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John Rampton
General Manager Market Design
Electricity Authority

By email: submissions@ea.govt.nz

Dear John

Operational Review: Metering and Registry processes

We appreciate the opportunity to submit on the Authority's *Operational review of metering and related registry processes*, published 4 September 2018.

We have responded to the Code change proposals as per the format sought (electronically) and reproduced as an appendix in this submission. We have responded to the following:

- Proposal 002 (Prohibition of net metering) and Proposal 020 (Alternative certification for Point of Connection (POC) to the grid); as discussed below we do not support these proposals
- Proposals 001, 008, 009, 013, and 018; we suggest drafting amendments for clarity
- Proposals 011 (Raw meter data and compensation factors) and 014 (HHR certification and interrogation cycles); we raise an alternative approach.

In previous submissions[1] to Code change omnibus proposals, we have advocated that the source for each Code change proposal should be made transparent.[2] We continue to advocate for transparency as good regulatory practice and for the information value such disclosure would bring.

Proposal 002: Prohibition of net metering.

We support increased focus on the regulatory settings at the household (ICP) level for emerging technologies, such as how to treat meter data. As we identify in our scenarios study Te Mauri Hiko – Energy Futures, we consider households, and the emerging technologies now available to them, will play an increasing and important role in New Zealand's energy future.

While we understand the situation outlined in the paper, and support the objectives, we are concerned that simply prohibiting net metering 'inside' a three-phase meter will:

- require our three phase grid meters to be reconfigured such that import and export from the grid can no longer be measured accurately; and
- create similar, if individually less material, inaccuracies at ICP level (the materiality will grow, potentially rapidly, with uptake of emerging behind-the-meter technologies including PV and battery storage).

[1] For example, March 2018 submission, November 2016 submission
[2] For contextual value such as specific expertise or partisan interest, and whether proposals result from the Authority's monitoring and compliance activities.

For grid metering, the Code provides[3] that a (grid) connection can only be either export or import at any given time point in time, and not both at the same time. We would expect the policy discussion for ICP level to start with the same premise.

Our analysis of the proposal raises the following issues, at both grid and ICP level, from which we conclude the policy needs broader discussion:

- most importantly, poor power factors can create significant inaccuracies in quantifying real kWh, so the proposal is contrary to requirements for measurement accuracy in Part 10[4]
- an existing 3-phase meter that cannot be configured to each phase would become redundant. The economic cost of replacing such non-compliant meters needs to be considered
- where existing 3-phase meters (for example our High Voltage delta meter installations) can be reconfigured to comply, the reconfiguration cost will be passed on to consumers, and
- at ICP level, the proposal creates inequities between solar consumers on single phase and those on three phase meters.

Our main concern is that mandating no net metering 'inside' a three-phase meter will remove the accuracy benefits that a three-phase meter, operating as intended, brings to market settlement. At the very least we consider the proposed Code amendment should not apply to three phase **grid** meters.

To address the growing need for import and export at ICP level to be accurately metered we also suggest there may be better solutions than banning net metering within the metrology function of three phase meters. We consider a sensible next step would be a short and issue-specific consultation, including with technical metering experts and the distributed energy industry.

Accordingly, we do not support Proposal 002 at this stage.

Proposal 020: Alternate certification for point of connection

The purpose for alternate certification is to allow more time for re-certification processes if a meter for some reason cannot be re-certified in the regulated time-frames under Schedule 10.8. We do not agree that the policy for alternate certification only applies to Installation Control Points (ICPs). We are not aware of any previous policy decisions that limited clause 32 to ICPs.[5]

Having access to the alternate certification process is the most efficient way for the grid owner to maintain certification compliance. Gaining access to measurement transformers at a grid installation can be more challenging than for an ICP. Grid outages require a great deal of planning to manage Health and Safety, system security and the disruption to our consumers. Even an outage planned well in advance can be cancelled if issues arise. When such situations arise, we can use alternate certification process to maintain compliance until the outage can be rescheduled. We consider the incremental time to recertify does not compromise measurement accuracy in the interim.

Where we cannot arrange an outage and alternate certification is not available, then the grid owner faces the prospect of not meeting its Code obligations. Being unable to comply results in self-breach processes or exemption requests, and both routes create transaction costs. In our view, retaining

[3] Part 1 interpretation: **grid exit point** and **GXP** mean any **point of connection** on the **grid**— at which electricity predominantly flows out of the grid….and such point of connection may, at any given time, be a grid exit point or a grid injection point, but may not be both at the same time

[4] Schedule 10.1 Table 1

[5] The Part D (now part 10) review consultation, 23 Sept 2009, did not discuss any policy for limiting alternative certification to ICPs.

the original intent for alternate certification for grid metering installations remains the most efficient option.

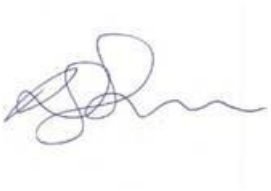
Aggregate costs and benefits are insufficient support for each proposal.

Finally, we consider applying an aggregate approach across many proposals masks important detail of each proposal. We note no quantitative assessment has been made so the Authority's Code amendment principle 3 cannot be complied with.

Describing the costs and benefits for **each** proposal (even just qualitatively) would provide better opportunity to assess that a proposal's benefits outweigh its costs. We consider the aggregate qualitative approach is not suitable to support a Code amendment for each proposal.

Please contact micky.cave@transpower.co.nz in the first instance me if you have any questions about this submission.

Yours sincerely



Rebecca Osborne

Regulatory Affairs and Pricing Manager

Appendix - Format submissions

Operational Review of Metering and Related Registry Processes	
Submitter	Transpower
Proposal Reference	001 Electrical connection and disconnection of points of connection
Question 1: Do you agree with the Authority's problem definition? If not, why not?	
We consider problem 2 has already been rectified by the recent Code amendments under gazette notice "Notice of the Electricity Industry Participation Code Amendment (Code Review Programme) 2018" dated 24 September 2018. Specifically: Item 4(m) *clarifying when a reconciliation participant may connect or electrically connect certain points of connection*.	
Question 2: Do you agree with the Authority's proposed solution? If not, why not?	
Problem 2: We consider the gazetted Code change has already addressed the problem described.	
Question 3: Do you have any comments on the Authority's proposed Code drafting?	
Clause 10.33 as amended by the gazette notices, solved the problem and no further change is necessary. We consider the new requirement is 10.29B (2) duplicates existing policy (clause 15.9) for grid owner responsibility for submission information at the NSP. New clause 10.29C is unsubstantiated as the problem definition does not mention any issue with grid NSPs that needs to be addressed.	
Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?	
Problem 2: Yes, for recently gazetted previous amendment. In our view proposed new clauses 10.29B (2) and 10.29C should not be incorporated into the Code.	
Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	
Problem 2: No. No amendment is necessary as the issue has been addressed.	

Submitter	Transpower
Proposal Reference	002 Prohibition of net metering

Question 1: Do you agree with the Authority's problem definition? If not, why not?

We support attention to the regulatory settings at the household (ICP) level for emerging technologies, such as how to treat meter data. As we identify in Te Mauri Hiko – Energy Futures, we consider households, and the emerging technologies now available to them, will play a valuable role in New Zealand's energy future.

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

Our analysis of the proposal raises the following issues, at both grid and ICP level, from which we conclude the policy needs broader discussion:

- most importantly, poor power factors can create significant inaccuracies in quantifying real kWh, so the proposal is contrary to requirements for measurement accuracy in Part 10[6]
- an existing 3-phase meter that cannot be configured to each phase would become redundant. The economic cost of replacing such non-compliant meters needs to be considered
- where existing 3-phase meters (for example our High Voltage delta meter installations) can be reconfigured to comply, the reconfiguration cost will be passed on to consumers, and
- at ICP level, the proposal creates inequities between solar consumers on single phase and those on three phase meters.

Specifically, the proposed solution will:

- make the accuracy requirements in schedules 10.1 table 1 for multi-phase installation using single phase metering unable to be met. For example, a phase to phase load with a 65-degree lag power factor will result in the meter readings on one phase being 12% high and one of the other phases incorrectly recording export when there is none;
- make compliance with 10.37 not possible, as the reactive energy can't be measured accurately on multi-phase installation using single phase metering;
- result in a breach of 10.6 and 15.2;
- render any multi-phase meter (or installation) that is currently compliant, but that does not have the functionality to record single phase measurements, redundant at the next certification. For example, the grid owner's revenue meters do not record single phase revenue data, electromechanical meters can't comply, and multi-phase installations that are a delta configuration can't comply.

Question 3: Do you have any comments on the Authority's proposed Code drafting?

[6] Schedule 10.1 Table 1

No comment, we do not support Proposal 002 at this stage.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No. While we understand the situation described in the paper and support the objectives, we are concerned that simply prohibiting net metering within the metrology functions, via new rules for three phase meters, could:

- require our three phase grid meters to be reconfigured such that import and export from the grid cannot be measured accurately; and
- create similar, if individually less material, inaccuracies at ICP level (the materiality will grow, potentially rapidly, with uptake of emerging behind-the-meter technologies including PV and battery storage).

For grid metering, the Code provides[7] that a (grid) connection can only be either export or import at any given time point in time, and not both at the same time. We would expect the policy discussion for ICP level to start with the same premise.

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

We consider the proposed Code amendment should not apply to three phase **grid** meters.

We also suggest there may be better solutions, than banning net metering within the metrology function of three phase meters, to address the growing need for import and export at ICP level to be accurately metered separately. We consider a sensible next step would be a short and issue-specific consultation, including with technical metering experts and the distributed energy industry.

We do not support Proposal 002 at this stage.

[7] ((a) **grid exit point** and **GXP** mean any **point of connection** on the **grid**— at which electricity predominantly flows out of the grid….and such point of connection may, at any given time, be a grid exit point or a grid injection point, but may not be both at the same time

Submitter	Transpower
Proposal Reference	008 Prevailing load checks
Question 1: Do you agree with the Authority's problem definition? If not, why not?	
No comment	
Question 2: Do you agree with the Authority's proposed solution? If not, why not?	
No comment	
Question 3: Do you have any comments on the Authority's proposed Code drafting?	
Yes, we consider the drafting omits the *component certification check* or an *installation component configuration check* for a measuring transformer change or a ratio change.	
Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?	
No comment	
Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.	
No comment	

Submitter	Transpower
Proposal Reference	009 ISO 9001 Sync with class B ATH application period

Question 1: Do you agree with the Authority's problem definition? If not, why not?

No comment

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

No comment

Question 3: Do you have any comments on the Authority's proposed Code drafting?

Yes, we note that there are references to AS/NZS ISO 9001:2008. As the standard is no longer applicable the reference is redundant and should be removed.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No comment

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No comment

Submitter	Transpower
Proposal Reference	011 Raw meter data and compensation factors

Question 1: Do you agree with the Authority's problem definition? If not, why not?

No comment

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

No.

In our view, the compensation factor should be applied in the meter. Where this is not possible the compensation factor should be applied at the first download. This approach would create consistency as all data will be scaled primary values either in the meter or as soon as it has left the meter.

Question 3: Do you have any comments on the Authority's proposed Code drafting?

No comment

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No comment

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No, we consider a better option is to make it compulsory to apply compensation factors in the meter or where this is not possible, at the first download. A customer or an ATH certifying an installation then has meaningful information displayed at the meter. The certification process should be more efficient and there is less likelihood of errors as the technician can verify the primary values in the meter while on site. Very few modern Current Transformer (CT) meters would not have the capability to record in scaled primary values.

Submitter	Transpower
Proposal Reference	013 Raw meter data output test

Question 1: Do you agree with the Authority's problem definition? If not, why not?

No comment

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

No comment

Question 3: Do you have any comments on the Authority's proposed Code drafting?

We assume the ammeter with accuracy +/- 5%, under 9 (1) (c) (ib), is used to calculate load that will be used to compare against the raw meter data from the meter.

We raise whether the larger accuracy range for the ammeter measurement is consistent with the accuracy requirements under Schedule 10.1 Table 1.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No comment

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No comment

Submitter	Transpower
Proposal Reference	014 HHR Certification and interrogation cycles

Question 1: Do you agree with the Authority's problem definition? If not, why not?

No comment

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

Re Clause 20 (1) new insertion (j)(ii).

If the Code drafting in reference number 011 is adopted, then there will be a difference in the **one kWh** accuracy requirement between a meter that has a correction factor applied in the meter and one where the correction factor is applied by the Trader.

The proposal does not explain how the one kWh threshold was determined, the likely impact on the number of installations that may fail the threshold, and the impact on accurate settlement of the market.

Question 3: Do you have any comments on the Authority's proposed Code drafting?

Yes. For clause 20, does the metering installation cancelation process only applies to ICPs that are on the registry? The requirement to update the registry clause 20 (2) implies that this may be the case, but we seek clarity.

Clause 20 (1) new insertion (j)(i). We consider the maximum interrogations cycle should be referenced.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No.

We consider an assessment of data quality should be made when there is a difference between the interval and register readings, but certification should only be cancelled if the data used for settlement is inaccurate, defective or not fit for purpose.

Readings may not match for valid and explainable reasons which should be sought before incurring costs to recertify an installation that may be functioning correctly.

Submitter	Transpower
Proposal Reference	018 Certification validity periods

Question 1: Do you agree with the Authority's problem definition? If not, why not?

Yes

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

Yes

Question 3: Do you have any comments on the Authority's proposed Code drafting?

Yes.

While making changes to Table 1 of Schedule 10.1, should also clarify that "maximum metering **installation** certification validity period" also applies as the "maximum certification validity period" for a **meter**. Propose either:

- amend table 10.1 to convey that the validity periods apply to both the installation and the meter; or
- amend Schedule 10.8 clause 1(2) to refer to an installation category, not meter class.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

Yes

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No comment

Submitter	Transpower
Proposal Reference	020 Scope for the use of Alternate certification

Question 1: Do you agree with the Authority's problem definition? If not, why not?

No. We consider the problem is an erroneous assumption that all metering installations should have registry records.

We agree with an objective for NSP meters to be certified with an appropriate level of accuracy. However, we disagree with the asserted policy intent for clause 32 Schedule 10.7 that alternate certification should **only** apply to ICPs.

We understand the policy behind clause 32 was to limit the alternate certification process **only** to situations where a measurement transformer could not be certified and to make it a once only option. We do not believe there was any policy discussion on limiting clause 32 to ICPs. (Refer Part D review consultation, 23 Sept 2009).

In the initial version of Part 10 there was *a Code of Practice 10.5 - Variation of requirements*. This and the even earlier COP D5 were the predecessors to clause 32. In both Code of Practices, the variation could be applied to any type of metering installation, i.e. no distinction between ICPs and NSPs. As part of a major overhaul of Part 10/D, COP 10.5 was replaced by clause 32.

The accuracy of an NSP metering installation is addressed in Part 10 32 (1)(b).

Question 2: Do you agree with the Authority's proposed solution? If not, why not?

No.

Having access to the alternate certification process is the most efficient way for the grid owner to maintain certification compliance. Gaining access to measurement transformers at a grid installation can be more challenging than for an ICP. Grid outages require a great deal of planning to manage Health and Safety, system security and the disruption to our consumers. Even an outage planned well in advance can be cancelled if issues arise. When such situations arise, we can use alternate certification process to maintain compliance until the outage can be rescheduled. We consider the incremental time to recertify does not compromise measurement accuracy in the interim.

In situations where we cannot arrange an outage and alternate certification is not available, then the grid owner faces the prospect of not meeting its Code obligations. Being unable to comply results in self-breach processes or exemption requests, and both routes create transaction costs. In our view, retaining the original intent for alternate certification for grid metering installations remains the most efficient option.

Question 3: Do you have any comments on the Authority's proposed Code drafting?

Yes.

We consider a better solution is to amend clause 32 (1) to the following:

(c) ……applies; and

(d) in the case of an ICP that is not an NSP the **metering equipment provider** has updated the **metering installation's certification** in the **registry**.

Question 4: Do you agree with the objectives of the proposed amendment? If not, why not?

No

Question 5: Do you agree the proposed amendment is preferable to any other alternatives that meet the objectives of the proposed amendment? If not, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Electricity Industry Act 2010.

No.

We believe a better solution is to change 32 (1) to the following:

(c) ……applies; and

(d) in the case of an ICP that is not an NSP the **metering equipment provider** has updated the **metering installation's certification** in the **registry**.

D.1 Please complete the table below if you wish to submit on the CBA for the proposals that require a regulatory statement.

Question 7: Do you agree the costs and benefits identified are appropriately categorised? If you disagree, please provide reasons.

No.

We consider the qualitative cost-benefit assessment, across all the Code change proposals that each have a regulatory statement, is unhelpful for participants to understand the merit of each proposal. Without a clear line of sight of costs and benefits for each proposal we consider the Authority has not provided sufficient opportunity for responders to be fully informed on each proposal.

We consider the following costs have not been identified for Proposals 002 and 020:

- Proposal 002:
  - cost to reconfigure and then test multi-phase meters as single phase;
  - cost to modify HV delta metering installation;
  - lost value/replacement cost of meters that are currently compliant that can't be reconfigured; and
  - cost of inaccurate settlement of the market.

- Proposal 020: when the grid owner faces situations where it cannot comply with the Code for meeting timelines for recertification, we consider the transaction costs of resultant self-breach processes or exemption processes need to be considered.

Question 8: Do you agree the benefits of the proposals in aggregate outweigh their costs? If you disagree, please provide reasons.

No.

We consider applying an aggregate approach across many proposals masks important detail of each proposal. Describing the costs and benefits for **each** proposal (even just qualitatively) would provide better opportunity to assess that a proposal's benefits outweigh its costs. We consider the aggregate qualitative approach is not suitable to support a Code amendment for each proposal.