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connecting our community

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Submissions
Electricity Authority
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by email: TPM@ea.govt.nz
(subject line "Consultation Paper – TPM-related Code amendments")

Hey, that there be electricity, give me some money!

Thank you for the opportunity to provide feedback on the Electricity Authority's (Authority) proposed amendments to the Electricity Industry Participation Code 2010 (Code) that relate primarily to the implementation of the new transmission pricing methodology (TPM).

While the proposal notes that the information deficit relates to "the generation activity of a small number of generators", this will not remain the case, as grid scale generation co-located with load will expand. The consultation paper also extends the application of determining generation for gross load to EVs, PV and battery installations, and this will occur at the residential level.

Although the consultation paper focuses on the technical aspects of measuring "behind the meter" generation that that is used at a premise, it is the concept of charging for a service that Transpower is not providing that is likely to be a more significant barrier. When EDBs look to pass on the costs, we think that customers will find it incongruous for us to set and adjust charges based on metrics that include energy that Transpower has not delivered.

To explain by example, let's eaves drop on this hypothetical interaction with a customer (we can only hear our side of the phone conversation):

> "Hello Mr Plumides"
> ...
> "Yes, as I mentioned in my email, we need to install a meter to measure how much electricity you generate at your plant."
> ...
> "No, the meter at your connection only measures how much generation is exported to our network. We need to know how much is generated in total."
> ...
> "Oh, sorry, we just need to know so that we can charge you for all the electricity you use, not just the amount we deliver."
> ...
> "No, sorry again, you will need to pay for the meter and provide a suitable location to install it …."
> ...
> "Sorry, I didn't quite catch that, I can put the meter where?"
>
> "[click]"

Decarbonising our economy

On a more serious note, electricity is simply one of many mechanisms for transporting energy. We are concerned about the distortion that an effective "tax" on this particular mechanism might have. Electrification provides a pathway for decarbonisation, and we need to avoid disincentives for the use of locally generated electricity.

A tax on self-generated electricity might:

- encourage a customer considering a PV and heat pump solution for process heat to instead select solid fuel option,
- encourage a customer considering a PV and EV solution, to instead remain with a ICE vehicle,
- discourage a large milk factory from installing a grid scale solar array to meet its energy growth needs, or
- encourage customers to defect from the grid altogether (as distributed generation and storage options develop) to avoid the tax.

How far to reach

Electricity is also delivered to and created by customers in many different ways:

- diesel back-up generation,
- PV, wind, hydro and co-generation from surplus heat,
- purchasing batteries (and might one day power vehicles or homes through battery swapping),
- PHEV cars produce electricity from petrol,
- an alternator in a traditional car produces electricity.

It is difficult to know where the line would be drawn. If the Authority is only intent on taxing AC 230 or 400 volt versions of electricity, then the Authority might find it instead encourages DC systems, other voltages and/or other frequencies.

In a number of situations, customers isolate themselves from their local distribution network when they are operating their own generation – we are wondering if this physical isolation exempts them from the proposed grid tax? If not, then are we going to apply the tax to the various off-grid homes that are scattered around the country, and to the good people of the Chatham Islands and Rakiura, as they are generating their own electricity?

As distributed generation grows, we are aware of the efficiencies of storing and utilising energy on the DC side of the inverter. We are already seeing significant use of battery storage being co-located with PV, and we expect to see this extend to DC appliances. Many modern appliances are well suited to DC supplies including heating loads, LEDs and electronic equipment. We understand that load flows on DC systems are significantly more difficult to meter, and this may represent a barrier to determining gross load.

It is also unclear if the Authority might limit its gross load assessment to electricity. A customer that installs PV to heat water would be taxed, so should a customer installing a solar thermal water heating system also be exposed to the same tax? Afterall, the energy source and outcome is the same.

In the extreme, installing insulation can be considered a form of substitution where an upfront capital investment avoids future energy purchases, and reduces exposure to the residual charge. Should the Authority be looking to tax that as well?

Undermining competitive markets

Providers of alternative energy sources (such as PV) do so in competition with grid supplied energy. When those providers find that distributors are asking customers to pay equivalent grid costs for energy that their solution produces, they may feel that they are being put at a competitive disadvantage. Monopoly distributors that exert their ability to charge in this way may be accused of taking advantage of their dominant position in the market which is illegal under the Commerce Act.

Safety concerns

Installing embedded generation is high risk electrical work. We rely on customers and their providers proactively applying to us before installing generation and providing details of their equipment for us to access and ensure it is compliant with safety requirements (for example, ensuring that the equipment will isolate from our network when a fault occurs).

We are concerned that the additional costs associated with metering the output of embedded generation as well as additional charges if distributors look to pass on transmission costs will act as a deterrent to customers engaging with us.

As technology evolves, we think it will become easier to plug in generating appliances, including electric vehicles with "vehicle to home" capability. A financial incentive to avoid interacting with the distribution network represents a risk to our staff and to the public. Embedded generation that fails to isolate following a network fault or during planned maintenance puts our crews at risk of electrocution.

Concluding remarks

We understand that the move to use gross load is intended to limit distortions around energy source substitution. But this is problematic, as the customers' perspective is fuel or energy substitution, rather than simply where electricity is produced.

While the Authority might find technical solutions to measuring gross load, we consider that the real barrier will occur when customers resist this overreach, and simply refuse to provide information that allows us to charge them for a service we are not providing.

Rather than looking for ways to enhance the measurement of gross load and to extend it to include developing technologies (PV, EV and BS), we submit that the Authority should accept that the role of the grid will be different in our energy future, and we should instead transition away from gross load and focus on how customers are using the grid, rather than how they are not using the grid.

Thank you again for the opportunity to provide feedback. If you have any queries regarding these comments, please feel free to contact me on [redacted]

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