ELECTRICITY INDUSTRY PARTICIPATION CODE
METERING EQUIPMENT PROVIDER AUDIT REPORT

For

TRUSTPOWER LIMITED

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 23 January 2018

Date audit report completed: 26 January 2018

Audit report due date: 31-Jan-18

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Trustpower Limited (Trustpower) is a Metering Equipment Provider (MEP) and is required to undergo an audit by 31 January 2018, in accordance with clause 1(1)(b) of schedule 10.5.

Trustpower has resolved many of the data discrepancies and they have improved the timeliness of registry changes following meter installation or recertification.

The quantity of uncertified metering installations has reduced and there are now only 801 with expired certification.

Trustpower has commenced AMI deployment and there are some improvements required to the certification reports to ensure better clarity.

The main three issues recorded in the report are as follows:

1. 801 metering installations have expired certification.
2. 57 Category 2 inspections were not conducted within the allowable window, leading to cancellation of certification.
3. 22 three phase installations have single phase meters with a multiplier of 3 and they were certified using the statistical sampling method. These are not fit for purpose and certification is cancelled.

The AMI data collection and processing function is operating as expected and is fully compliant.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and recommends an audit frequency of six months. A number of the issues are now cleared and the matter of expired certification is recorded twice, in Sections 7.1 and 7.19. Taking this into account, along with Trustpower's plans to resolve the other items, I recommend a 12 month period.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Provision of accurate information	2.5	11.2 and 10.6	Registry not always updated as soon as practicable in some cases	Moderate	Low	2	Disputed
Registry updates	3.2	2 of Schedule 11.4	5 registry updates later than 15 business days.	Strong	Low	1	Identified
Metering Installation Design & Accuracy	4.3	4(1) of Schedule 10.7	Error and uncertainty calculations not always conducted correctly by ATHs.	Moderate	Low	2	Identified
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days	Moderate	Low	2	Identified
Accurate and complete records	5.1	4(1) of Schedule 10.6	Some inaccurate certification records	Moderate	Low	2	Identified

Provision of Registry Information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect	Moderate	Low	2	Identified
Cancellation of certification	6.4	6 of Schedule 11.4	Certification cancelled and registry not updated within 10 business days for 57 ICPs without inspections within the allowable window and 22 installations with a single phase meter on a three phase installation.	Moderate	Low	2	Identified
Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired for 801 ICPs	Moderate	Medium	4	Identified
Bridged control devices	7.11	35 of Schedule 10.7	Reconciliation participant not notified of bridged control device within 10 business days.	Strong	Low	1	Identified
Interim certification	7.19	18 of Schedule 10.7	706 ICPs with expired interim certification	Moderate	Medium	4	Identified
Inspections	8.2	Clause 46(1) of schedule 10.7	57 Category 2 inspections not conducted within the allowable window of +/- 6 months.	Moderate	Low	2	Identified
					Future Risk Rating	**24**	
					Indicative Audit Frequency	**6 months**	

Future risk rating	1-2	3-6	7-9	10-19	20-24	25+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Modification of metering installations	4.9	Clause 10.34(2), (2A) and (3)	Seek written confirmation from Distributors that they agree with the following points in relation to the AMI deployment: - required functionality - terms of use - required interface format - integration of the ripple receiver and the meter - functionality for controllable load.
Accuracy of records	5.1	Clause 4(1)(a) and (b) of Schedule 10.	Re-title AMI forms to ensure clarity
Component certification	7.15	Clause 26(1) of Schedule 10.7	Ensure meter certification date, expiry date and certifying ATH is clear in certification reports

ISSUES

Subject	Section	Recommendation	Description
Distributed generation	6.2	New clause required	Distributed generation installed without retailer approval and without import/export metering. The Code needs to require the Distributer's approval process to ensure a Retailer has agreed to purchase the generation and to ensure import/export metering is installed before approval is granted.

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code (Section 11)

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

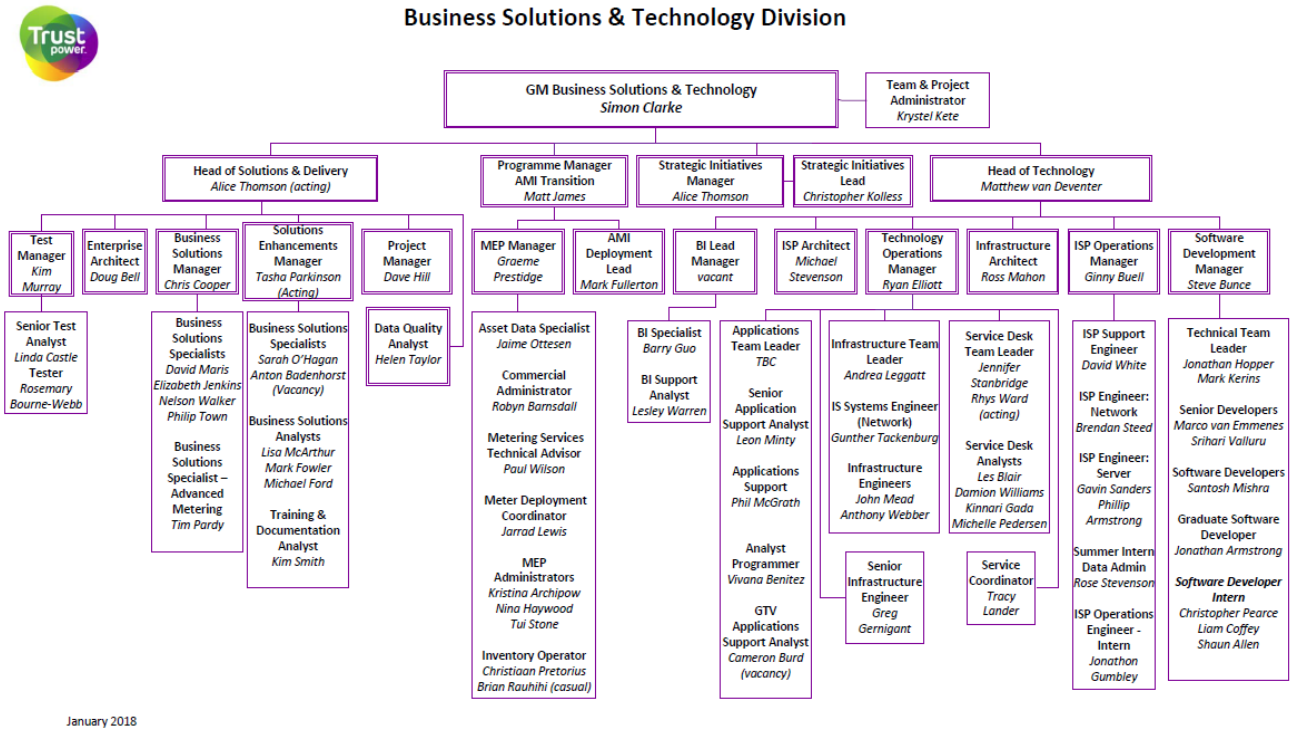
Audit observation

I checked the Electricity Authority website, and I confirm there are no exemptions in place.

Audit commentary

I checked the Electricity Authority website, and I confirm there are no exemptions in place.

1.2. Structure of Organisation



1.3. Persons involved in this audit

Auditor: Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Trustpower personnel assisting in this audit were:

Name	Title
Matt James	Programme Manager – AMI Transition
Rod Jones	Landis+Gyr
Graeme Prestidge	MEP Manager
Paul Wilson	Metering Services Technical Advisor

1.4. Use of Agents (Clause 10.3)

Code reference

Clause 10.3

Code related audit information

A participant who uses a contractor

- *remains responsible for the contractor's fulfillment of the participants Code obligations*
- *cannot assert that it is not responsible or liable for the obligation due to the action of a contractor*
- *must ensure that the contractor has at least the specified level of skill, expertise, experience, or qualification that the participant would be required to have if it were performing the obligation itself.*

Audit observation

Trustpower engages with ATHs to conduct certification activities and they are an ATH themselves, but there are no contractors used to perform MEP responsibilities.

Audit commentary

Trustpower engages with ATHs to conduct certification activities and they are an ATH themselves, but there are no contractors used to perform MEP responsibilities.

1.5. Hardware and Software

Trustpower MEP data is held in Maximo, which is subject to backup arrangements in accordance with standard industry protocols.

1.6. Breaches or Breach Allegations

Trustpower confirmed there were no breach allegations related to the scope of this audit.

1.7. ICP Data

Metering Category	Number of ICPs
1	157,505
2	1,249
3	5
4	6
5	14
9	25

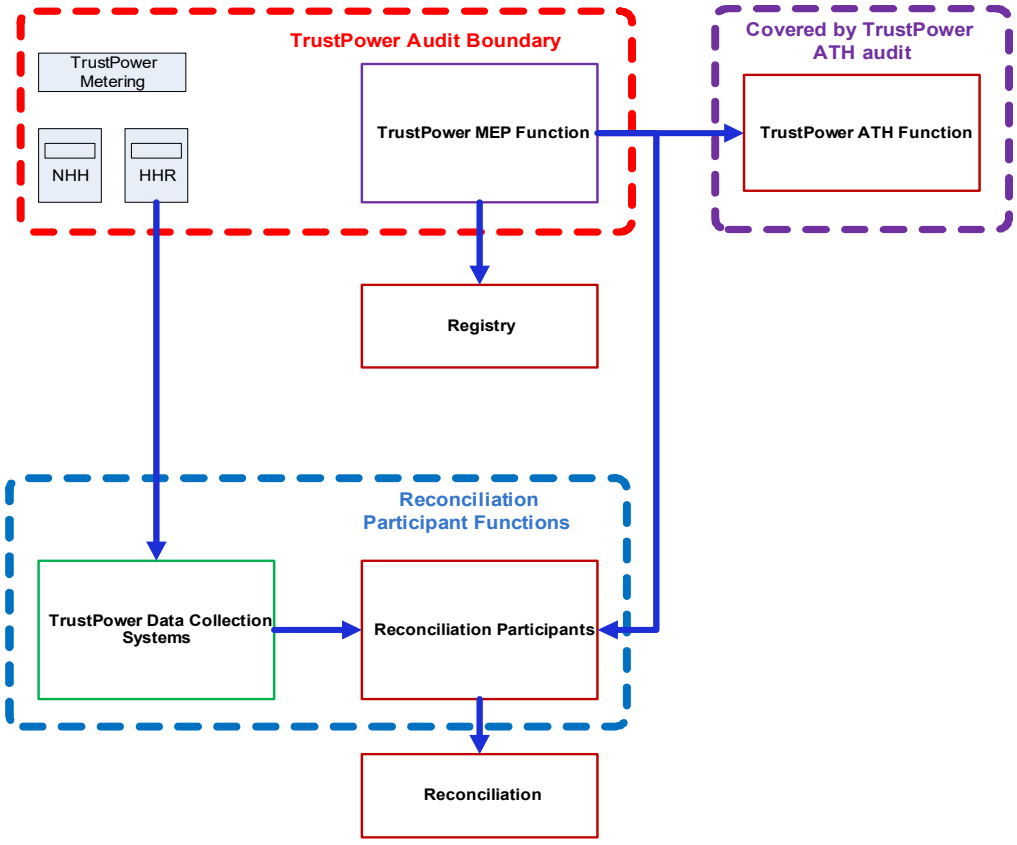
1.8. Authorisation Received

A letter of authorisation was not required or requested.

1.9. Scope of Audit

This audit was conducted in accordance with the Guideline for Metering Equipment Provider Audits V2.1, which was published by the Electricity Authority.

The boundaries of this audit are shown below for greater clarity.



1.10. Summary of previous audit

The previous audit was conducted in August 2016 by Steve Woods of Veritek Limited. The table below shows that the issues raised are still existing.

Table of Non Compliance

Subject	Section	Clause	Non compliance	Status
Registry notification	3.3	2 of schedule 11.4	Registry not updated within 15 days for 6 ICPs.	Still existing
Error and uncertainty	4.3.1	4(1) of schedule 10.7	Uncertainty calculations do not consider all conditions.	Still existing
Accuracy of registry information	6.1	7(1) of schedule 11.4 & 11.2(1)(a) of part 11 & 10.6(1)(a) of part 10	Some registry records incomplete or inaccurate.	Still existing
Changes to registry records	6.2	3 of schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
Certification of metering installations	7.1	10.38(a) of part 10	1,153 ICPs with expired interim certification. One Category 2 installation with expired certification. 13,317 previously fully certified installations with expired certification.	Still existing but for a much smaller number of ICPs

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
CT burden	4.9	31(7) of schedule 10.7	Require ATHs to measure on-site burden and take steps to ensure accuracy if required, including the installation of burden resistors if necessary.	Cleared

Subject	Section	Clause	Recommendation for improvement	Status
Accuracy of registry records	6.1	7 of schedule 11.4	Liaise with Retailer to determine if an import export meter needs to be installed.	Identified

2. OPERATIONAL INFRASTRUCTURE

2.1. MEP responsibility for services access interface (Clause 10.9(2))

Code reference

Clause 10.9(2)

Code related audit information

The MEP is responsible for providing and maintaining the services access interface.

Audit observation

I checked certification records for 30 metering installations, covering all relevant ATHs.

Audit commentary

I checked 30 certification records and found the services access interface was recorded by all ATHs.

Audit outcome

Compliant

2.2. Dispute Resolution (Clause 10.50(1) to (3))

Code reference

Clause 10.50(1) to (3)

Code related audit information

Participants must in good faith use its best endeavours to resolve any disputes related to Part 10 of the Code.

Disputes that are unable to be resolved may be referred to the Authority for determination.

Complaints that are not resolved by the parties or the Authority may be referred to the Rulings Panel by the Authority or participant.

Audit observation

I checked whether any disputes had been dealt with during the audit period.

Audit commentary

Trustpower has not been required to resolve any disputes in accordance with this clause.

Audit outcome

Compliant

2.3. MEP Identifier (Clause 7(1) of Schedule 10.6)

Code reference

Clause 7(1) of Schedule 10.6

Code related audit information

The MEP must ensure it has a unique participant identifier and must use this participant identifier (if required) to correctly identify its information.

Audit observation

I checked the registry data to ensure the correct MEP identifier was used.

Audit commentary

Trustpower uses the TRUM identifier in all cases.

Audit outcome

Compliant

2.4. Communication Equipment Compatibility (Clause 40 Schedule 10.7)

Code reference

Clause 40 Schedule 10.7

Code related audit information

The MEP must ensure that the use of its communication equipment complies with the compatibility and connection requirements of any communication network operator the MEP has equipment connected to.

Audit observation

I checked that the ATH has a process to check the relevant type test certificates to ensure compliance with this clause.

Audit commentary

Trustpower ensures all communication equipment is appropriately certified with the relevant telecommunications standards. This is recorded in type test certificates and other approval documents.

Audit outcome

Compliant

2.5. Participants to Provide Accurate Information (Clause 11.2 and Clause 10.6)

Code reference

Clause 11.2 and Clause 10.6

Code related audit information

The MEP must take all practicable steps to ensure that information that the MEP is required to provide to any person under Parts 10 and 11 is complete and accurate, not misleading or deceptive and not likely to mislead or deceive.

If the MEP becomes aware that in providing information under Parts 10 and 11, the MEP has not complied with that obligation, the MEP must, as soon as practicable, provide such further information as is necessary to ensure that the MEP does comply.

Audit observation

The content of this audit report was reviewed to determine whether all practicable steps had been taken to provide accurate information.

Audit commentary

The content of this audit report indicates that Trustpower has taken all practicable steps to ensure that information is complete and accurate in most cases; however, in section 6.4 the report records that some information was not updated as soon as practicable.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 01-Jan-17 To: 12-Nov-17	Registry not always updated as soon as practicable in some cases. Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are recorded as moderate because there is room to improve the timeliness of some registry updates. The impact on other participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Continue to monitor and improve reporting. Influence contractor and Network behavior's where that is having an impact on timeframes for updates. Although it was identified as part of the audit preparation that some inspections had not been completed, establishing which sites were no longer certified as a result of the late inspection was only carried out after the Auditors site visit which impacted the registry update timeframe. This is considered a one off event, as the learnings will be rolled into the established business process. We believe waiting to clarify the understanding with auditor in this situation did constitute taking action in a practicable timeframe – albeit outside the obligatory code requirement	Completed	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Continue to monitor and improve reporting. We believe we are very good and most instances fall outside of our control or required further investigation to enable us to process. NB: Due to the low numbers and low impact it is our view that this could justifiably hold a lower risk rating.	Ongoing	

3. PROCESS FOR A CHANGE OF MEP

3.1. Payment of Costs to Losing MEP (Clause 10.22)

Code reference

Clause 10.22

Code related audit information

The MEP for a metering installation may change only if the responsible participant enters into an arrangement with another person to become the MEP for the metering installation, and if certain notification requirements are met (in relation to the registry and the reconciliation manager).

The gaining MEP must pay the losing MEP a proportion of the costs within 20 business days of assuming responsibility.

The costs are those directly and solely attributable to the certification and calibration tests of the metering installation or its components from the date of switch until the end of the current certification period.

Audit observation

I checked if Trustpower had sent or received any invoices.

Audit commentary

Trustpower has not sent or received any invoices in relation to this clause during the audit period.

Audit outcome

Not applicable

3.2. Registry Notification of Metering Records (Clause 2 of Schedule 11.4)

Code reference

Clause 2 of Schedule 11.4

Code related audit information

The gaining MEP must advise the registry of the registry metering records for the metering installation within 15 days of becoming the MEP for the metering installation.

Audit observation

I checked the event detail for the period 01/01/17 to 12/12/17 for all records where Trustpower became the MEP to evaluate the timeliness of updates.

Audit commentary

I examined an event detail report for 319 switches in relation to this clause and the findings are shown in the table below. Late nomination by the trader was the cause of the late update for four of the five ICPs where the update was late. Compliance is at 98.4% and could have been 99.7% without the late nominations.

Audit	Total ICPs	Total outside 15 days	Average days	% compliant
Jan 2018	319	5	15	98.4%

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Jan-17 To: 12-Dec-17	5 registry updates later than 15 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are in place to ensure the timeliness of updates, but Trustpower is sometimes prevented from updating the registry due to late nomination. The impact on other participants is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
No action taken	completed	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Trustpower considers this to be a high level of compliance and in a practical sense we don't believe further corrective actions are possible.	Ongoing	

3.3. Provision of Metering Records to Gaining MEP (Clause 5 of Schedule 10.6)

Code reference

Clause 5 of Schedule 10.6

Code related audit information

During an MEP switch, a gaining MEP may request access to the losing MEP's metering records.

On receipt of a request from the gaining MEP, the losing MEP has 10 business days to provide the gaining MEP with the metering records or the facilities to enable the gaining MEP to access the metering records.

The losing MEP must ensure that the metering records are only received by the gaining MEP or its contractor, the security of the metering records is maintained, and only the specific metering records required for the purposes of the gaining MEP exercising its rights and performing its obligations are provided.

Audit observation

I checked with Trustpower to confirm whether there had been any requests from other MEPs.

Audit commentary

This has not occurred and no examples are available to examine. Trustpower have stated that any information will be provided as necessary.

Audit outcome

Compliant

3.4. Termination of MEP Responsibility (Clause 10.23)

Code reference

Clause 10.23

Code related audit information

Even if the MEP ceases to be responsible for an installation, the MEP must either comply with its continuing obligations; or before its continuing obligations terminate, enter into an arrangement with a participant to assume those obligations.

The MEP is responsible if it:

- *is identified in the registry as the primary metering contact or*
- *is the participant who owns the meter for the POC or to the grid or*
- *has accepted responsibility under clause 1(1)(a)(ii) of schedule 11.4 or*
- *has contracted with a participant responsible for providing the metering installation.*

MEPs obligations come into effect on the date recorded in the registry as being the date on which the metering installation equipment is installed or, for an NSP the effective date set out in the NSP table on the Authority's website.

An MEPs obligations terminate only when;

- *the ICP changes under clause 10.22(1)(a);*
- *the NSP changes under clause 10.22(1)(b), in which case the MEPs obligations terminate from the date on which the gaining MEP assumes responsibility;*
- *the metering installation is no longer required for the purposes of Part 15; or*
- *the load associated with an ICP is converted to be used solely for unmetered load.*

Audit observation

I confirmed that Trustpower has ceased to be responsible for some metering installations by checking the event detail report.

Audit commentary

Trustpower has ceased to be responsible for some metering installations and they still continue with their responsibilities, mainly in relation to the storage or records, which are kept indefinitely. I checked ICP 0000184999CT72E, which is now ready for decommissioning. The records are still available from 2013.

Audit outcome

Compliant

4. INSTALLATION AND MODIFICATION OF METERING INSTALLATIONS

4.1. Design Reports for Metering Installations (Clause 2 of Schedule 10.7)

Code reference

Clause 2 of Schedule 10.7

Code related audit information

The MEP must obtain a design report for each proposed new metering installation or a modification to an existing metering installation, before it installs the new metering installation or before the modification commences.

Clause 2(2) and (3)—The design report must be prepared by a person with the appropriate level of skills, expertise, experience and qualifications and must include a schematic drawing, details of the configuration scheme that programmable metering components are to include, confirmation that the configuration scheme has been approved by an approved test laboratory, maximum interrogation cycle, any compensation factor arrangements, method of certification required, and name and signature of the person who prepared the report and the date it was signed.

Clause 2(4)—The MEP must provide the design report to the certifying ATH before the ATH installs or modifies the metering installation (or a metering component in the metering installation).

Audit observation

Trustpower has engaged Accucal, VEMS, Delta and Trustpower as ATHs for certification activities. Accucal's design reports were checked during their ATH audit conducted in May 2017. I confirmed that the design reports for three metering installations where Trustpower is the MEP and Accucal was the ATH, were the same as those checked during the Accucal audit, where compliance was confirmed. I checked Trustpower's library of design reports and I checked the VEMS and Delta reports during their most recent ATH audits.

Audit commentary

The design reports include all of the requirements noted above and they were prepared by a person with the appropriate level of skills, expertise, experience and qualifications.

Audit outcome

Compliant

4.2. Contracting with ATH (Clause 9 of Schedule 10.6)

Code reference

Clause 9 of Schedule 10.6

Code related audit information

The MEP must, when contracting with an ATH in relation to the certification of a metering installation, ensure that the ATH has the appropriate scope of approval for the required certification activities.

Audit observation

I confirmed that Trustpower has used Accucal, VEMS, Delta and their own ATH (Trustpower Class B) during the audit period.

Audit commentary

I checked the Authority's website and confirm that all ATHs have appropriate scopes of approval.

Audit outcome

Compliant

4.3. Metering Installation Design & Accuracy (Clause 4(1) of Schedule 10.7)

Code reference

Clause 4(1) of Schedule 10.7

Code related audit information

The MEP must ensure:

- *that the sum of the measured error and uncertainty does not exceed the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of the metering installation*
- *the design of the metering installation (including data storage device and interrogation system) will ensure the sum of the measured error and the smallest possible increment of the energy value of the raw meter data does not exceed the maximum permitted error set out in Table 1 of Schedule 10.1 for the category of installation*
- *the metering installation complies with the design report and the requirements of Part 10.*

Audit observation

I checked the processes used by Trustpower to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 15 metering installations.

Audit commentary

Two ATHs are used to conduct certification for Category 2 metering installations. The Trustpower ATH conducted 13 of the sample of 15, and the Delta ATH conducted two.

The Trustpower ATH is correctly calculating uncertainty taking temperature variations into account.

The Delta ATH is not considering temperature variations in their uncertainty calculations. This does not achieve compliance with clause 4(1)(a) of schedule 10.7. The uncertainty calculation for Hioki working standards is particularly important because the 3196 model has a temperature coefficient of 0.03% per degree Celsius and the 3169 has a temperature coefficient of 0.02% per degree Celsius. If these working standards are used in cold temperatures the combination of uncertainties could easily approach or exceed the maximum allowable threshold of 0.6%.

The design report was correctly recorded for all 15 metering installations.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 17-Mar-17 To: 14-Sep-17	Error and uncertainty calculations not always conducted correctly by ATHs. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**

Low	I have recorded the controls as moderate because there is room to improve the records provided by ATHs and their processes. There could be a minor impact on metering installation accuracy; therefore, the audit risk rating is low

Actions taken to resolve the issue	Completion date	Remedial action status
Advised Delta of non-compliance, and corrective actions required on their behalf Although the form did not include the calculation it included the data to enable the Trustpower Test House to establish that if the temperature had been correctly applied the sites where still within the allowable tolerances and compliant. *Refer: Participant Response*	Completed	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Continue to monitor and check Test House certification and compliance with requirements.	Ongoing	

4.4. Subtractive Metering (Clause 4(2)(a) of Schedule 10.7)

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

For metering installations for ICPs that are not also NSPs, the MEP must ensure that the metering installation does not use subtraction to determine submission information used for the purposes of Part 15.

Audit observation

I asked Trustpower to confirm whether subtraction was used for any metering installations where they were the MEP.

Audit commentary

Trustpower does not have any metering installations where subtractive metering is used.

Audit outcome

Not applicable

4.5. HHR Metering (Clause 4(2)(b) of Schedule 10.7)

Code reference

Clause 4(2)(b) of Schedule 10.7

Code related audit information

For metering installations for ICPs that are not also NSPs, the MEP must ensure that all category 3 or higher metering installations must be half-hour metering installations.

Audit observation

I checked Trustpower's list file to confirm compliance with this requirement.

Audit commentary

I checked Trustpower's list file and I confirm that all category 3 and above metering installations are HHR.

Audit outcome

Compliant

4.6. NSP Metering (Clause 4(3) of Schedule 10.7)

Code reference

Clause 4(3) of Schedule 10.7

Code related audit information

The MEP must ensure that the metering installation for each NSP that is not connected to the grid does not use subtraction to determine submission information used for the purposes of Part 15 and is a half-hour metering installation.

Audit observation

I checked if Trustpower is responsible for any NSP metering.

Audit commentary

Trustpower is responsible for metering at two NSPs. Trustpower confirmed that subtraction is not used at these NSPs.

Audit outcome

Compliant

4.7. Responsibility for Metering Installations (Clause 10.26(10))

Code reference

Clause 10.26(10)

Code related audit information

The MEP must ensure that each point of connection to the grid for which there is a metering installation that it is responsible for has a half hour metering installation.

Audit observation

I checked if Trustpower is responsible for any GXP metering by reviewing the NSP Mapping Table.

Audit commentary

Trustpower is responsible for metering at three points of connection to the grid, and they are all HHR metered.

Audit outcome

Compliant

4.8. Suitability of Metering Installations (Clause 4(4) of Schedule 10.7)

Code reference

Clause 4(4) of Schedule 10.7

Code related audit information

The MEP must, for each metering installation for which it is responsible, ensure that it is appropriate having regard to the physical and electrical characteristics of the POC.

Audit observation

I asked Trustpower to provide details of how they ensure the suitability of metering installations.

Audit commentary

There is a written instruction to all contractors that they will ensure the enclosure provides protection from the environment, restricted access to terminals, basic insulation and wiring and ease of access for meter readers.

Audit outcome

Compliant

4.9. Installation & Modification of Metering Installations (Clauses 10.34(2), (2A) and (3))

Code reference

Clauses 10.34(2), (2A) and (3)

Code related audit information

If a metering installation is proposed to be installed or modified at a POC, other than a POC to the grid, the MEP must consult with and use its best endeavours, to agree with the distributor and the trader for that POC, before the design is finalised, on the metering installations:

- *required functionality*
- *terms of use*
- *required interface format*
- *integration of the ripple receiver and the meter*
- *functionality for controllable load.*

Each participant involved in the consultations must use its best endeavours to reach agreement and act reasonably and in good faith.

Audit observation

Trustpower as an MEP does not install metering for other retailers. Trustpower has provided copies of the non-AMI design reports to all relevant distributors in order to achieve compliance with this requirement.

Trustpower has commenced the installation of AMI, which constitutes a change in design. I checked that consultation had occurred and agreement reached with relevant distributors. Trustpower will be the only trader so agreement is not required with other traders.

Audit commentary

Trustpower provided a copy of correspondence sent to distributors and traders in June 2016. I checked the contents of the correspondence and confirm that it meets the requirements above.

Trustpower has conducted consultation discussions with Marlborough Lines, Waipa Networks, PowerCo and Aurora in relation to the planned AMI project. The points listed above formed part of these discussions.

Trustpower advised that these Distributors have provided verbal agreement in relation to the relevant points listed in this clause.

I recommend Trustpower follows up on these discussions by seeking written confirmation of the Distributors' agreement with the:

- required functionality
- terms of use
- required interface format
- integration of the ripple receiver and the meter
- functionality for controllable load.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 10.34(2), (2A) and (3)	Seek written confirmation from Distributors that they agree with the following points in relation to the AMI deployment: - required functionality - terms of use - required interface format - integration of the ripple receiver and the meter - functionality for controllable load.	We agree with, and see the benefits of this recommendation. Our initial deployments are focused on 4 networks where we have been operating as a Retailer and an MEP for a number of years. We have had an open dialogue with each of these networks about out plans for AMI deployment and are confident that we have their strong support for the outcomes we are looking to achieve at these early stages. Going forward as we scale the volume, we will look to strengthen and formalise these engagements with networks as per the recommendation.	Identified

Audit outcome

Compliant

4.10. Changes to Registry Records (Clause 3 of Schedule 11.4)

Code reference

Clause 3 of Schedule 11.4

Code related audit information

The MEP must advise the registry of the registry metering records or any change to the registry metering records for a metering installation for which it is responsible, no later than 10 business days following:

a) the electrical connection of an ICP that is not also an NSP
b) any subsequent change in any matter covered by the metering records.

Audit observation

I checked the event detail report for the period 01/01/17 to 12/12/17 to evaluate the timeliness of registry updates.

Audit commentary

The table below shows that there were some late registry updates. Five of the seven late updates for new connections were due to late nomination by traders. One update was late due to late field notification and one was late due to the need to confirm actual dates.

10,885 of the late updates were due to the population of statistical recertification dates, which all had update durations of 12 days, not 10 days as required by the Code.

Event	Year	Total ICPs	ICPs Notified Within 10 Days	ICPs Notified Greater Than 10 Days	Average Notification Days	Percentage Compliant
New connection	2015	142	116	26		81.7%
	2016	203	187	16	6.8	92.1%
	2017	**145**	**138**	**7**	**5.7**	**95.2%**
Update	2015	3,067	2,113	954		68.9%
	2016	3,927	3,243	684	31	82.6%
	2017	**17,776**	**5,756**	**12,020**	**24.7**	**32.4%**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Jan-17 To: 12-Dec-17	Some records updated on the registry later than 10 business days. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate in this area because there is room for some improvement. The impact on participants, customers or settlement is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Two which were in our control were resolved as soon as identified and addressed appropriately going forward. Many of these are corrections to historic data. We seek advice on how to update these and not appear on this report, as they are updated when resolved. Statistical sampling: Better understanding of dates when updating registry of statistical sampling. Chose the 1st of the month as certification date instead of the date of the registry update. We note the update occurred at 12 days not the required 10 days. Included in the bulk update to reflect the statistical sampling outcomes was a technical error in administration, this has little to no impact.	Completed	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Continue with our reports and influencing contractors in regards to timeframes of information	Ongoing	

4.11. Metering Infrastructure (Clause 10.39(1))

Code reference

Clause 10.39(1)

Code related audit information

The MEP must ensure that for each metering installation:

- *an appropriately designed metering infrastructure is in place*
- *each metering component is compatible with, and will not interfere with any other component in the installation*
- *collectively, all metering components integrate to provide a functioning system*
- *each metering installation is correctly and accurately integrated within the associated metering infrastructure.*

Audit observation

The AMI metering and data collection system is considered "metering infrastructure". The design report and type test report were checked to confirm compliance.

Audit commentary

The type test report, design report and this audit report confirm that the system will operate in a compliant manner.

Audit outcome

Compliant

4.12. Responsibility for Metering at ICP (Clause 11.18B(3))

Code reference

Clause 11.18B(3)

Code related audit information

If an ICP is to be decommissioned, the MEP who is responsible for each metering installation for the ICP must:

- *advise the trader no later than three business days prior to decommissioning that the trader must, as part of the decommissioning, carry out a final interrogation; or*
- *if the MEP is responsible for the interrogation of the metering installation, arrange for a final interrogation to take place.*

Audit observation

I checked whether Trustpower was the MEP at any decommissioned ICPs and whether notification had been provided to relevant traders.

Audit commentary

Trustpower has advised all traders that when arranging to have the status of an ICP changed to "Inactive-ready for decommissioning" (1,6) that they are to carry out the final interrogation.

Audit outcome

Compliant

4.13. Measuring Transformer Burden and Compensation Requirements (Clause 31(4) and (5) of Schedule 10.7)

Code reference

Clause 31(4) and (5) of Schedule 10.7

Code related audit information

The MEP must, before approving the addition of, or change to, the burden or compensation factor of a measuring transformer in a metering installation, consult with the ATH who certified the metering installation.

If the MEP approves the addition of, or change to, the burden or compensation factor, it must ensure the metering installation is recertified by an ATH before the addition or change becomes effective.

Audit observation

I asked Trustpower whether they had approved any burden changes during the audit period.

Audit commentary

There have not been any examples of this occurring during the audit period.

Audit outcome

Compliant

4.14. Changes to Software ROM or Firmware (Clause 39(1) and 39(2) of Schedule 10.7)

Code reference

Clause 39(1) and 39(2) of Schedule 10.7

Code related audit information

The MEP must, if it proposes to change the software, ROM or firmware of a data storage device installed in a metering installation, ensure that, before the change is carried out, an approved test laboratory:

- *tests and confirms that the integrity of the measurement and logging of the data storage device would be unaffected*
- *documents the methodology and conditions necessary to implement the change*
- *advises the ATH that certified the metering installation of any change that might affect the accuracy of the data storage device.*

The MEP must, when implementing a change to the software, ROM or firmware of a data storage device installed in a metering installation:

- *carry out the change in accordance with the methodology and conditions identified by the approved test laboratory under clause 39(1)(b)*
- *keep a list of the data storage devices that were changed*
- *update the metering records for each installation affected with the details of the change and the methodology used.*

Audit observation

I checked if there any examples of changes in accordance with these clauses.

Audit commentary

There were some firmware changes conducted by the Landis + Gyr Class A ATH. The firmware version is recorded for all relevant installations. I checked this was present in the data.

Audit outcome

Compliant

4.15. Temporary Energisation (Clause 10.28(6))

Code reference

Clause 10.28(6)

Code related audit information

An MEP must not request the temporary energisation of a new POC unless authorised to do so by the reconciliation participant responsible for that POC and has an arrangement with that reconciliation participant to provide metering services.

Audit observation

I checked examples of insufficient load certification to determine whether there were any examples of temporary energisation for the purposes of testing.

Audit commentary

I checked examples of insufficient load certification to determine whether there were any examples of temporary energisation for the purposes of testing. None were identified.

Audit outcome

Not applicable

5. METERING RECORDS

5.1. Accurate and Complete Records (Clause 4(1)(a) and (b) of Schedule 10.6, and Table 1, Schedule 11.4)

Code reference

Clause 4(1)(a) and (b) of Schedule 10.6, and Table 1, Schedule 11.4

Code related audit information

The MEP must, for each metering installation for which it is responsible, keep accurate and complete records of the attributes set out in Table 1 of Schedule 11.4. These include:

- *a) the certification expiry date of each metering component in the metering installation*
- *b) all equipment used in relation to the metering installation, including serial numbers and details of the equipment's manufacturer*
- *c) the manufacturer's or (if different) most recent test certificate for each metering component in the metering installation*
- *d) the metering installation category and any metering installations certified at a lower category*
- *e) all certification reports and calibration reports showing dates tested, tests carried out, and test results for all metering components in the metering installation*
- *f) the contractor who installed each metering component in the metering installation*
- *g) the certification sticker, or equivalent details, for each metering component that is certified under Schedule 10.8 in the metering installation:*
- *h) any variations or use of the 'alternate certification' process*
- *i) seal identification information*
- *j) any applicable compensation factors*
- *k) the owner of each metering component within the metering installation*
- *l) any applications installed within each metering component*
- *m) the signed inspection report confirming that the metering installation complies with the requirements of Part 10.*

Audit observation

I checked certification records for 25 metering installations to evaluate compliance with this clause.

Audit commentary

Some issues were identified with the content of certification reports. They are listed in the table below.

Quantity	Issue
1	Incorrect metering category
3	Incorrect ATH
18	Meter certification date and certifying ATH not recorded
5	Meter certification expiry date not recorded
5	HHR/NHH, Maximum interrogation cycle and services access interface not recorded
8	CT expiry date earlier than installation expiry date
1	Incorrect installation certification expiry date

The inspection process identified the following incorrect data fields.

Quantity	Issue
22	TARIFF ERROR – meter configuration discrepancy
10	CERT EXPIRY – Installation Expiry date incorrectly recorded
13	COMPONENTS – missing from records
24	RELAY DETAILS – incorrect details in records

I recommend the Intellibub job record is titled "Metering Installation Certification Report" to clarify its purpose.

Recommendation	Description	Audited party comment	Remedial action
Clause 4(1)(a) and (b) of Schedule 10.6	Re-title AMI forms to ensure clarity.	*Scheduled for next release.* *By 01/03/2018*	Identified

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.1 With: Clause 4(1) of Schedule 10.6 From: 01-Jan-17 To: 12-Dec-17	Some inaccurate certification records. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate because there is room for improvement. There is a minor impact on other participants; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Rectify known data issues Intellihub Certification form has already been modified since first AMI Meters deployed and future releases are scheduled to ensure continuous improvements.	01/03/2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	

Improve, documentation, reporting and training of processing staff. Will review the list of non-compliances and where an opportunity exists to introduce a new control, and the exception is not already identified or being managed, we will introduce new reporting. For example; meter certification details and certifying test house are held in our Asset management system not on the site certification form. We don't believe further controls are required in this area.	Ongoing	

5.2. Inspection Reports (Clause 4(2) of Schedule 10.6)

Code reference

Clause 4(2) of Schedule 10.6

Code related audit information

The MEP must, within 10 business days of receiving a request from a participant for a signed inspection report prepared under clause 44 of Schedule 10.7, make a copy of the report available to the participant.

Audit observation

I asked Trustpower whether any requests had been made for copies of inspection reports.

Audit commentary

Trustpower has not been requested to supply any inspection reports, but these are available and can be supplied on request.

Audit outcome

Compliant

5.3. Retention of Metering Records (Clause 4(3) of Schedule 10.6)

Code reference

Clause 4(3) of Schedule 10.6

Code related audit information

The MEP must keep metering installation records for 48 months after any metering component is removed, or any metering installation is decommissioned.

Audit observation

I checked a directory of metering records from 2013 to confirm compliance.

Audit commentary

Trustpower keeps records indefinitely. I confirmed this by checking some records from 2013.

Audit outcome

Compliant

5.4. Provision of Records to ATH (Clause 6 Schedule 10.6)

Code reference

Clause 6 Schedule 10.6

Code related audit information

If the MEP contracts with an ATH to recertify a metering installation and the ATH did not previously certify the metering installation, the MEP must provide the ATH with a copy of all relevant metering records not later than 10 business days after the contract comes into effect.

Audit observation

Trustpower will comply with this requirement as it arises. There are no current examples where this has occurred.

Audit commentary

Trustpower will comply with this requirement as it arises. There are no current examples where this has occurred.

Audit outcome

Not applicable

6. MAINTENANCE OF REGISTRY INFORMATION

6.1. MEP Response to Switch Notification (Clause 1(1) of Schedule 11.4)

Code reference

Clause 1(1) of Schedule 11.4

Code related audit information

Within 10 business days of being advised by the registry that it is the gaining MEP for the metering installation for the ICP, the MEP must enter into an arrangement with the trader and advise the registry it accepts responsibility for the ICP and of the proposed date on which it will assume responsibility.

Audit observation

I checked the event detail report for the period 01/01/17 to 12/12/17 to confirm whether all responses were within 10 business days.

Audit commentary

All responses were within 10 business days.

Audit outcome

Compliant

6.2. Provision of Registry Information (Clause 7 (1), (2) and (3) of Schedule 11.4)

Code reference

Clause 7 (1), (2) and (3) of Schedule 11.4

Code related audit information

The MEP must provide the information indicated as being 'required' in Table 1 of clause 7 of Schedule 11.4 to the registry, in the prescribed form for each metering installation for which the MEP is responsible.

From 1 April 2015, a MEP is required to ensure that all the registry metering records of its category 1 metering installations are complete, accurate, not misleading or deceptive, and not likely to mislead or deceive.

The information the MEP provides to the registry must derive from the metering equipment provider's records or the metering records contained within the current trader's system.

Audit observation

I checked the list file for 100% of records to identify discrepancies.

Audit commentary

Analysis of the list file and an event detail report for all Trustpower ICPs found a number of issues. The table below shows the issues found, and has a comparison to the previous audit results.

Dec 2017 Qty of ICPs	Aug 2016 Qty of ICPs	Feb 2016 Qty of ICPs	Issue	Resolved
46	79	195	No control device information on the registry.	In progress
0	1	7	Blank metering records on the registry.	N/A
0	0	2	Day without night.	N/A
1	1	1	Night without day.	Yes
1	3	28	UN12 - these are metered streetlights. They are likely to be NC12 but this needs to be confirmed.	In progress
1680	-	-	UN only with a relay installed	In progress
0	0	1	HHR profile with NHH meter.	N/A
1	1	1	Category 2 with no CTs on the registry. This ICP now has a different MEP	Yes
957	4,873	5,397	Certification or expiry dates incorrect	In progress
22	1	0	Compensation factor of 3 certified after 29/08/13.	In progress
2	2	0	Category 1 with CTs.	Yes
255	222	Not checked	Installations without 7304 register.	In progress
18	Not checked	Not checked	CN only on residential ANZSIC code	9 resolved

Other data related issues not related to the MEP function were found, as follows.

Dec 2017 Qty of ICPs	Aug 2016 Qty of ICPs	Feb 2016 Qty of ICPs	Issue	Resolved
38	26	59	ICP indicates solar generation on the site but there is no injection channel recorded on the registry. I recommend that Trustpower liaise with the Retailer to determine if an import export meter needs to be installed.	In progress
165	0	0	Profile requiring certified control device where control device is not certified (excl AMI).	In progress

I investigated the matter of ICPs with distributed generation indicated on the registry but where an import/export meter is not installed. In most cases Trustpower had not been requested to change the meter, or the job was in progress. There are two ICPs where the Distributor has approved the installation of solar generation but the customer is now refusing to have an import/export meter installed. This area has been problematic for some time and the issues are increasing as more solar installations occur. I recommend the Authority implements a Code change in order to prevent further issues. The Code needs to require the Distributer's approval process to ensure a Retailer has agreed to purchase the generation and to ensure import/export metering is installed before approval is granted.

Issue	Description	Remedial action
New clause recommended	Distributed generation installed without retailer approval and without import/export metering	The Code needs to require the Distributer's approval process to ensure a Retailer has agreed to purchase the generation and to ensure import/export metering is installed before approval is granted.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-Jan-17 To: 12-Dec-17	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as strong in this area. There are still a small number of areas where improvement can be made. Very few of the discrepancies have an impact on participants, customers or settlement. The only relevant ones in this regard are tariff related and there were only a small number. The audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
We agree with the auditors findings and will continue to prioritise and rectify identified issues. However we note and agree with the auditor that very few of these discrepancies have an impact and that Trustpower has continued to make good progress in bringing overall numbers down.	31/03/2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Improve reporting to identify those that have an impact. Where appropriate, attempt to duplicate the control reports that were run by the auditor, and include these as part of our own checks	Ongoing	

6.3. Correction of Errors in Registry (Clause 6 of Schedule 11.4)

Code reference

Clause 6 of Schedule 11.4

Code related audit information

By 0900 hours on the 13th business day of each reconciliation period, the MEP must obtain from the registry:

- *a list of ICPs for the metering installations the MEP is responsible for*
- *the registry metering records for each ICP on that list.*

No later than five business days following collection of data from the registry, the MEP must compare the information obtained from the registry with the MEP's own records.

Within five business days of becoming aware of any discrepancy between the MEP's records and the information obtained from the registry, the MEP must correct the records that are in error and advise the registry of any necessary changes to the registry metering records.

Audit observation

I conducted a walkthrough of the validation processes to confirm compliance. I checked all records in the event detail report to confirm whether the timeliness requirements were being met.

Audit commentary

Trustpower runs a discrepancy report on a monthly basis; corrections are made within five days of confirming an error is present. This sometimes involves a site visit.

Audit outcome

Compliant

6.4. Cancellation of Certification (Clause 20 of Schedule 10.7)

Code reference

Clause 20 of Schedule 10.7

Code related audit information

The certification of a metering installation is automatically cancelled on the date on which one of the following events takes place:

a) the metering installation is modified otherwise than under sub clause 19(3) or 19(6)
b) the metering installation is classed as outside the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, defective or not fit for purpose under this Part or any audit
c) an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation
d) the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested
e) an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part

f) if the metering installation has been determined to be a lower category under clause 6 and the maximum current conveyed through the metering installation at any time exceeds the current rating of its metering installation category as set out in Table 1 of Schedule 10.1

g) the metering installation is certified under clause 14 and sufficient load is available for full certification testing and has not been retested under clause 14(4)

h) a control device in the metering installation certification is, and remains for a period of at least 10 business days, bridged out under clause 35(1)

i) the metering equipment provider responsible for the metering installation is advised by an ATH under clause 48(6)(b) that a seal has been removed or broken and the accuracy and continued integrity of the metering installation has been affected.

A metering equipment provider must, within 10 business days of becoming aware that one of the events above has occurred in relation to a metering installation for which it is responsible, update the metering installation's certification expiry date in the registry.

Audit observation

I checked for examples of all of the points listed above, and checked whether certification had been cancelled, and whether the registry had been updated within 10 business days.

Audit commentary

I checked all of the points mentioned above and found two issues resulting in cancellation of certification, as follows:

1. 57 Category 2 inspections were not conducted or were conducted outside the allowable window.
2. 22 three phase installations with a single phase meter were recertified by statistical sampling. A single phase meter on a three phase installation is not fit for purpose.

The certification expiry date was not updated within 10 business days as required by the Code.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.4 With: Clause 6 of Schedule 11.4 From: 01-Jan-17 To: 12-Dec-17	Certification cancelled and registry not updated within 10 business days for 57 ICPs without inspections within the allowable window and 22 installations with a single phase meter on a three phase installation. Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as moderate in this area because the Category 2 installations were identified and it was expected that the AMI deployment would occur prior to the need for inspections. The issues found can all potentially have a minor impact on other participants and on settlement. The audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status

Cancel Certification where compliance is now invalid Breach was only identified as part of the Audit process and these were completed on discovery.	Completed	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Ensure Reporting identifies when inspections are not completed within required window. Update process documentation to change Certification if the above occurs. Ensure Staff are aware of above.	01/03/2018	

6.5. Registry Metering Records (Clause 11.8A)

Code reference

Clause 11.8A

Code related audit information

The MEP must provide the registry with the required metering information for each metering installation the MEP is responsible for, and update the registry metering records in accordance with Schedule 11.4.

Audit observation

This clause refers to schedule 11.4 which is discussed in Section 6.2, apart from the requirement to provide information in the "prescribed form". I checked for examples of Trustpower not using the prescribed form.

Audit commentary

This clause refers to schedule 11.4 which is discussed in Section 6.2, apart from the requirement to provide information in the "prescribed form". I checked for examples of Trustpower not using the prescribed form and did not find any exceptions.

Audit outcome

Compliant

7. CERTIFICATION OF METERING INSTALLATIONS

7.1. Certification and Maintenance (Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7)

Code reference

Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7

Code related audit information

The MEP must obtain and maintain certification for all installations and metering components for which it is responsible. The MEP must ensure it:

- *performs regular maintenance, battery replacement, repair/replacement of components of the metering installations*
- *updates the metering records at the time of the maintenance*
- *has a recertification programme that will ensure that all installations are recertified prior to expiry.*

Audit observation

I conducted the following checks to identify metering installations with expired, cancelled or late certification:

- the registry PR255 report was checked to identify ICPs with expired certification
- the new connections process was checked by using the event detail report, PR255 and the list file to identify ICPs where the certification was not conducted within five business days of energisation
- I checked ICPs where certification was cancelled to ensure the registry was updated accordingly.

Audit commentary

The registry shows 801 ICPs have expired certification. The table below gives a breakdown of these.

Quantity	Description
578	Interim certified without another MEP nominated
128	Interim certified with another MEP nominated
57	Cancelled certification due to Category 2 inspections not completed within the window
1	Category 3 fully certified expired
37	Category 1 fully certified expired
801	**Total**

Trustpower has contacted all relevant retailers for the uncertified sites to obtain customer information. AMI deployment will then occur to achieve certification. Four retailers have not yet provided contact details or confirmed whether they wish for deployment to proceed. The results of these discussions may result in more ICPs having alternative MEPs nominated.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.1 With: Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7 From: 01-Apr-15 To: 31-Dec-17	Certification expired for 801 ICPs. Potential impact: High Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	I have recorded the controls as moderate in this area because certification has been expired for a number of years for some ICPs and because some of the expired installations were fully certified at one point. The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification, therefore the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
Continue to actively reduce the number of uncertified sites.	On Going	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Continue Compliance programs	On Going	

7.2. Certification Tests (Clause 10.38(b) and clause 9 of Schedule 10.6)

Code reference

Clause 10.38(b) and clause 9 of Schedule 10.6

Code related audit information

For each metering component and metering installation an MEP is responsible for, the MEP must ensure that:

- *an ATH performs the appropriate certification and recertification tests*
- *the ATH has the appropriate scope of approval to certify and recertify the metering installation.*

Audit observation

I checked the certification records for 25 metering installations to confirm compliance. ATHs have shown that their processes include all tests and the reports confirm tests are completed.

Audit commentary

Most certification activities have been conducted by Trustpower with some being conducted by Accucal, VEMS and Delta ATHs. The most recent audit reports for all ATHs confirm the appropriate testing is conducted.

Audit outcome

Compliant

7.3. Active and Reactive Capability (Clause 10.37(1) and 10.37(2)(a))

Code reference

Clause 10.37(1) and 10.37(2)(a)

Code related audit information

For any category 2 or higher half-hour metering installation that is certified after 29 August 2013, the MEP must ensure that the installation has active and reactive measuring and recording capability.

Consumption only installations that is a category 3 metering installation or above must measure and separately record:

a) import active energy
b) import reactive energy
c) export reactive energy.

Consumption only installations that are a category 2 metering installation must measure and separately record import active energy.

All other installations must measure and separately record:

a) import active energy
b) export active energy
c) import reactive energy
d) export reactive energy.

All grid connected POCs with metering installations which are certified after 29 August 2013 should measure and separately record:

a) import active energy
b) export active energy
c) import reactive energy
d) export reactive energy.

Audit observation

All relevant metering is compliant with this clause.

Audit commentary

All relevant metering is compliant with this clause.

Audit outcome

Compliant

7.4. Local Service Metering (Clause 10.37(2)(b))

Code reference

Clause 10.37(2)(b)

Code related audit information

The accuracy of each local service metering installation in grid substations must be within the tolerances set out in Table 1 of Schedule 10.1.

Audit observation

This clause relates to Transpower as an MEP.

Audit commentary

This clause relates to Transpower as an MEP.

Audit outcome

Not applicable

7.5. Measuring Transformer Burden (Clause 30(1) and 31(2) of Schedule 10.7)

Code reference

Clause 30(1) and 31(2) of Schedule 10.7

Code related audit information

The MEP must not permit a measuring transformer to be connected to equipment used for a purpose other than metering, unless it is not practical for the equipment to have a separate measuring transformer.

The MEP must ensure that a change to, or addition of, a measuring transformer burden or a compensation factor related to a measuring transformer is carried out only by:

a) the ATH who most recently certified the metering installation
b) for a POC to the grid, by a suitably qualified person approved by both the MEP and the ATH who most recently certified the metering installation.

Audit observation

I asked Trustpower if there were any examples of burden changes or the addition of non-metering equipment being connected to metering CTs.

Audit commentary

There are no examples of burden changes having occurred.

Audit outcome

Not applicable

7.6. Certification as a Lower Category (Clauses 6(1)(b) and (d), and 6(2)(b) of Schedule 10.7)

Code reference

Clauses 6(1)(b) and (d), and 6(2)(b) of Schedule 10.7

Code related audit information

A category 2 or higher metering installation may be certified by an ATH at a lower category than would be indicated solely on the primary rating of the current if the MEP, based on historical metering data, reasonably believes that:

- *the maximum current will at all times during the intended certification period be lower than the current setting of the protection device for the category for which the metering installation is certified, or is required to be certified by the Code; or*
- *the metering installation will use less than 0.5 GWh in any 12 month period.*

If a metering installation is categorised under clause 6(1)(b), the ATH may, if it considers appropriate, and, at the MEP's request, determine the metering installation's category according to the metering installation's expected maximum current.

If a meter is certified in this manner:

- *the MEP must, each month, obtain a report from the participant interrogating the metering installation, which details the maximum current from raw meter data from the metering installation by either calculation from the kVA by trading period, if available, or from a maximum current indicator if fitted in the metering installation conveyed through the point of connection for the prior month; and*
- *if the MEP does not receive a report, or the report demonstrates that the maximum current conveyed through the POC was higher than permitted for the metering installation category it is certified for, then the certification for the metering installation is automatically cancelled.*

Audit observation

I checked all ICPs for examples where the CT ratio was above the threshold to confirm that protection was appropriate or that monitoring was in place.

Audit commentary

19 metering installations have CT ratios above 500/5. I checked the certification records for all 19 installations and I confirm appropriate protection is in place to limit the maximum current to less than 500A.

Audit outcome

Compliant

7.7. Insufficient Load for Certification Tests (Clauses 14(3) and (4) of Schedule 10.7)

Code reference

Clauses 14(3) and (4) of Schedule 10.7

Code related audit information

If there is insufficient electricity conveyed through a POC to allow the ATH to complete a prevailing load test for a metering installation that is being certified as a half hour meter and the ATH certifies the metering installation the MEP must:

- *obtain and monitor raw meter data from the metering installation at least once each calendar month to determine if load during the month is sufficient for a prevailing load test to be completed:*
- *if there is sufficient load, arrange for an ATH to complete the tests (within 20 business days).*

Audit observation

I checked if there were any examples of Insufficient load certifications

Audit commentary

Trustpower does not allow certification in accordance with this clause. Load banks are required to be used to increase the load to conduct testing.

Audit outcome

Not applicable

7.8. Insufficient Load for Certification – Cancellation of Certification (Clause 14(6) of Schedule 10.7)

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

If the tests conducted under clause 14(4) of Schedule 10.7 demonstrate that the metering installation is not within the relevant maximum permitted error:

- *the metering installation certification is automatically revoked:*
- *the certifying ATH must advise the MEP of the cancellation within 1 business day:*
- *the MEP must follow the procedure for handling faulty metering installations (clause 10.43 - 10.48).*

Audit observation

Trustpower does not allow certification in accordance with this clause. Load banks are required to be used to increase the load to conduct testing.

Audit commentary

Trustpower does not allow certification in accordance with this clause. Load banks are required to be used to increase the load to conduct testing.

Audit outcome

Not applicable

7.9. Alternative Certification Requirements (Clauses 32(2), (3) and (4) of Schedule 10.7)

Code reference

Clauses 32(2), (3) and (4) of Schedule 10.7

Code related audit information

If an ATH cannot comply with the requirements to certify a metering installation due to measuring transformer access issues, and therefore certifies the metering installation in accordance with clause 32(1) of Schedule 10.7, the MEP must:

- *advise the market administrator, by no later than 10 business days after the date of certification of the metering installation, of the details in clause 32(2)(a) of Schedule 10.7*
- *respond, within 5 business days, to any requests from the market administrator for additional information*
- *ensure that all of the details are recorded in the metering installation certification report*
- *take all steps to ensure that the metering installation is certified before the certification expiry date.*

If the market administrator determines the ATH could have obtained access the metering installation is deemed to be defective and the MEP must follow the process of handling faults metering installations in clauses 10.43 to 10.48.

Audit observation

I checked the registry records to confirm whether alternative certification had been applied.

Audit commentary

Alternative certification has not been applied to any metering installations.

Audit outcome

Not applicable

7.10. Timekeeping Requirements (Clause 23 of Schedule 10.7)

Code reference

Clause 23 of Schedule 10.7

Code related audit information

If a time keeping device that is not remotely monitored and corrected controls the switching of a meter register in a metering installation, the MEP must ensure that the time keeping device:

a) has a time keeping error of not greater than an average of 2 seconds per day over a period of 12 months
b) is monitored and corrected at least once every 12 months.

Audit observation

I asked Trustpower whether there were any metering installations with timeclocks.

Audit commentary

Trustpower confirmed there are no metering installations with timeclocks.

Audit outcome

Not applicable

7.11. Control Device Bridged Out (Clause 35 of Schedule 10.7)

Code reference

Clause 35 of Schedule 10.7

Code related audit information

The participant must, within 10 business days of bridging out a control device or becoming aware of a control device being bridged out, notify the following parties:

- *the relevant reconciliation participant*
- *the relevant metering equipment provider.*

If the control device is used for reconciliation, the metering installation is considered defective in accordance with 10.43.

Audit observation

I checked the process for the management of bridged control devices and I checked whether any notifications were required to other parties.

Audit commentary

Trustpower has a process for dealing with control devices which have been bridged out, which is that they are immediately resolved. I checked one example at ICP 0000630260WPF9C where the relay was found to be bridged during the inspection process. The issue was found and resolved on 31/05/17 but the relevant reconciliation participant was not notified until 20/06/17, which does not achieve compliance with the 10 day requirement. This was the only example identified.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.11 With: Clause 35 of Schedule 10.7 From: 31-May-17 To: 20-Jun-17	Reconciliation participant not notified of bridged control device within 10 business days. Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because only one example was found. The impact on settlement and participants is minor; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Due to Queens birthday weekend we missed obligation by 1 or 2 working days - None	Completed	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
None – This is an exception and are confident we have the controls in place to comply.	Completed	

7.12. Control Device Reliability Requirements (Clause 34(5) of Schedule 10.7)

Code reference

Clause 34(5) of Schedule 10.7

Code related audit information

If the MEP is advised by an ATH that the likelihood of a control device not receiving signals would affect the accuracy or completeness of the information for the purposes of Part 15, the MEP must, within three business days inform the following parties of the ATH's determination (including all relevant details):

a) the reconciliation participant for the POC for the metering installation
b) the control signal provider.

Audit observation

I checked the steps Trustpower had taken to identify regions with signal propagation issues.

Audit commentary

Trustpower has not been advised of any areas by the ATHs.

Audit outcome

Compliant

7.13. Statistical Sampling (Clauses 16(1) and (5) of Schedule 10.7)

Code reference

Clauses 16(1) and (5) of Schedule 10.7

Code related audit information

The MEP may arrange for an ATH to recertify a group of category 1 metering installations for which the MEP is responsible using a statistical sampling process.

The MEP must update the registry in accordance with Part 11 on the advice of an ATH as to whether the group meets the recertification requirements.

Audit observation

I checked whether statistical sampling had occurred during the audit period.

Audit commentary

Trustpower has conducted any statistical sampling during the audit period. The process and results are compliant.

Audit outcome

Compliant

7.14. Compensation Factors (Clause 24(3) of Schedule 10.7)

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

If a compensation factor must be applied to a metering installation that is an NSP, the MEP must advise the reconciliation participant responsible for the metering installation of the compensation factor within 10 days of certification of the installation.

In all other cases the MEP must advise the registry of the compensation factor.

Audit observation

I checked the records for 15 Category 2 metering installations to confirm that compensation factors were correctly recorded on the registry.

Audit commentary

Compensation factors have been updated accurately on the registry. I confirmed this by checking the records for 15 ICPs.

Audit outcome

Compliant

7.15. Metering Installations Incorporating a Meter (Clause 26(1) of Schedule 10.7)

Code reference

Clause 26(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each meter in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for 30 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 30 installations, however as recorded in Section 5.1, some information is unclear. The meter certification and expiry dates are contained in Maximo but are not always recorded on the certification reports. I recommend these dates are included on all certification reports. The Trustpower ATH certifies non-AMI meters but AMI meters are purchased pre-certified from Landis + Gyr. The certifying ATH is not clear on certification reports or in Maximo. I recommend clarity is improved for this information.

Audit outcome

Compliant

Recommendation	Description	Audited party comment	Remedial action
Clause 26(1) of Schedule 10.7	Ensure meter certification date, expiry date and certifying ATH is clear in certification reports.	Confirmed data is being captured Review reporting requirements and modify reports if required.	Identified

7.16. Metering Installations Incorporating a Measuring Transformer (Clause 28(1) of Schedule 10.7)

Code reference

Clause 28(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each measuring transformer in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for 15 metering installations to confirm compliance.

Audit commentary

Measuring transformers were certified for all 15 installations by the manufacturer, TWS.

Audit outcome

Compliant

7.17. Metering Installations Incorporating a Data Storage Device (Clause 36(1) of Schedule 10.7)

Code reference

Clause 36(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each data storage device in a metering installation it is responsible for is certified.

Audit observation

I checked the certification records for eight metering installations to confirm compliance.

Audit commentary

The eight certification records that I checked confirmed that the ATHs that data storage devices are being correctly certified. The recommendation in Section 7.15 is also relevant to this clause, where better clarity is required with regard to certification date, expiry date and certifying ATH.

Audit outcome

Compliant

7.18. Notification of ATH Approval (Clause 7 (3) Schedule 10.3)

Code reference

Clause 7 (3) Schedule 10.3

Code related audit information

If the MEP is notified by the Authority that an ATH's approval has expired, been cancelled or been revised, the MEP must treat all metering installations certified by the ATH during the period where the ATH was not approved to perform the activities as being defective and follow the procedures set out in 10.43 to 10.48.

Audit observation

I checked the ATH register to confirm compliance.

Audit commentary

All relevant ATHs have appropriate approval.

Audit outcome

Compliant

7.19. Interim Certification (Clause 18 of Schedule 10.7)

Code reference

Clause 18 of Schedule 10.7

Code related audit information

The MEP must ensure that each interim certified metering installation on 28 August 2013 is certified by no later than 1 April 2015.

Audit observation

I checked the registry records (PR255) to identify any ICPs with interim certification recorded.

Audit commentary

There are 706 previously interim certified installations with expired certification.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.19 With: Clause 18 of Schedule 10.7 From: 01-Apr-15 To: 12-Dec-17	706 ICPs with expired interim certification. Potential impact: High Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	I have recorded the controls as moderate in this area because certification has been expired for a number of years for these ICPs. The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification, therefore the audit risk rating is medium.

Actions taken to resolve the issue	Completion date	Remedial action status
Continue to actively reduce the number of uncertified sites.	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Continue Compliance program	Ongoing	

8. INSPECTION OF METERING INSTALLATIONS

8.1. Category 1 Inspections (Clause 45 of Schedule 10.7)

Code reference

Clause 45 of Schedule 10.7

Code related audit information

The MEP must ensure that category 1 metering installations (other than interim certified metering installations):

- *have been inspected by an ATH within 120 months from the date of the metering installation's most recent certification or*
- *for each 12 month period, commencing 1 January and ending 31 December, a sample of the category 1 metering installations selected under clause 45(2) of Schedule 10.7 has been inspected by an ATH.*

Before a sample inspection process can be carried out, the MEP must submit a documented process for selecting the sample to the Electricity Authority, at least two months prior to first date on which the inspections are to be carried out, for approval (and promptly provide any other information the Authority may request).

The MEP must not inspect a sample unless the Authority has approved the documented process.

The MEP must, for each inspection conducted under clause 45(1)(b), keep records detailing:

- *any defects identified that have affected the accuracy or integrity of the raw meter data recorded by the metering installation*
- *any discrepancies identified under clause 44(5)(b)*
- *relevant characteristics, sufficient to enable reporting of correlations or relationships between inaccuracy and characteristics*
- *the procedure used, and the lists generated, to select the sample under clause 45(2).*

The MEP must, if it believes a metering installation that has been inspected is or could be inaccurate, defective or not fit for purpose:

- *comply with clause 10.43*
- *arrange for an ATH to recertify the metering installation if the metering is found to be inaccurate under Table 1 of Schedule 10.1, or defective or not fit for purpose.*

The MEP must by 1 April in each year, provide the Authority with a report that states whether the MEP has, for the previous 1 January to 31 December period, arranged for an ATH to inspect each category 1 metering installation for which it is responsible under clause 45(1)(a) or 45(1)(b).

This report must include the matters specified in clauses 45(8)(a) and (b).

If the MEP is advised by the Authority that the tests do not meet the requirements under clause 45(9) of Schedule 10.7, the MEP must select the additional sample under that clause, carry out the required inspections, and report to the Authority, within 40 business days of being advised by the Authority.

Audit observation

I checked whether Trustpower had conducted sample inspections for Category 1 metering installations.

Audit commentary

I checked the inspection process and the associated reporting, which confirms compliance with the Code.

Audit outcome

Compliant

8.2. Category 2 to 5 Inspections (Clause 46(1) of Schedule 10.7)

Code reference

Clause 46(1) of Schedule 10.7

Code related audit information

The MEP must ensure that each category 2 or higher metering installation is inspected by an ATH at least once within the applicable period. The applicable period begins from the date of the metering installation's most recent certification and extends to:

- *120 months for Category 2*
- *60 months for Category 3*
- *30 months for Category 4*
- *18 months for Category 5.*

Audit observation

I checked the registry information to confirm which ICPs were due for inspection and I then checked the inspection reports for all relevant ICPs.

Audit commentary

All Category 3, 4 and 5 inspections were conducted within the allowable window. 57 Category 2 inspections were not conducted within the allowable window. 11 of the 57 were conducted earlier than the allowable window.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 8.2 With: Clause 46(1) of schedule 10.7 From: 01-Jan-17 To: 12-Dec-17	57 Category 2 inspections not conducted within the allowable window of +/- 6 months Potential impact: Medium Actual impact: Unknown Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because there is room for improvement. The impact on settlement and participants is unknown. These installations will be raised in the priority order for AMI deployment, which will minimise the risk; therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Updated registry to reflect that the sites are uncertified	Completed	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
Add a 6 month window to certifications dates when establishing the program of work reporting so that our administrator and contractors are fully aware of time frames in which this work is required to be carried out. Improve management of Audits – Continue inspection program and recertify sites now deemed uncertified	Completed	

8.3. Inspection Reports (Clause 44(5) of Schedule 10.7)

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

The MEP must, within 20 business days of receiving an inspection report from an ATH:

- *undertake a comparison of the information received with its own records*
- *investigate and correct any discrepancies*
- *update the metering records in the registry.*

Audit observation

I checked the inspection process and the results to confirm compliance.

Audit commentary

The inspection report information was checked against Trustpower's records within the required timeframe.

Audit outcome

Compliant

8.4. Broken or removed seals (Clause 48(4) and (5) of Schedule 10.7)

Code reference

Clause 48(4) and (5) of Schedule 10.7

Code related audit information

If the MEP is advised of a broken or removed seal it must use reasonable endeavours to determine

a) who removed or broke the seal
b) the reason for the removal or breakage

and arrange for an ATH to carry out an inspection of the removal or breakage and determine any work required to remedy the removal or breakage.

The MEP must make the above arrangements within

a) three business days, if the metering installation is category 3 or higher
b) 10 business days if the metering installation is category 2
c) 20 business days if the metering installation is category 1.

Audit observation

I checked all examples of notification of missing seals, which were all as a result of inspection processes or notification by field technicians.

Audit commentary

There were 15 examples and in all cases an investigation was conducted on-site and the components were re-sealed. Some examples resulted in faulty metering investigations. Further detail is provided in Section 9.

Audit outcome

Compliant

9. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

9.1. Investigation of Faulty Metering Installations (Clause 10.43(4) and (5))

Code reference

Clause 10.43(4) and (5)

Code related audit information

If the MEP is advised or becomes aware that a metering installation may be inaccurate, defective, or not fit for purpose, it must investigate and report on the situation to all affected participants as soon as reasonably practicable after becoming aware of the information, but no later than;

a) 20 business days for Category 1,
b) 10 business days for Category 2 and
c) 5 business days for Category 3 or higher.

Audit observation

I checked the results of the inspection process, where there were three examples of theft, two of damaged components and two of incorrect wiring leading to load not being recorded.

Audit commentary

All installations were Category 1 and the investigations were conducted immediately, therefore the 20 business day requirement is met.

Audit outcome

Compliant

9.2. Testing of Faulty Metering Installations (Clause 10.44)

Code reference

Clause 10.44

Code related audit information

If a report prepared under clause 10.43(4)(c) demonstrates that a metering installation is inaccurate, defective, or not fit for purpose, the MEP must arrange for an ATH to test the metering installation and provide a 'statement of situation'.

If the MEP is advised by a participant under clause 10.44(2)(a) that the participant disagrees with the report that demonstrates that the metering installation is accurate, not defective and fit for purpose, the MEP must arrange for an ATH to:

a) test the metering installation
b) provide the MEP with a statement of situation within five business days of:
c) becoming aware that the metering installation may be inaccurate, defective or not fit for purpose; or
d) reaching an agreement with the participant.

The MEP is responsible for ensuring the ATH carries out testing as soon as practicable and provides a statement of situation.

Audit observation

I checked the results of the inspection process, where there were three examples of theft, two of damaged components and two of incorrect wiring leading to load not being recorded.

Audit commentary

In all cases, appropriate testing and reporting was conducted immediately. The inspection forms and revenue assurance forms contain sufficient information to report to relevant parties without the need for a statement of situation.

Audit outcome

Compliant

9.3. Statement of Situation (Clause10.46(2))

Code reference

Clause10.46(2)

Code related audit information

Within three business days of receiving the statement from the ATH, the MEP must provide copies of the statement to:

- *the relevant affected participants*
- *the market administrator (for all category 3 and above metering installations and any category 1 and category 2 metering installations) on request.*

Audit observation

There were no examples of statements of situation being required.

Audit commentary

There were no examples of statements of situation being required.

Audit outcome

Not applicable

10. ACCESS TO AND PROVISION OF RAW METER DATA AND METERING INSTALLATIONS

10.1. Access to Raw Meter Data (Clause 1 of Schedule 10.6)

Code reference

Clause 1 of Schedule 10.6

Code related audit information

The MEP must give authorised parties access to raw meter data within 10 business days of receiving the authorised party making a request.

The MEP must only give access to raw meter data to a trader or person, if that trader or person has entered into a contract to collect, obtain, and use the raw meter data with the end customer.

The MEP must provide the following when giving a party access to information:

a) the raw meter data; or
b) the means (codes, keys etc.) to enable the party to access the raw meter data.

The MEP must, when providing raw meter data or access to an authorised person use appropriate procedures to ensure that:

- *the raw meter data is received only by that authorised person or a contractor to the person*
- *the security of the raw meter data and the metering installation is maintained*
- *access to the raw meter data is limited to only the specific raw meter data under clause 1(7)(c) of Schedule 10.6.*

Audit observation

I checked whether any parties had requested access to raw meter data.

Audit commentary

No requests have been received, but Trustpower advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.2. Restrictions on Use of Raw Meter Data (Clause 2 of Schedule 10.6)

Code reference

Clause 2 of Schedule 10.6

Code related audit information

The MEP must not give an authorised person access to raw meter data if to do so would breach clause 2(1) of Schedule 10.6.

Audit observation

I checked whether any parties had requested access to raw meter data.

Audit commentary

No requests have been received, but Trustpower advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.3. Access to Metering Installations (Clause 3(1), (3) and (4) of Schedule 10.6)

Code reference

Clause 3(1), (3) and (4) of Schedule 10.6

Code related audit information

The MEP must within 10 business days of receiving a request from one of the following parties, arrange physical access to each component in a metering installation:

- *a relevant reconciliation participant with whom it has an arrangement (other than a trader)*
- *the Authority*
- *an ATH*
- *an auditor*
- *a gaining MEP.*

This access must include all necessary means to enable the party to access the metering components

When providing access the MEP must ensure that the security of the metering installation is maintained and physical access is limited to only the access required for the purposes of the Code, regulations in connection with the party's administration, audit and testing functions.

Audit observation

I checked whether any parties had requested access to metering installations.

Audit commentary

No requests have been received, but Trustpower advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.4. Urgent Access to Metering Installations (Clause 3(5) of Schedule 10.6)

Code reference

Clause 3(5) of Schedule 10.6

Code related audit information

If the party requires urgent physical access to a metering installation, the MEP must use its best endeavours to arrange physical access.

Audit observation

I checked whether any parties had requested access to metering installations.

Audit commentary

No requests have been received, but Trustpower advised access could be granted in accordance with this clause if necessary.

Audit outcome

Compliant

10.5. Electronic Interrogation of Metering Installations (Clause 8 of Schedule 10.6)

Code reference

Clause 8 of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from an MEP's back office, the MEP must

- *ensure that the interrogation cycle does not exceed the maximum interrogation cycle shown in the registry*
- *interrogate the metering installation at least once within each maximum interrogation cycle.*

When raw meter data can only be obtained from an MEP's back office, the MEP must ensure that the internal clock is accurate, to within ±5 seconds of:

- *New Zealand standard time; or*
- *New Zealand daylight time.*

When raw meter data can only be obtained from an MEP's back office, the MEP must record in the interrogation and processing system logs, the time, the date, and the extent of any change in the internal clock setting in the metering installation.

When raw meter data can only be obtained from an MEP's back office, the MEP must ensure that a data storage device in a metering installation does not exceed the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6.

The MEP must compare the time on the internal clock of the data storage device with the time on the interrogation and processing system clock, calculate and correct (if required by this provision) any time error, and advise the affected reconciliation participant.

When raw meter data can only be obtained from an MEP's back office, the MEP must, when interrogating a metering installation, download the event log, check the event log for evidence of malfunctioning or tampering, and if this is detected, carry out the appropriate requirements of Part 10.

The MEP must ensure that all raw meter data that can only be obtained from the MEPs back office, that is downloaded as part of an interrogation, and that is used for submitting information for the purpose of Part 15 is archived:

- *for no less than 48 months after the interrogation date*
- *in a form that cannot be modified without creating an audit trail*
- *in a form that is secure and prevents access by any unauthorised person*

in a form that is accessible to authorised personnel.

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to Landis+Gyr in Australia to confirm compliance with the Code. I also requested copies of specific reports.

Audit commentary

The following findings are relevant to compliance with these clauses.

- The maximum interrogation cycle is a minimum of 90 days. Interrogation occurs four times per day and the registry will be changed to "AMI non-communicating" after 14 days if data is not successfully obtained, therefore compliance is likely to be achieved with the requirement to "interrogate" within 90 days. There were no examples of "AMI non-communicating" for more than 14 days. A relevant point to note is that "interrogation" does not occur in the traditional sense. The devices are programmed to "push" data to the head end.

- The clock synchronisation setting is 5 seconds to 10 seconds. Any clock errors between these times are adjusted automatically. Any errors outside these times must be adjusted manually. Clock errors over 10 seconds are reported to Trustpower. The reporting was demonstrated. These settings are also suitable for Category 2 installations when deployment commences for these.
- The event log download process was demonstrated and I confirmed the event log contains the appropriate events to achieve compliance. The event information is transferred via SFTP in a format agreed with Trustpower. A list was provided with 84 individual events and a selection of these have been deemed relevant and are reported to Trustpower. The relevant events can be summarised as follows:
    - Tamper (initially filtered by Landis+Gyr to remove false records)
    - Phase failure
    - Memory failure
    - Temperature alarm
    - Reverse power (detecting unexpected generation flow)
    - Load side voltage detection (to detect bridging of remotely disconnected devices)
    - Clock synchronisation
    - Time synchronisation failure (because outside the threshold)
    - Re-programming
    - Manual download
- Data will be kept for at least 48 months.
- Data is transmitted securely by SFTP and is only accessible to authorised persons with appropriate passwords.
- The interrogation log contains all relevant details as required by the Code.

Audit outcome

Compliant

10.6. Security of Metering Data (Clause 10.15(2))

Code reference

Clause 10.15(2)

Code related audit information

The MEP must take reasonable security measures to prevent loss or unauthorised access, use, modification or disclosure of the metering data.

Audit observation

I conducted a walkthrough of the data security processes.

Audit commentary

Data is transmitted securely by SFTP and is only accessible to authorised persons with appropriate passwords.

Audit outcome

Compliant

10.7. Time Errors for Metering Installations (Clause 8(4) of Schedule 10.6)

Code reference

Clause 8(4) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEPs back office, the MEP must ensure that the data storage device it interrogates does not exceed the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6.

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to Landis+Gyr in Australia to confirm compliance with the Code.

I checked clock synchronisation reporting.

Audit commentary

The clock synchronisation setting is 5 seconds to 10 seconds.

Any clock errors between these times are adjusted automatically. Any errors outside these times must be adjusted manually. Clock errors over 10 seconds are reported to Trustpower. The reporting was demonstrated. These settings are also suitable for Category 2 installations when deployment commences for these.

Time synchronisation does not occur automatically across the boundary of a trading period. This is to ensure all time changes occur within a trading period so data is not lost. For example, if the data storage device time is 13:01:20 and the device is "fast" by 100 seconds (a very unlikely occurrence) the time will not be changed back to 12:59:50 because if it was the kWh from 13:00:00 to 13:01:20 would be lost. Any time changes over a boundary must be made manually and normal practice is to conduct the change within the trading period.

Audit outcome

Compliant

10.8. Event Logs (Clause 8(7) of Schedule 10.6)

Code reference

Clause 8(7) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEP's back office, the MEP must, when interrogating a metering installation:

- *a) ensure an interrogation log is generated*
- *b) review the event log and:*
  - *i. take appropriate action*
  - *ii. pass the relevant entries to the reconciliation participant.*
- *c) ensure the log forms part of an audit trail which includes:*
  - *i. the date and*
  - *ii. time of the interrogation*
  - *iii. operator (where available)*
  - *iv. unique ID of the data storage device*
  - *v. any clock errors outside specified limits*

vi. *method of interrogation*
vii. *identifier of the reading device used (if applicable).*

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to Landis+Gyr in Australia to confirm compliance with the Code.

I checked the event information received by Trustpower.

Audit commentary

- The event log download process was demonstrated and I confirmed the event log contains the appropriate events to achieve compliance. The event information is transferred via SFTP in a format agreed with Trustpower. The relevant events can be summarised as follows:
  - Tamper (initially filtered by Landis+Gyr to remove false records)
  - Phase failure
  - Memory failure
  - Temperature alarm
  - Reverse power (detecting unexpected generation flow)
  - Load side voltage detection (to detect bridging of remotely disconnected devices)
  - Clock synchronisation
  - Time synchronisation failure (because outside the threshold)
  - Re-programming
  - Manual download
- All event information is received. I checked the database to confirm its presence.

Audit outcome

Compliant

10.9. Comparison of HHR Data with Register Data (Clause 8(9) of Schedule 10.6)

Code reference

Clause 8(9) of Schedule 10.6

Code related audit information

When raw meter data can only be obtained from the MEP's back office, the MEP must ensure that each electronic interrogation that retrieves half-hour metering information compares the information against the increment of the metering installations accumulating meter registers.

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to Landis+Gyr in Australia to confirm compliance with the Code.

I checked the exception reporting.

Audit commentary

Sumcheck validation occurs daily and is based on midnight to midnight NZST. The "fail" setting is 1 kWh and all trading periods must be present for a pass to occur. Any failures are investigated to determine the cause. The exception reporting confirmed that the only "failures" were due to data not being present at the time of the sumcheck occurring.

Audit outcome

Compliant

10.10.Correction of Raw Meter Data (Clause 10.48(2),(3))

Code reference

Clause 10.48(2),(3)

Code related audit information

If the MEP is notified of a question or request for clarification in accordance with clause 10.48(1), the MEP must, within 10 business days:

- *respond in detail to the questions or requests for clarification*
- *advise the reconciliation participant responsible for providing submission information for the POC of the correction factors to apply and period the factors should apply to.*

Audit observation

I conducted a walkthrough of the data collection and provision process and system via a skype call to Landis+Gyr in Australia to confirm compliance with the Code.

Audit commentary

Correction and estimation processes are the same and are called "substitution". A document was provided detailing the "Metering Data Validation, Substitution and Estimation" procedures, which are regulated in Australia. The same processes is used for Trustpower. In summary the following principles apply:

- Data validation includes all of the requirements of clause 17 of schedule 15.2, including:
  - checks for missing data;
  - (b) checks for invalid dates and times;
  - (c) checks of unexpected zero values;
  - (d) comparison with expected or previous flow patterns;
  - (e) comparison of meter readings with data on any data storage device registers that are available;
  - (f) a review of meter and data storage device event log
- Estimation (substitution) processes include all of the requirements of clauses 15 and 19 of schedule 15.2.

The validation and substitution processes are considered robust and comprehensive. The requirements of Part 15 are outside the scope of this audit because they are the responsibility of Retailers, which means the contents of this section will need to be included in Trustpower's next Reconciliation Participant audit report. If these services are provided to any other Reconciliation Participants, the audit for these parties will need to consider the compliance of these processes.

Any changes from NHH to HHR will be conducted at midnight to ensure the registry update and reconciliation processes are not adversely affected. No changes have been conducted to date.

Audit outcome

Compliant

CONCLUSION

Trustpower has resolved many of the data discrepancies and they have improved the timeliness of registry changes following meter installation or recertification.

The quantity of uncertified metering installations has reduced and there are now only 801 with expired certification.

Trustpower has commenced AMI deployment and there are some improvements required to the certification reports to ensure better clarity.

The main three issues recorded in the report are as follows:

1. 801 metering installations have expired certification.
2. 57 Category 2 inspections were not conducted within the allowable window, leading to cancellation of certification.
3. 22 three phase installations have single phase meters with a multiplier of 3 and they were certified using the statistical sampling method. These are not fit for purpose and certification is cancelled.

The AMI data collection and processing function is operating as expected and is fully compliant.

PARTICIPANT RESPONSE

Trustpower thanks Veritek (Steve) for the audit process and his input into the review of our MEP and Test House compliance. As always the process has proven valuable either through reassurance of areas that Trustpower continues to operate well in, or the small recommendations of improvement.

Overall we acknowledge what appears to be one genuine new area of non-compliance that has impacted on this audit, and affects our rating in several areas. That finding is our non-compliance on Cat 2 inspections and the consequential impact is has on expired certifications and timeliness of registry updates.

In response to the 4 summarised issues in this audit we add the following comments;

Issue 1. 801 metering installations have expired certification.

We agree with these findings. These have been significantly reduced over the last 18 months from 13,317 ICPs with expired interim certification. The recertification of the remaining 801 ICPs (now including the 57 Cat 2 ICPS) remain a high priority.

Trustpower does take our role in metering compliance seriously, which has been further evidenced this year when we agreed to take on the MEP role and recertify ~1,000 uncertified ICPS from a 3rd party MEP. We are also actively working with another 3rd party MEP using IP we have built up through our own compliance programme to attempt to recertify a further ~9,000 ICPS.

Issue 2.

8.2 Category 2 to 5 Inspections (Clause 46(1) of Schedule 10.7)

We agree with these findings. 57 Category 2 inspections were not conducted within the allowable window, leading to cancellation of certification.

We have subsequently cancelled the certification for these sites, as noted early in the audit we believe this action was taken within an appropriate timeframe from becoming fully away of our obligations.

Section 6.2 Cancellation of Certification (Clause 20 of Schedule 10.7)

This also relates to the above late inspections and population of correction to the registry.

The event date was determined to be 10 years plus 6 months of certification date. These sites were identified as non-compliant during the Audit process and actioned appropriately. As with hundreds of registry updates which are the result of data correction or certification it is > 10 days since the event but have been updated as soon as practical.

Where bulk data corrections occur our experience is that engaging the right expertise to ensure that accuracy and quality is achieved can come at the expense of timeliness - it is not always possible to achieve both.

Issue 3. 22 three phase installations have single phase meters with a multiplier of 3 and they were certified using the statistical sampling method.

These sites are considered to be included in issue 1 and are scheduled to be recertified and have at all times remained on our internal register of uncertified sites, despite what the registry reflected.

We agree that we have technically breached however due to these sites already being covered in issue 1 we request these should only be considered to be minor with little or no impact.

Issue 4

4.3 Metering Installation Design & Accuracy (Clause 4(1) of Schedule 10.7)

Further investigation following the audit leads Trustpower to believe that we had controls in place to cover for this non-compliance, and that the application of those control's i.e. a review by our test house manager for these cat 2 certifications, would and does eliminate this non-compliance.

Our Test House Manager or MEP manager reviews all cat 2 certification. As identified other Test Houses have not included the temperature in their uncertainty calculations however they have provided the temperature and relevant data for Trustpower to establish that if they had carried out calculations correctly, it would not impact on the overall error calculations being within allowable tolerance. In the identified instances we believe this is a technical breach of another Test House and did not affect the overall site certification. I this circumstance:

For the two sites in question I got the following results:

1. ICP 0000022275CEA6A – Total installation Error at 12^0 C
    i. Delta ATH = 0.506% and TPW = 0.57% (including installation uncertainty of Hioki at 12^0C of 0.12%)

2. ICP 0000053848CE3DA – Total installation Error at 26^0 C
    i. Delta ATH = 0.612% and TPW = 0.73% (these may differ due to not having all the decimal places printed on Delta's form, but no added installation uncertainty of Hioki at 26^0C)

Risk Rating.

Trustpower understands the need for consistency and a formulated approach the risk rating that has been introduced.

In some instances it is extremely unlikely to ever be fully compliant and often technically non- compliant due to another participant's failure to comply. I these instances, we believe the risk rating does not necessarily reflect that there will always be some instances of non-compliances and therefore seek this to be considered in our overall score.

Non-Compliant ICPs with interim or expired certification can be considered to have breached under multiple clauses. We request that this is considered when applying total Risk our overall score.

Trustpower as an MEP has worked hard to improve compliance and has also been proactive in assisting other MEP's to reduce the number of non-compliant sites. This audit has shown we continue to improve and has highlighted several areas for us to focus.

Summary

Overall we are pleased with the findings of this audit and believe that Trustpower still operates a high performing MEP operations.

On balance, we feel that the recommendation to extend our audit cycle to a minimum of 12 months would appropriately reflect how our business has performs and is tracking to perform for the next audit cycle.

Under the current audit regime, it is proving difficult to reduce the points attributed to the risk rating for a MEP that is performing transactions and events against several hundred thousand metering assets. We hope that our track record of performance and improvement is taken into account when assessing this audit report.