cost). EDB price signals are heard, but without worrying about “ten cent” type signals to Great Aunt Mary over when she should do her laundry or bake her scones.
- The other two types of retailers do run ICPs as cost centres, and can express Gross Profit at an ICP level. In the first type, there is a tendency for the RM to scale the retailer down; they pay less as a result of the distributor basing revenue on reconciled volume. Finally, there is the set whose metering is the most dodgy, often scaled up by the RM, who pay more. Although they accept this for settlement, they would rather the EDB’s stakeholders pay for retailer clerical / IT inefficiency when it comes to distributor billing.

If the EA bans the use of GXP reconciled volumes and requires distributors to calculate invoices based on metered quantities, it is cementing in the present incompetence of some retailer systems and giving those retailers a price incentive not to address the problem. I fail to see how that matches the objecting in the Act to promote efficiency.

It is possible the most incompetent IT systems are not capable of apportioning EDB GXP-level billed volume across ICPs. The EDB has to do this apportionment; it is the data source for ComCom annual disclosure Schedule 8. The information is therefore available for apportioning a GXP-level volume bill across the ICPs. I am not aware of anyone ever asking for it.

I suggest it might be an idea to sort out why a number of submitters believe the meters don't work, or the timeband aggregation isn't accurate and is made up by a large amount of estimate, hope and guess, before:

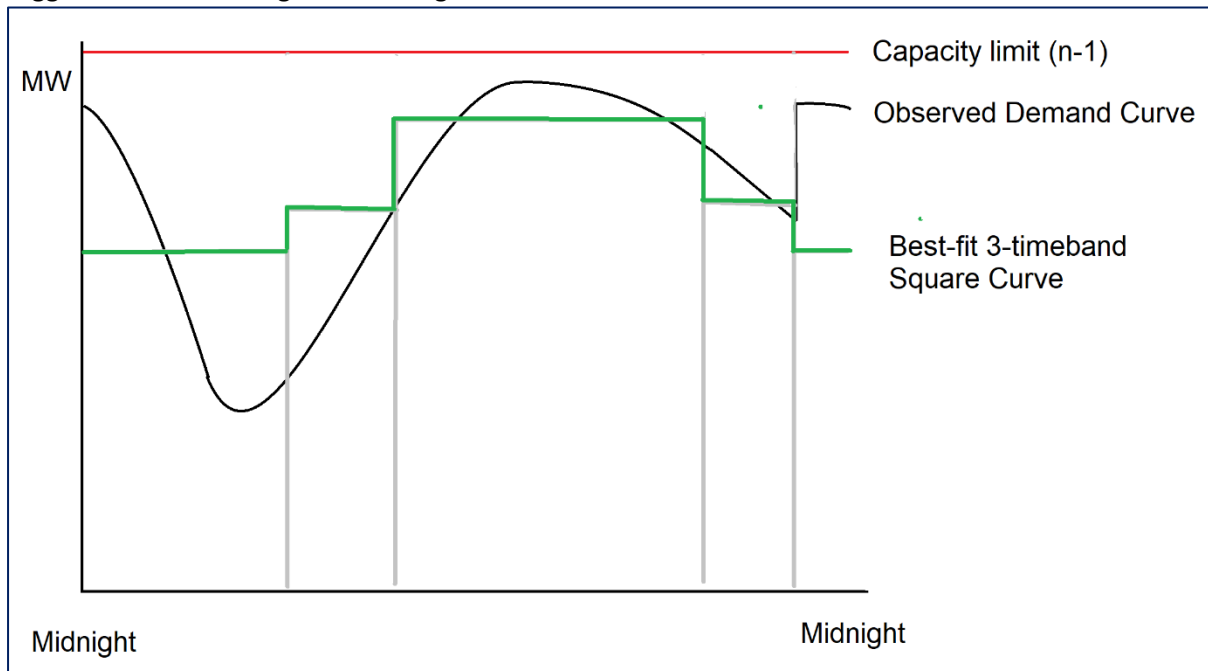
- (i) basing the entire pricing strategy on this data, and
- (ii) telling distributors they aren't allowed to do what everyone else does to limit the damage the data inaccuracies can cause, and that is to base the financial interactions with other participants on volume as defined by the Reconciliation Manager, which just happened to be a GXP level as this is where reconciliation happens.

Establishing how many retailers treat the EDB's service as a direct (per-ICP) cost rather than an overhead may also be a useful input to the discussion. Requiring EDBs to produce invoices to a high granularity is not compatible with clerical efficiency, if the first thing the retailer does with an EIEP1 file is to load it into Excel and apply a sum() to get the column total.

Time of Use Cost Reflective Pricing

There is an almost universal acceptance that time of use pricing can be synonymous with cost reflective pricing, and that by charging for volume based on the timebands in which it was consumed, congestion signals can be sent.

This does not alter the fact that time-banding involves designing a best-fit square curve, averaging the demand for the trading periods represented by the timeband, and pricing them based on average proximity to congestion. This does not price-signal the peak trading period (ADMD), nor suggest how much congestion during the timeband varies.



It will direct EV charging to the start of the overnight time band where it will compete with hot water and other transferrable load. Distributors require other methods to send more granular signals (i) greater penetration of ripple control/time clocks (ii) smart sockets (iii) more than 3 timebands.

Use of all 48 trading periods would allow for maximum granularity, no averaging or merging of congestion signals with adjacent trading periods, but with the overarching caveat from retailers (e.g. Contact Energy advising that the HHR values cannot be relied upon) and distributors (e.g. Wellington Electricity who suspect the day/night time-banding is on an estimated basis, and Network Waitaki who can demonstrate this through the Reconciliation Manager every billing cycle).

Retailers also value receiving little information; a number have submitted that the EA should clarify what it means by location and time-specific pricing i.e. this does not mean each location (distribution transformer and its downstream LV) and each time period. Most are happy with very simple price plans, particularly where they see no benefit in micro-signals of the “ten cent” variety, and retail initiatives such as “hour of free power” are a much larger signal.

Whatever timebands are chosen will need to be uniform across the country, or efficiency gains in price signalling will be lost through increased complicity in retail systems to produce the different timebands for each distributor. Adopting a once-size-fits-all approach is also not an efficient way of signalling where congestion is happening and to what extent, as this is *location* and *trading-period* specific.

ToU pricing is synonymous with timebands, if the intention is not to require 48 price points per location per day. There is no discussion within the consultation process other than whether or not a shoulder timeband may be useful. There is no recognition that for this (the preferred?) option to work, the industry will have to be on a common basis for timebands; retailers have enough trouble getting it correct for one EDB; how would their systems cope with 29?

Timeband structures also cement in a false commonality, with distributors limited to providing signals based on timebands that are optimal for someone else.

Since this is the preferred solution, may I suggest that the timebands, and whether or not there needs to be a shoulder, are a regional consideration (UNI, LNI, USI, LSI). This would on one extreme avoid inflicting Auckland’s optimal structure on the West Coast, and at the other inflicting each network’s optimal timebanding on retailers.

A lot of discussion will be needed, statements such as “do you think shoulders could be helpful” are shallow. Having it in place by Christmas suggests disconnection from reality.

Inconsistencies

It must be disheartening to see respondents complain about Inconsistencies within the consultation document between the discussion text and the suggested conclusions.

For example, either the connection fees for EV charging stations are cost-reflective, or there is a subsidy going on; applicant to EDB, or EDB to applicant. It is inconsistent to talk on one hand about the price for a service fairly reflecting the cost to the network on a holistic basis, and on the other

hand complain about access seekers having to pay different amounts for different networks. This inconsistency goes all the way to the Minister, who believes the connection cost for EV charging stations have variation that should be addressed, failing to comprehend that if the connection price was cost reflective there would be variation as each distributor's costs, drive by the proximity of congestion, are different.

Either distributors are allowed to have different costs, or they are not. Either the connection charges are allowed to be reflective of those different costs, or they are not. The Minister sees variation as something where action is require to address it. If that does not compromise the entire cost-reflective initiative, I do not know what does.

It is also inconsistent to state the c/kWh charges should be cost reflective (which at most places and most times would be \$0), and then group consumers into load groups (e.g. residential) and charge them differently for volume. I would expect only Stephen Hawking (and this brain fart from the Authority) could attribute intelligence to a kWh so it knows to cost the network something different depending on the customer group about to use it. It is not as if Great Aunt Mary's batch of 11am scones will have any different cost attribution for the EDB than a similar batch prepared next door in a school cooking class.

Finally, to state the distributors should consider price/quality trade-offs knowing full well that price/quality constraints incentivise them to not do anything that could adversely impact SAIDI/SAIFI is simply disingenuous. The price/quality signal says to invest in capacity and redundancy where it has the best bang-for-buck on SAIDI/SAIFI' entirely in the opposite direction.

It all serves only to confuse, at a time when consistency and maturity from the Regulator is what is needed.

Electric Vehicles and Capital Contributions

Why has the Capital Contribution issue surfaced now?

An EECA survey has shown that range anxiety is affecting the uptake of non-carbon transport. Given that the Government has all of its present eggs in the 'EV' basket, this translates directly to there being a shortage of charging stations. An exaggeration sure, but if in concept there were EV charging stations at 20km intervals between Bluff and Spirits Bay, and each could handle 40 cars simultaneously, then range anxiety would vanish².

Petrol distribution was like this in the 1950's. Every second street corner had a petrol station; every village with more than three buildings had a garage with a couple of bowsers out the front. The petrol distribution industry then matured. Uneconomic sites closed and marginal sites merged.

² The alternative, of buying each EV owner a trailer with a 7kVA generator to tow, also eliminates range anxiety, but defeats the purpose of the EV.

We are faced with two issues at present:

- The need to create a significant number of charging stations, each capable of drawing 5MVA at times of peak load, and at locations where the sudden arrival of such load was not on the planning horizon and the network cannot cope without investment;
- The likelihood that a number of these sites will be short lived compared with the life of the distribution upgrade needed to supply the site e.g. hydrogen expands its footprint

Distributors want the new industry to pay its way; in particular its share of upgrading work that has not just been bought forward, but would otherwise not have been needed, and enough to make sure that if in a few years the distributor is left with a stranded asset, the entire venture has not been a risk-free jaunt by some energy trader paid for by the existing EDB consumers.

The EV charge station investors intend to make money. They cannot do this if the establishment costs are too high, or the level of ongoing sales is not sufficient.

One might say that if a business case does not stack up, then that is a good financial /price signal that the business should not be established at that site. However, this clashes directly with the political imperative to build EV charging stations. The industry has been here before – uneconomic rural circuits – RERC was established to subsidise them – the same solution has been adopted here already with the Low Emission Transport Fund (LETF).

Maybe the capital contribution issue has arisen now because LETF does not have sufficient resources to assist the larger charging stations now a number of the smaller ones have been built. The next obvious target is to force the EDBs to subsidise the charge station industry by limiting their ability to recover cost through the Capital Contribution process.

The EA should spend the effort to understand the different nuances in the existing Capital Contribution policies – there are only 29 of them – and come up with a methodology to calculate the various parameters involved.

For example, what is the “official” calculation for LRMC?

Capital Contribution policies can then be assessed in terms of cost-reflectivity.

It is likely the Minister would be aggrieved if the result was that the present policies are fair, and what is being charged to a sudden entrant demanding 5MVA of peak supply is entirely compatible with cost. The EA is charged with encouraging an efficient industry; even the Minister cannot override the legislation if a considered review, and formalising of the policy, shows it to already be cost reflective.

The issue is that the Authority has entered this situation unprepared, but is already asking if people agree with its preferred outcome. Remember the mess made of the AMI meter specification. Do the research, establish the cost-reflective principles, define an industry-wide calculation for LRMS, consult, tread carefully, tread once.

To have this sorted by the Minister’s stated “four months” with the variation in prices “addressed” sits somewhere between dreaming and Muldoonist.

It is not in the Retailers interest to listen

Freight transporters make money by shipping goods across Cook Strait on ferries. If the ferry is not running, money is not made. It is in the interests of the freight transporter to put pressure on anyone they can, to get Railways or Bluebridge to buy another ferry.

Retailers make money by selling electricity. It is in the interests of the retailer to put pressure on anyone they can, to get an EDB to remove a constraint that is preventing the retailer from selling electricity when they want to.

It is in the retailer's interest to not listen to distributor price signals. It is in the retailer's interest to force peaks on the network to bring forward construction. A number of submissions (e.g. Wellington Electricity) refer to peaks caused by "free power" offerings, which is the retailer passing the signal to the consumer that now is a very good time to consume a lot of electricity (e.g. charge an EV). Regardless of how bad a time it is for the EDB.

There seems to be little interest from the Authority to investigate the distortion of such offerings on load, and the likelihood of bringing forward investment that would not otherwise be needed in the timeframe, therefore creating larger networks than strictly needed and leading to over-investment in the industry as a result. EDBs sending price signals that are not cost-reflective is seen as a bad thing, but when retailers do it, this is just a function of a competitive market sorting itself out. Maybe distributors need to start sending more clear signals to retailers that free power offers are not in the EDBs interest.

Or maybe Wellington Electricity is correct; maybe the issue can be resolved by mandating ripple control for EV charging, in the same way as it is mandatory for hot water, bypassing the entire issue of how to get a price signal through a retailer so that a consumer can ignore it.

Early adopter penalty

Unlikely bedfellows, 2 Degrees/ELKI and Network Waitaki have both raised concerns about an early adopter penalty that will be enshrined by the EA's vision of how pricing should work.

If volume charges are high, such as signalling period of congestion, this provides an incentive for those able to do so, to invest in technology and other initiatives to minimise exposure to such pricing. Or, in English, it makes it economic to put in some solar panels.

This is only a short term fix. Load growth forces the EDB to upgrade the circuit anyway. The congestion limit is no longer relevant, congestion pricing is no longer relevant, the EA would have the volume price drop back to zero as there is no congestion to signal.

This wrecks the economics of those solar panels. Although there may still be energy value in what they are producing, there is no EDB value and the owner is stuck with an asset not paying its way. A home owner with a desire to virtue-signal and with plenty of spare resources may still consider the investment worth while, but on a corporate sense, the timing of the circuit upgrade, therefore the timing of removal of the network congestion charge, has to be one of the inputs into the business case when considering a commercial PV farm.

The consumers most affected by a congestion charge are those who do the desired thing by investing to avoid it, if collectively this action is not enough to avoid the upgrade. If this is not a perverse outcome, what is?

Yet another example of casual racism

Condensing this entire work programme into one sentence, the EA asserts that EDBs need to signal capacity constraints by linking the volume charge to congestion, calculated on a location (circuit?) basis. This is to encourage those who see the value in it for them, to undertake action to move load away from the peak periods, “flatten the curve”, and defer – perhaps forever – the need for the EDB to undertake a deep, and expensive, circuit upgrade.

Ignoring the fact that these price signals are swallowed by retailers and come out the other side either not at all, or as “free power” offers, or as value-add services such as retailer-controlled thermostats on air conditioners, it remains a fact that not all consumers are able to respond to price signals.

- If you live in rented accommodation or social housing, you cannot invest in distributed generation, batteries or other load-spreading technology
- If you are on a benefit you do not have the spare money to invest in anything
- If you have just purchased your first home, with the mortgage taking 65% of after-tax earnings to service it, you do not have the spare money to invest in anything
- If you work part time in the gig economy, or have separated from your partner and have child support obligations, or are living in a garage because you cannot afford anything better to rent, or are in one of four families collectively renting a large, old, poorly-insulated house, you do not have the spare money to invest in anything
- These people are the ones who cannot avoid a price signal, they are price takers, and are the last ones left standing once all the affluent people have purchased their Teslas, installed their solar panels and battery systems, and shaved a small percentage off peak load.

The non-adopters are primarily the unemployed, the underemployed, the habitually poor, those plagued by poor choices in the past, and those from disadvantaged backgrounds. Tangata Whenua and Tagata Pasifika are overly represented in this group. The policy is racist.