ELECTRICITY INDUSTRY PARTICIPATION CODE
METERING EQUIPMENT PROVIDER AUDIT REPORT

For

METRIX LIMITED

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 7 May 2019

Date audit report completed: 27 May 2019

Audit report due date: 31-May-19

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EXECUTIVE SUMMARY

Metrix Limited (Metrix) is a new Metering Equipment Provider (MEP) due to an ownership change and is required to undergo an audit by 31/05/19, in accordance with clause 16A.17(a). The previous audit was conducted for Mercury NZ Limited and included both Metrix and Mercury Generation. Metrix Limited is now owned by IntelliHUB and is therefore considered a new participant. There hasn't been any change to the operation as a result of the ownership change.

Ten non-compliances were identified, which is an improvement on 12 in the last audit. The level of compliance has improved in most areas.

Improvements are evident in the following areas:

1. Error and uncertainty calculations are now conducted in a compliant manner.
2. There are less previously interim certified metering installations still uncertified.
3. There are less registry discrepancies.
4. Data management practices have been strengthened.
5. Recertification has occurred in all cases when bridging has occurred.

The main findings from this audit are as follows:

1. In 2016 the Authority provided a memo in relation to low burden on CT metered installations, clarifying that the certifying ATH for the metering installation must ensure that CTs are accurate at low burden. Many installations have older CTs with high rated burden where the in-service burden is lower than the lowest test point, and confirmation has not been provided by the manufacturer or a Class A ATH that the CTs will continue to operate within their accuracy range. I have therefore recorded non-compliance for at least 17 metering installations in relation to this clause. Metrix disputes this non-compliance; however, I confirmed with the Authority in July 2018 that non-compliance does exist, and certification is cancelled for these installations.
2. Insufficient load certification practices still require some attention. The communication process from the field to the back office needs to be more definite to ensure monitoring occurs.
3. Statistical sampling practices need to be changed to ensure all meters in a sample are included in the pass/fail calculation so that the sample represents the population. Certification is invalid for one meter type where the sample did not represent the population.

Metrix will provide an estimation function, which is confirmed as compliant. The estimation requirements of Part 15 are outside the scope of this audit because they are the responsibility of Retailers, which means the content of **section 10.10** will need to be included in Retailers' next Reconciliation Participant audit reports if these services are used.

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 although it recommends an audit frequency of six months, my recommendation is that the Authority considers a frequency of 12 months to allow enough time to resolve the matters raised and to recognise the improved level of compliance since the last audit.

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	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable. Revised AMI data only supplied for a 15-day period.	Moderate	Low	2	Investigating Identified
Registry updates	3.2	2 of Schedule 11.4	199 registry updates later than 15 business days.	Strong	Low	1	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
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Moderate	Low	2	Investigating
Error correction	6.3	6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Moderate	Low	2	Investigating
Certification cancellation	6.4	20 of Schedule 10.7	Certification not cancelled on the registry for 17 metering installations where low burden is present.	Moderate	Low	2	Disputed
Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired, cancelled or late for 3,010 ICPs.	Moderate	Medium	4	Investigating
Insufficient load	7.7	14(3) of Schedule 10.7	Monitoring not conducted for three ICPs.	Weak	Low	3	Identified
Interim certification	7.19	18 of Schedule 10.7	827 ICPs with expired interim certification.	Moderate	Medium	4	Investigating

Time errors	10.7	8(4) of Schedule 10.6	42 examples of clock errors outside the allowable thresholds in the most recent reports.	Strong	Low	1	Investigating
					Future Risk Rating	**23**	
					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

ISSUES

Subject	Section	Recommendation	Description
		Nil	

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

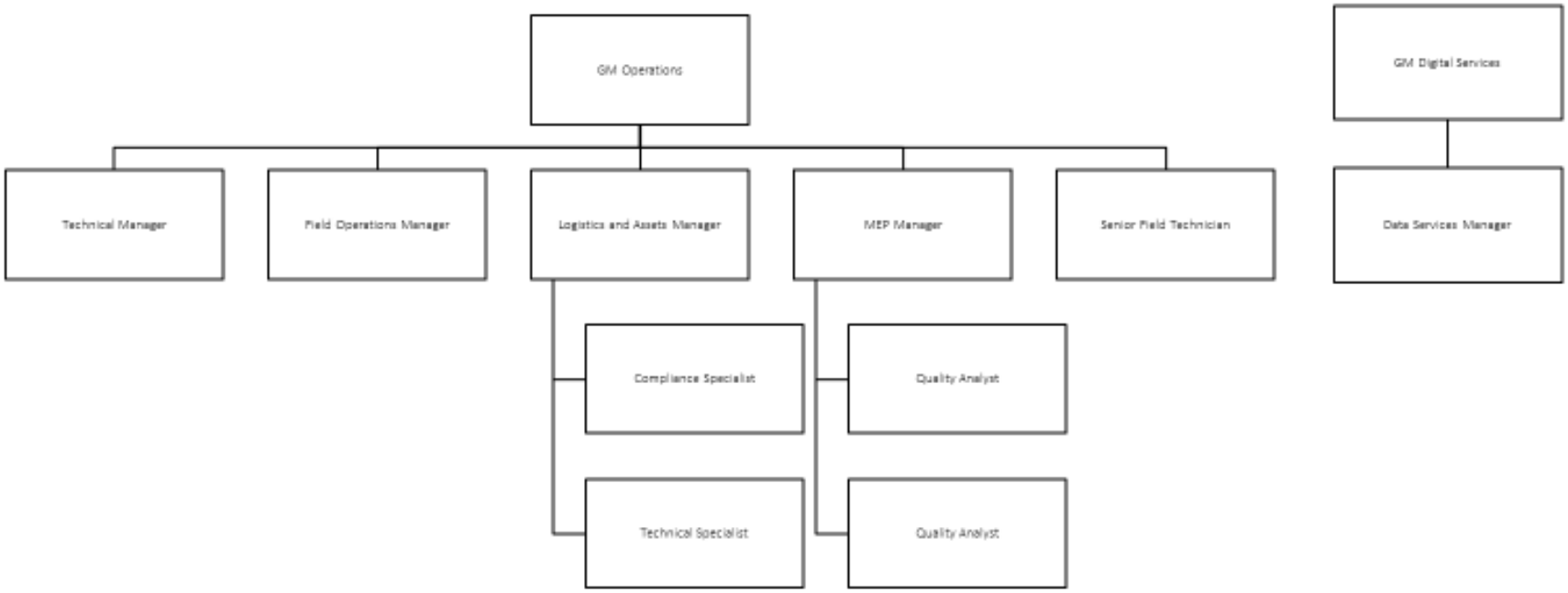
I checked the Electricity Authority website and I confirm there are no exemptions in place.

Audit commentary

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

1.2. Structure of Organisation

The Metrix organisation chart is shown below.



1.3. Persons involved in this audit

Auditor: Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Metrix personnel assisting in this audit were.

Name	Title	Operation
Niu Nelson	MEP Manager	Metrix
Chris Chambers	Compliance Co-ordinator	Metrix
Daniel Pinny	Data Services Manager (AMI)	Metrix

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

Metrix engages with ATHs to conduct certification activities, and Metrix is an ATH. As an MEP, they have copies of all relevant records for installations above Category 1. They have copies of records attached to SAP for recent ICPs, but they rely on ATHs to manage and store Category 1 certification records for most ICPs. I requested certification reports for 54 ICPs to confirm their compliance and availability.

Audit commentary

All certification records were provided, which achieves compliance with this clause.

1.5. Hardware and Software

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

AMI data collection occurs using four different head ends and the data is stored and managed in a Meter Data Management System, which is described further in **section 10**. These systems are also subject to backup arrangements in accordance with standard industry protocols.

1.6. Breaches or Breach Allegations

Metrix confirmed there are no breach allegations relevant to the scope of this audit.

1.7. ICP Data

Metering Category	Number of ICPs
1	404,020
2	2,731
3	11
4	1
5	0

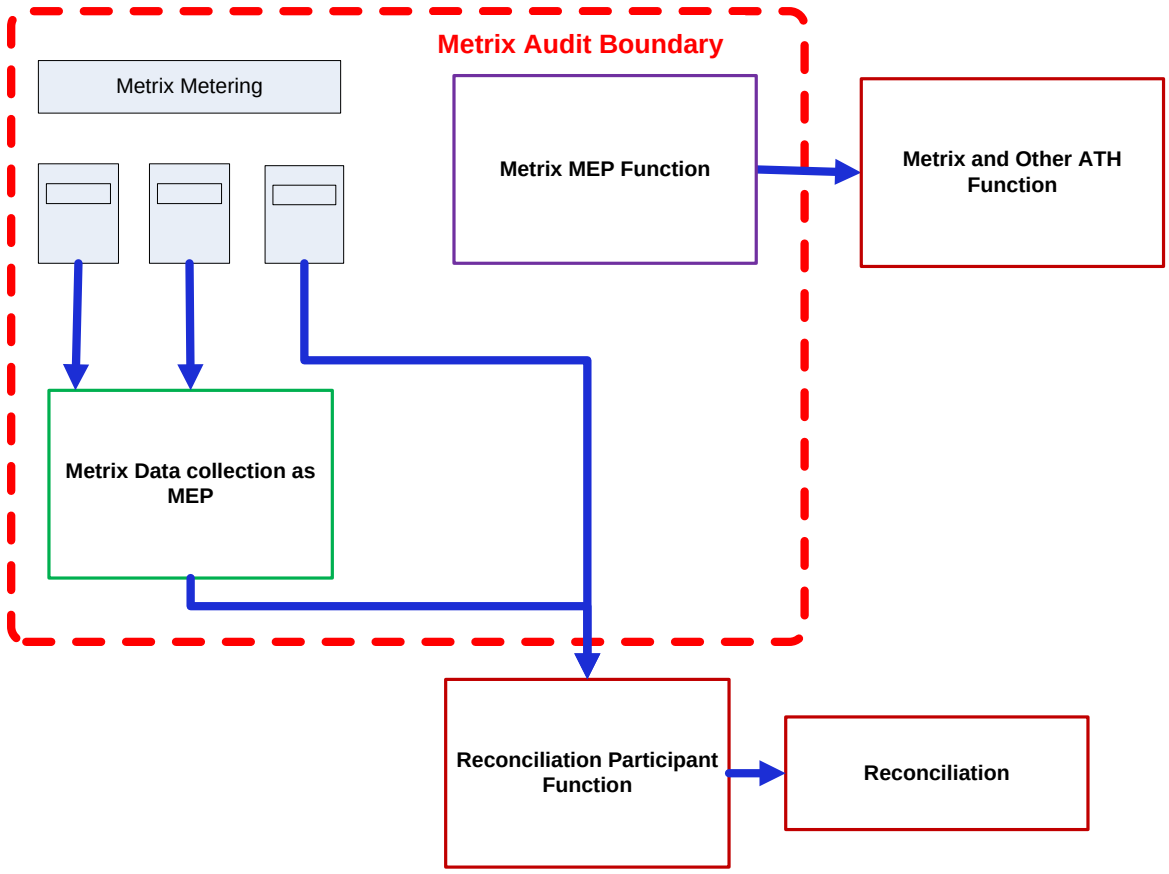
1.8. Authorisation Received

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 V2.2, which was published by the Electricity Authority.

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



1.10. Summary of previous audit

This is the first audit for Metrix Limited. The previous audit was conducted for Mercury NZ Limited in July 2018 by Steve Woods of Veritek Limited. The table below shows that most of the issues still remain.

TABLE OF NON-COMPLIANCE

Subject	Section	Clause	Non-Compliance	Status
Provision of accurate information	2.5	11.2 and 10.6	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable.	Still existing
Registry updates	3.2	2 of Schedule 11.4	25 registry updates later than 15 business days.	Still existing
Error and uncertainty	4.3	4(1) of Schedule 10.7	Error and uncertainty calculations do not always consider site-specific conditions. Therefore, Metrix is not ensuring the sum of the measured error and uncertainty does not exceed the maximum permitted error.	Cleared
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Still existing
Error correction	6.3	6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Still existing
Certification cancellation	6.4	20 of Schedule 10.7	Certification not cancelled on the registry for 35 ICPs where AMI meters were bridged, and nine metering installations where low burden is present.	Still existing
Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired, cancelled or late for 3,685 ICPs.	Still existing
Interim certification	7.19	18 of Schedule 10.7	1,217 ICPs with expired interim certification.	Still existing
Category 2 to 5 inspections	8.2	46(1) of Schedule 10.7	One Metrix and four Mercury metering installations not inspected within the required window.	Cleared

Maximum interrogation cycle	10.5	8 of Schedule 10.6	6,986 installations not interrogated within the maximum interrogation cycle.	Still existing
Time errors	10.7	8(4) of Schedule 10.6	137 examples of clock errors outside the allowable thresholds in the most recent reports.	Still existing

TABLE OF RECOMMENDATIONS

Subject	Section	Clause	Description	Status
Accuracy of records	5.1	Clause 4(1)(a) and (b) of Schedule 10.	Require ATHs to provide certification records with better clarity.	Resolved

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 54 metering installations, covering all relevant ATHs.

Audit commentary

The Code places responsibility for maintaining the services access interface on the MEP and places responsibility for determining and recording it with ATHs. I checked the certification records for all relevant ATHs, and the services access interface is recorded correctly by them all.

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

Metrix 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

Metrix uses the MTRX 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

Metrix is the MEP for AMI metering installations where communication equipment is present. There are also some HHR metering installations with modems. I checked that the ATHs have processes in place to check the relevant type test certificates to ensure compliance with this clause.

Audit commentary

Metrix ensures all communication equipment is appropriately certified with the relevant telecommunications standards. This is recorded in type test certificates and other approval documents. A copy of the type test schedule was provided, which contains a list of all components used and the type test report reference. One of the EDMI Mk 10 models needed a specific modem to be used to ensure compliance. No other issues were identified.

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

In **section 6.2**, I have recorded that there are some registry data discrepancies. Whilst there continues to be excellent progress made in resolving these, I have determined that the "as soon as practicable" threshold has not been met in relation to the existence of discrepancies and the timeframe for resolution, because they have been in existence for several years.

In **section 10.5**, I checked whether revised information was provided for periods where data is not available and then becomes available. Metrix sends "catch-up" data for a period of 15 days but if data is available outside this timeframe it is not provided. Clause 10 of Schedule 10.6 is not specific regarding the time period for revised data, but Clause 10.6 requires information to be "complete and accurate" and it also requires further or corrected information to be provided as soon as practicable. Therefore, I conclude that a 15-day window for revised data does not comply with Clause 10.6.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 29-Aug-13 To: 29-Apr-19	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable. Revised AMI data only supplied for a 15-day period. 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 in this area because there are still a small number of areas where improvement can be made. Very few of the registry related 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. Revision data only being provided for 15 days has a minor impact on participants because the quantify of data outside the 15 days is low. The audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status

Registry Data Discrepancies Metrix have good controls in place to ensure no new data discrepancies are sent to the Registry. The remaining data discrepancies may require site investigations of which we will work with the current participants for access and make the necessary updates to ensure compliance and work with participants for resolution. **Revised AMI data** Metrix automatically sends "catch-up" data for a period of 15 days, if data is not available and then becomes available, we will provide data beyond 15 days on request.	December, 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Registry Data Discrepancies Metrix will continue to quality check data to ensure these are corrected at source before proceeding with the update to the Registry. **Revised AMI data** Metrix is currently testing a change that would see the automated "catch-up" window extended from 15 to a minimum of 40 days; noting that we already set the AMI Flag to "N" if not reading for 40+ days.	Ongoing daily August, 2019	

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

Metrix has not sent or received any invoices in relation to this clause.

Audit commentary

Metrix has not sent or received any invoices in relation to this clause.

Audit outcome

Compliant

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 01/07/18 to 31/03/19 for all records where Metrix became the MEP to evaluate the timeliness of updates.

Audit commentary

The table below shows that there were 199 late updates to the registry out of 2,343 events. I checked 20 records in detail to determine root causes of late updates. In 11 of 20 cases, the trader had nominated Metrix late causing the late update. For the nine examples where the nomination was on time, the reason the update was late was due to processing issues. There appeared to be a delay between the SAP population date and the registry update date.

Event	Year	Total ICPs	ICPs Notified Within 15 Days	ICPs Notified Greater Than 15 Days	Average Notification Days	Percentage Compliant
New MEP	2016	150	39	111	126.5	26.0%
	2017	19	9	10	49	47%
	2018	188	163	25	15	87%
	2019	**2,343**	**2,144**	**199**	**8**	**92%**

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Jul-18 To: 31-Mar-19	199 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 Metrix is often prevented from updating the registry due to late nomination or late updates from traders. 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**
To minimize impact to the end consumer, Metrix will proceed with field work, provided a nomination will be triggered by the participant. Metrix will continue to quality check data to ensure these are corrected at source before proceeding with the update to the Registry to avoid further impact on participants.	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Metrix will continue to work with participants to support timely updates are made to the Registry.	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 Metrix to confirm whether there had been any requests from other MEPs.

Audit commentary

No requests have occurred during the audit period. Some requests have been made to Metrix to reverse their meter removal event in the registry, so that the gaining MEP can upload their data.

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 MEP's 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 Metrix has ceased to be responsible for some metering installations by checking the event detail report. I then checked the records for a selection of five ICPs.

Audit commentary

Metrix continues with their responsibilities, mainly in relation to the storage of records, which are kept indefinitely.

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

I checked the suite of design reports provided by Metrix to relevant ATHs, and I checked that ATHs were correctly recording the design report in the certification records.

Audit commentary

The design reports include all relevant details required by the Code and ATHs had correctly recorded the design for all 54 metering installations checked. There were no new design reports produced during the audit period.

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 which ATHs had been used during the audit period, in order to check the Authority's website for scope of approval.

Audit commentary

Metrix uses several ATHs and they all have a current and appropriate scope 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 Metrix to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 54 metering installations.

Audit commentary

All fully calibrated and selected component processes are compliant, as confirmed by checking certification records.

For Category 2 comparative certification, Metrix, VEMS and Wells ATHs have compliant practices for the calculation of uncertainty. Delta's practice is still not compliant, but they did not conduct any comparative certification for Metrix MEP during the audit period.

With regard to the design of the installation (including data storage device and interrogation system), Metrix ensures 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. There are no components installed where "coarse" rounding is in place for the data, or where meters with a low pulse rate are connected to separate data storage devices.

Metrix ensures the metering installation complies with the design report and the requirements of Part 10 by requiring ATH's to confirm the installation matches the design, or by requiring updates to be provided if the installation does not match the design. The design report was correctly recorded in the certification records for the 54 installations I checked.

Audit outcome

Compliant

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

Audit commentary

Metrix 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 the records for all 12 ICPs where the metering category was greater than Category 2.

Audit commentary

All relevant installations are HHR metered.

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

Metrix is not responsible for any NSP metering.

Audit commentary

Metrix is not responsible for any NSP metering.

Audit outcome

Not applicable

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

Metrix is not responsible for any grid metering.

Audit commentary

Metrix is not responsible for any grid metering.

Audit outcome

Not applicable

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 checked the certification records for all ATHs to confirm this point is being considered at the time of certification.

Audit commentary

The certification records for all ATHs contain a field or a statement in relation to this clause and the technician is required to confirm that installations are compliant and safe.

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

I checked previous communication regarding metering designs, and I checked whether there were any new or modified designs during the audit period.

Audit commentary

Metrix has communicated with all Distributors and Traders in relation to this requirement. I checked some examples of sent and received documentation, which confirmed compliance. There were no new or modified designs during the audit period.

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 01/07/18 to 31/03/19 to evaluate the timeliness of registry updates.

Audit commentary

The table below shows that registry updates were on time for 90% of new connections. I checked 20 late updates in detail and found late nomination by the trader was the cause in seven cases. Mercury Energy is the trader in all cases and for new connections; the field notification goes to them first and is then passed on to Metrix. For the 13 examples where nomination was on time, it appears processing issues caused the late updates.

93% of updates were populated within 10 business days.

Event	Year	Total ICPs	ICPs Notified Within 10 Days	ICPs Notified Greater Than 10 Days	Average Notification Days	Percentage Compliant
New connection	2016	711	474	237	11.5	66.7%
	2017	897	815	82	5.8	91%
	2018	1,699	1,435	264	7.7	85%
	2019	**2,315**	**2,093**	**222**	**7.0**	**90%**

Update	2016	44,928	6,465	38,463	483	14.4%
	2017	139,000	5,000	134,000	N/A	3.6%
	2018	7,336	2,052	5,284	626	28%
	2019	**22,503**	**20,864**	**1,639**	**5.0**	**93%**

Audit outcome

Non-compliant

Non-compliance	**Description**
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Jul-18 To: 31-Mar-19	Some records updated on the registry later than 10 business days. 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 in this area because there is room to improve and shorten the notification process for new connections. The late updates for new connections occurred after the trader had populated their records, therefore 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**
Metrix will continue to work with participants to support timely updates to the Registry for New Connections. In areas where Metrix have control of the timeliness of updates, the level of compliance is good. Historical data quality updates will continue to be updated to reach compliance, refer to section 6.2. Metrix suspect there will be minimal change to the percentage of compliance for late Registry updates until we complete data cleanse activities.	December, 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Metrix plans to implement a change in the process for New Connections where we receive the field notification from Contractors first to improve compliance.	March, 2020	

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

Metrix has AMI data collection systems, and these are considered "metering infrastructure". I checked that the systems operate as intended and are compatible with all metering components interrogated, by examining the success rate of data collection along with the number of events generated.

Audit commentary

There were no obvious issues with the operation of the AMI systems. All components operate as intended in an integrated manner.

Audit outcome

Compliant

4.12. Responsibility for Metering at ICP (Clause 10.23A)

Code reference

Clause 10.23A

Code related audit information

If a metering installation at an ICP is to be decommissioned, but the ICP is not being decommissioned, the metering equipment provider that is responsible for decommissioning the metering installation must—

(a) if the metering equipment provider is responsible for interrogating the metering installation—

(i) arrange for a final interrogation to take place before the metering installation is decommissioned; and

(ii) provide the raw meter data from the interrogation to the trader that is recorded in the registry as being responsible for the ICP; or

(b) if another participant is responsible for interrogating the metering installation, advise the other participant not less than three business days before the decommissioning—

(i) of the date and time of the decommissioning; and

(ii) that the participant must carry out a final interrogation.

(2) To avoid doubt, if a metering installation at an ICP is to be decommissioned because the ICP is being decommissioned—

(a) the metering equipment provider is not responsible for arranging a final interrogation of the metering installation; and

(b) the trader that is recorded in the registry as being responsible for the ICP must arrange for a final interrogation of the metering installation under clause 11.18(3).

Audit observation

I checked whether Metrix was the MEP at any decommissioned metering installations and whether notification had been provided to relevant traders.

Audit commentary

There were no examples of decommissioned metering installations where the ICP was not also decommissioned.

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 Metrix whether they had approved any burden changes during the audit period.

Audit commentary

They have not approved any burden or compensation factor changes without recertification occurring. A check of certification records confirmed compliance.

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

Metrix has not conducted any changes during the audit period.

Audit commentary

Metrix has not conducted any changes during the audit period.

Audit outcome

Compliant

4.15. Temporary Energization (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. None were identified.

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

Compliant

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 54 metering installations and I also checked all available inspection records to evaluate compliance with this clause.

Audit commentary

All the records listed above are available and the records were correct for the 54 examples checked. During the previous audit I recorded that several of the certification records were difficult to read and some of the critical fields were difficult to identify. I recommended Metrix require ATHs to include the following information clearly on the first page of certification records:

1. ICP;
2. metering installation certification date;
3. metering installation certification expiry date;
4. electrical connection date (if known and if the ATH is also the electrical connection agent);
5. metering category;
6. certification type (selected component, comparative, fully calibrated, alternative, low load, lower category); and
7. error and uncertainty for Category 2 installations.

The Wells reports were the most difficult to read and they have recently improved the clarity of reports.

Audit outcome

Compliant

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 Metrix whether any requests had been made for copies of inspection reports.

Audit commentary

Metrix 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 2015 to confirm compliance.

Audit commentary

Metrix keeps records indefinitely and the availability of the 2015 records confirms compliance.

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

Metrix has provided information to ATH's in the past and this may occur in future. There are no current examples to examine.

Audit commentary

Metrix has provided information to ATH's in the past and this may occur in future. There are no current examples to examine.

Audit outcome

Compliant

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 switch breach detail report for the period 01/07/18 to 31/03/19 to confirm whether all responses were within 10 business days.

Audit commentary

All MN files were sent 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 and I checked the Category 1 inspection records to identify discrepancies.

Audit commentary

I checked all of Metrix's records to identify discrepancies with their data. The table below shows the results.

Quantity of ICPs May 2019	Quantity of ICPs July 2018	Quantity of ICPs July 2017	Issue	Comments
10	52	0	Blank records on the registry.	All 10 have Metrix meters removed and the new MEP has not yet populated the registry.
0	0	0	Category 1 ICPs with CTs.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Interim certified installations over Category 1.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Incorrect compensation factors of 2 or 14, which should have been 1.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Category 3 NHH.	Metrix will continue to quality check data and fix at source before updating the Registry.
205 **Showing as Interim but are fully certified**	9,044	11,299	Incorrect interim expiry dates. These appear to be fully certified with incorrect "I" flag.	Metrix will continue to data cleanse these sites and make the necessary corrections to the Registry. In some cases, Metrix have not changed certification from "I" to "F" as 'full certification' may exist but have also expired. Metrix will monitor these through RSP alerts and the possibility of adding these to statistical sampling.
0	0	462	Category 1 with certification duration of more than 15 years.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Category 1 with certification date the same as certification expiry date.	Metrix will continue to quality check data and fix at source before updating the Registry.
1	1	0	Incorrect certification date or certification expiry date for Cat 2.	Incorrect certification values entered manually. Metrix will ensure these are also identified and resolved by running the reconciliation tool more frequently.

7	4	14	Incorrect certification date or certification expiry date for Cat 1.	Incorrect certification values entered manually. Metrix will ensure these are also identified and resolved by running the reconciliation tool more frequently.
0	0	3	IN24 as register content code and period of availability.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	IN0 as register content code and period of availability.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	CN24 as register content code and period of availability. Some of these should be CN13.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	D24 and should be D16.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	N24.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	UN0.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	UN12 or UN19.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Day with no night.	Metrix will continue to quality check data and fix at source before updating the Registry.
0	0	0	Night with no day.	Metrix will continue to quality check data and fix at source before updating the Registry.
7	0	10	CN only on residential.	Metrix identified that these sites are Inclusive and will make the corrections to the Registry.
25 22 excluding duplicates	78	-	UN with a control device	Metrix identified that 9 sites are inclusive or D/N and will make the necessary corrections to the Registry. 13 sites require further investigation to see if Relay remained on site without removal because of safety, customer request or if they are

				still in use and the RCC/POA requires correction.
7 2 have meter cat9 (removed)	10	3,047	Max interrogation cycle of zero days.	Metrix have corrected the records and will add a validation rule to our reconciliation tool.
1,148	1,248	25,982	Controlled tariff with no load control device.	Metrix will continue to data cleanse these sites and will look at better ways to help resolve these exceptions. Metrix will liaise with Participants to see if Gas has been installed at sites to determine if LCD was removed during the transition. Metrix will choose 20 sites per network and do site investigations to identify trends which can then be tabled to address resolution.
40	31	39	Export ICPs with no injection register.	*Metrix monitors the "B" field and then pro-actively asks the retailer whether they wish to have an import/export meter installed.*
1	13	139	Stat sampled with a certification duration greater than 7 years	Metrix are currently investigating and will ensure the data is corrected at source before updating the Registry.
0	7	-	Incorrect ATH recorded	Metrix will continue to quality check data and fix at source before updating the Registry.

Metrix has made further progress with regard to resolving discrepancies in the registry data.

The inspection process found the following issues:

Count of ICPs	**Description**
111	The inspector could not report on the installation certification expiry date, because the installation certification sticker was unreadable, faded, damaged or missing.
72	The installation certification expiry date in the MEP's records did not match the installation certification sticker.
9	Metrix MEP records describe load control devices utilising an allocated asset number which does not match the actual manufacturer's serial number at the premise.
1	Metrix records have incorrect relay serial number.
2	Control device recorded in Metrix systems, but not found on site.

6	Load control found on site, but no serial number recorded in Metrix systems.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-Jul-18 To: 31-Mar-19	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 moderate in this area because there are still a small number of areas where improvement can be made. ATH accuracy is a good example. 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
Metrix have focused on the downward trend for data discrepancies as identified in the table above and will continue to work towards resolution for the ones that remain – Refer to "comments" section above in 6.2.	December, 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Metrix will continue to quality check data and fix at source before updating the Registry. This will ensure that no new discrepancies will be added to the table above in section 6.2.	Daily 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

This clause is specific and prescriptive, and it requires a complete metering record comparison to be undertaken. Metrix is conducting a complete validation, but errors are not being corrected within five business days, as recorded in **section 4.10**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4 From: 01-Jul-18 To: 31-Mar-19	Discrepancies not resolved within 5 business days. 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 in this area because there are still a small number of areas where improvement can be made. Certification date accuracy is a good example. 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
Metrix will continue to quality check data and fix at source before updating the Registry. Metrix have re-implemented the monthly reconciliation process which will help monitor the historical exceptions through to resolution. Refer to "comments" section 6.2 to resolve data discrepancies.	December, 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Metrix will run the reconciliation process weekly to ensure data discrepancies are identified and resolved within 5 business days to improve compliance in this area.	Ongoing	

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 the points listed above, and checked whether certification had been cancelled, and whether the registry had been updated within 10 business days.

Audit commentary

During previous audits, I identified ICPs where meters had been bridged but recertification had not occurred, leading to cancellation of certification. All historic issues are resolved, and certification has been conducted. I checked 13 examples from the current audit period, and they were all recertified.

The other issue relates to low burden on CT metered installations. The Authority provided a memo on 04/04/16 clarifying that:

The Electricity Industry Participation Code 2010 (Code) requires an ATH to ensure that an approved calibration laboratory or a class A ATH has confirmed that all measuring transformers comply with the standards in Table 5 of Schedule 10.1 (clause 3(b) of Schedule 10.8). If the errors are within the limits set by the standards, the transformer has passed the test and may be certified as accurate within that range of burden (clause 3 of Schedule 10.8 and Table 5 of Schedule 10.1).

If a measuring transformer is installed in a metering installation with the burden lower than the lowest test point used in the measuring transformer's calibration, then burdening resistors must be used to ensure that the measuring transformer operates within its calibration range.[1]

The memo also states:

If an ATH certifies a metering installation with under-burdened measuring transformers, and it has not complied with clause 31(7) of Schedule 10.7 of the Code, then:

1. The ATH will breach clause 31(7) of Schedule 10.7 and also clause 43 of Schedule 10.7 by failing to grant certification in accordance with Part 10
2. The metering installation may be classed outside the applicable accuracy tolerances specified in Table 1 of Schedule 10.1, or not be fit for purpose, and if so, the metering installation certification is cancelled (clause 20(1)(b) of Schedule 10.7)
3. In certifying the metering installation, the ATH may breach clause 21 of Schedule 10.7 by certifying a metering installation that exceeds that maximum permitted error set out in Table 1 of Schedule 10.1.

Analysis of the certification records during the 2017 audit found that nine had been certified with burden lower than the lowest test point, without a Class A ATH confirming that the measuring transformers will not be adversely affected. Therefore, in accordance with the Authority's memo, these metering installations are not considered "fit for purpose". This means certification is cancelled. One of the nine installations was recertified, but eight have not been. Metrix recorded during the previous audit that they do not agree with the Authority's interpretation of the Code and the related memo I have referred to. During the 2018 audit period, one additional ICP was identified with the same circumstances as the nine identified during the last audit. During the current audit period, seven further ICPs were identified.

No Category 2, 3 or 4 inspections were due during the audit period.

As recorded in **section 7.13**, the statistical sampling methodology is non-compliant for 250 ICPs, therefore certification is cancelled. Metrix intends to update the registry with the correct certification expiry date.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.4 With: Clause 20 of Schedule 10.7 From: 09-Apr-15 To: 05-May-19	Certification not cancelled on the registry for 17 metering installations where low burden is present. 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 most processes are managed with sufficient controls to avoid cancellation of certification. The installations with low burden are all recording within the allowable 2.5% therefore the impact on settlement is minor. The responsibility for Metrix is to cancel certification on the registry once they know certification is cancelled and the impact of not doing this is minor, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Bridging Metrix have focused on resolving historical issues as well as manage current bridged sites. Good processes established to capture bridged sites and cancel certification when required within compliance timeframes. **Burden** Metrix ATH still disputes the non-compliance associated with burden tests. This has been disputed in the last two ATH audits (2017 and 2018) Metrix ATH does not believe that the Code states burden is required to be added, when the comparative method of certification is used, because the Current Transformer itself is not being calibrated or certified. The Metrix ATH does not believe that the 2016 memo from the Electricity Authority sufficiently clarified the Code requirements, in particular, when the Comparative Method of certification is used. Metrix supports the need for clarity in the rules as indicated by the proposed rule amendment in the 2018 Omnibus.	Ongoing	Disputed
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Bridging Metrix will continue to utilize good process and practices in place for to capture bridged sites and cancel certification when required within compliance timeframes. **Burden** The planned Code Amendment referred-to above has not as yet been approved and published. Metrix ATH is also aware that the EA is considering a legal review of the Code clauses related to the Comparative Method of certification, and also the 2016 memo. There is currently a lack of industry-wide agreement regarding the efficacy of installing burden resistors. There is currently no Industry-Approved, commercially – available product which an ATH can purchase and install. In the interim, the Metrix ATH supports the formation of a technical working group. This group would include representation from ATH's and the Chief Metrologist. The group would: • Consider the pros and cons of adding burden resistors • The adoption of a Best Practice Installation Guideline. • Propose potential Code Amendments. The Metrix ATH is also currently in the process of investigating, designing constructing and testing a solution (component and housing), for the addition of burden, in preparation for an expected rule change. The solution will comprise of three resistors mounted in a sealable enclosure, securely installed on the meter panel. The enclosure will be manufactured with 2.5mm conduit wire pre-connected to the resistors, ready for installation. The technician will replace the existing yellow/white wires between the test block and the meter with the pre-wired burden box In developing a solution, Metrix ATH has also been developing a simple and straightforward decision - matrix for use by technicians. The inputs are 1) The VA rating of the Transformer and 2) The in-Service Burden (As Found) (results per phase). To keep the solution as simple as possible, two different levels of burden resistance are being proposed.	Ongoing	

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 Metrix 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 Metrix 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; and
- I checked ICPs where certification was cancelled to ensure the registry was updated accordingly.

Audit commentary

The registry shows 2,730 Category 1 ICPs with expired certification. This is down from 3,640 during the last audit. 827 of these ICPs show as previously interim certified.

Metrix provided a summary of ICPs where certification was unable to be physically performed. This summary is shown in the table below.

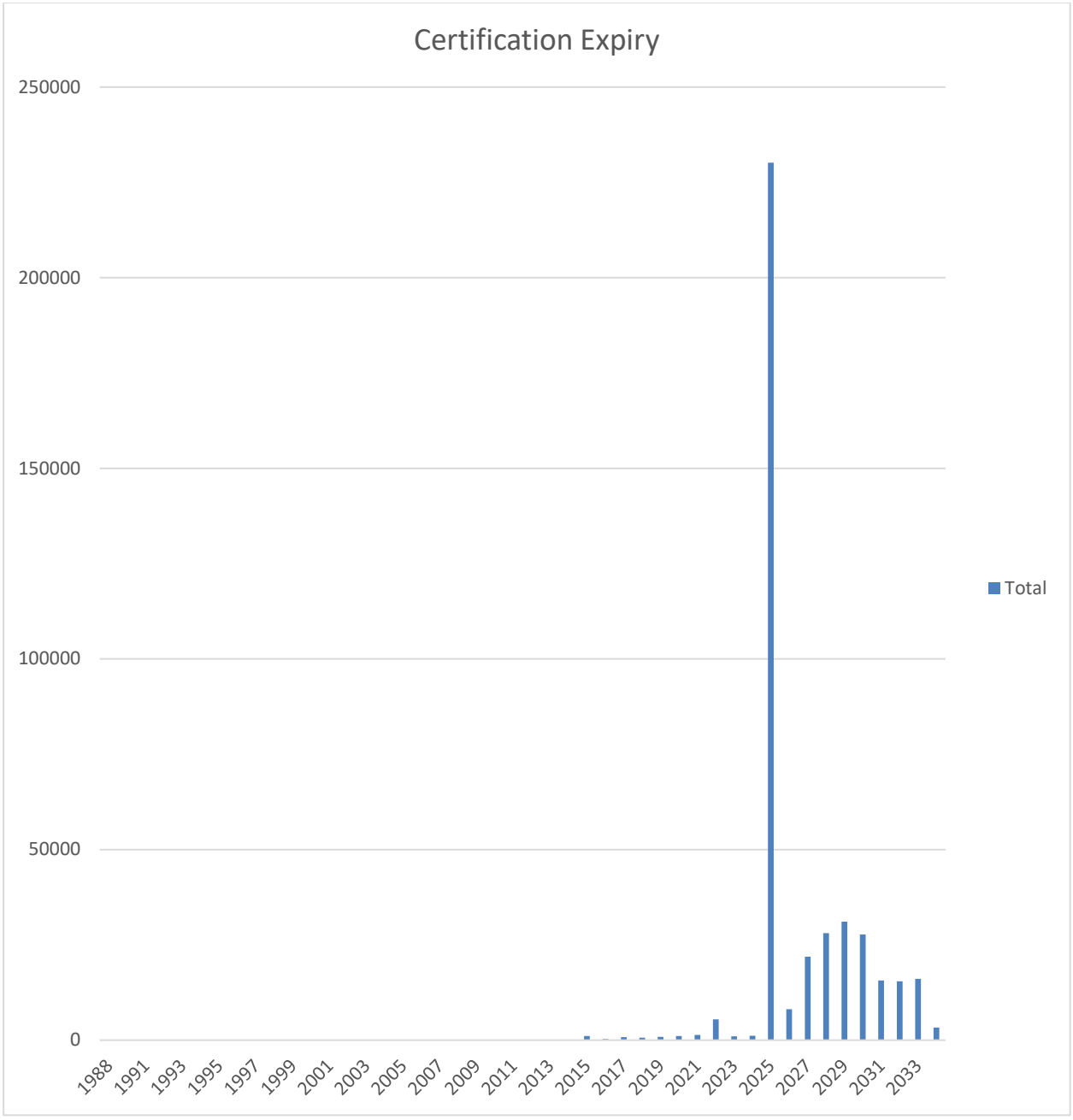
Reason	Quantity
Already AMI Meter	1
Meter Board Obstructed	13
Meter Incompatibility	18
No Access	110
No Power at Site	1
Refusal	72
Safety	71
Site Location	28

Tamper	1
Trader switch out	23
	343

There are seven Category 2 installations with expired certification. The details of these are shown below.

ICP	Certification date	Expiry date	Metrix comments
0000161379UN17D	30-10-17	25-07-18	Challenging site - More work is required by the Customer.
0008393743LC9D3	16-02-09	16-02-19	Challenging site - More work is required by the Customer.
0143676032LC666	14-01-09	14-01-19	Challenging site - Premise is being used as storage.
0148196039LCED9	12-03-09	12-03-19	Part of challenging sites - Plans to demolish the building is currently in progress.
0160154022LCD90	16-01-09	13-10-18	Part of challenging sites - CT's need to be replaced. More work is required by the Customer.
0193970058LC44D	10-12-18	10-03-19	Insufficient load – New SR raised to go back to site.
1002057575LCFCC	14-12-18	14-03-19	Building won't be complete until March 2020. Insufficient load - Request for certification for another 120months.

The graph below shows certification expiry totals out to 2033, which Metrix will need to plan for to ensure resources are available to conduct statistical sampling or field replacement.


Certification Expiry
250000
200000
150000
100000
50000
0
1988
1991
1993
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
2015
2017
2019
2021
2023
2025
2027
2029
2031
2033
Total

There are six ICPs where the registry shows the certification occurred more than five days from electrical connection or at the time metering was changed. The ICPs are shown in the table below.

ICP	Initial electrical connection date	Active date	Certification date	Comments
1002042927LC48C	27/07/2018	27/07/2018	21/08/2018	Insufficient load was present at the time of livening, but certification was not conducted until 21/08/18.
1002050282UN367	16/08/2018	16/08/2018	26/09/2018	It appears there may be a certification record for a BTS on 16/08/18 but the registry only shows the 26/09/18 records.
1002050475LC2A8	17/07/2018	17/07/2018	23/11/2018	The registry shows the BTS to permanent certification but not the BTS records.
2000000062SND1C	1/10/2018	1/10/2018	31/01/2019	The registry shows the BTS to permanent certification but not the BTS records.
0249446006LC7FB	N/A	N/A	14/09/2018	Meter was changed on 18/08/18, but there is no record of certification occurring on this date. The registry has a certification expiry of 14/09/28 instead of 18/08/28.
0193970058LC44D	N/A	N/A	10/12/2018	Meter was changed on 10/12/18, but there is no record of monitoring or recertification once more load was present.

Late certification also leads to non-compliance for Traders.

Category 2 ICP 0110408691LCD72 was recorded during the last audit as having expired certification. This is now certified.

As recorded in **section 6.4**, 17 metering installations have cancelled certification due to low burden and 250 statistically sampled ICPs have invalid certification.

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-Jan-98 To: 08-May-19	Certification expired, cancelled or late for 3,010 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
Expired Certification Metrix will monitor these through RSP alerts and the reconciliation tool. Metrix have batches in place to cater for re-certification and working with participants for access to sites to have the site recertified or equipment changed with certification. Metrix are actively monitoring sites where we are unable to gain access or are challenging sites – refer to section 7.1. Metrix will re-visit the statistical sampling method to cater for the remaining sites. **Statistical sampling** A process was followed which the Metrix ATH believed complied with the requirements of AS1284. In this case, the minimum of 15 samples obtained were included. Additional samples were subsequently obtained but were not included. The calculation of results could have been extended to include these. It should be noted that there was no deliberate attempt made to exclude any test results. Meters were calibrated and the results added to the calculation spreadsheet in chronological order as they were received. During the same statistical sampling exercise, two other populations of Legacy meters failed due to test results which exceeded the maximum permitted errors.	December, 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Expired Certification Metrix will monitor these through RSP alerts and the reconciliation tool. Metrix have batches in place to cater for re-certification and working with participants for access to sites to have the site recertified or equipment changed with certification. Metrix are actively monitoring sites where we are unable to gain access or are challenging sites – refer to section 7.1 and. Metrix will re-visit the statistical sampling method to cater for the remaining sites **Statistical sampling** Metrix ATH will ensure that future rounds of statistical sampling using the variables method will be included for all samples obtained.	December, 2019	

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 54 metering installations to confirm compliance.

Audit commentary

I confirm the appropriate tests are conducted and the results are recorded.

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

I checked the certification records for 34 metering installations to confirm compliance.

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 Metrix 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

Compliant

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 where the CT ratio was above the threshold to confirm that protection was appropriate or that monitoring was in place.

Audit commentary

Metrix has a list of Category 2 metering installations with CT ratios above 500/5. There are a small number where the protection or transformer rating is greater than 500A or is unknown. Monitoring is in place for all of these and none have a demand over the allowable threshold.

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 the process and three examples of insufficient load certification.

Audit commentary

The table below contains three examples of insufficient load certification. There is no evidence that additional integrity checks were conducted by the ATH and no evidence that monitoring occurred as required by clause 14(3) of Schedule 10.7.

ICP	Initial electrical connection date	Active date	Certification date	Comments
1002042927LC48C	27/07/2018	27/07/2018	21/08/2018	Insufficient load was present at the time of livening, but certification was not conducted until 21/08/18.
0249446006LC7FB	N/A	N/A	14/09/2018	Meter was changed on 18/08/18, but there is no record of certification

				occurring on this date. The registry has a certification expiry of 14/09/28 instead of 18/08/28.
0193970058LC44D	N/A	N/A	10/12/2018	Meter was changed on 10/12/18, but there is no record of monitoring or recertification once more load was present.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.7 With: Clause 14(3) of Schedule 10.7 From: 27-Jul-18 To: 19-May-19	Monitoring not conducted for three ICPs. Potential impact: Medium Actual impact: None Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as weak because they do not appear to be identifying situations where insufficient load is present and where more information is required. 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
Metrix will work with the certifying ATH where full certification has not taken place as demand must be monitored. Metrix will ensure monitoring takes place when the ATH specifies on their certification report, the minimum load threshold in order for them to be able to return to site and conduct full certification tests. Before Metrix advise the certifying ATH to return to site, we will liaise with the Retailer. The Metrix ATH has a well-established process in place to monitor Category 2 and above installations when certificates are generated with an endorsement that demand must be monitored.	August, 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

Metrix will work with the certifying ATH where full certification has not taken place as demand must be monitored. Metrix will ensure monitoring takes place when the ATH specifies on their certification report, the minimum load threshold in order for them to be able to return to site and conduct full certification tests. Before Metrix advise the certifying ATH to return to site, we will liaise with the Retailer.	August, 2019	

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 one business day:*
- *the MEP must follow the procedure for handling faulty metering installations (clause 10.43 - 10.48).*

Audit observation

I checked three examples to confirm compliance.

Audit commentary

Monitoring does not appear to have been conducted for the three ICPs checked, therefore the requirements of this clause do not yet apply. Metrix has a compliant process for monitoring once examples are added to the list.

Audit outcome

Compliant

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 five 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

Compliant

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 Metrix whether there were any metering installations with timeclocks.

Audit commentary

Metrix confirmed there are no metering installations with timeclocks.

Audit outcome

Compliant

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

Control device bridging sometimes occurs by contractors on behalf of traders and Metrix will then be notified in order to conduct remedial action, if the contractor is not operating under an ATH. Notification is not required to any other party because the request comes from the trader. The process is compliant, and I checked five examples to confirm compliance and to confirm timeliness.

Audit outcome

Compliant

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 Metrix had taken to identify regions with signal propagation issues.

Audit commentary

Metrix asked all relevant distributors for information on areas with signal propagation issues. Vector responded with some specific areas in the "United" region and Metrix is ensuring control devices are not installed in these areas. The other responses indicated that no issues were present.

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

I checked the detailed records for two tranches of statistical sampling. 223,980 where AMI metering was recertified and 3,176 where legacy metering was recertified.

Metrix ATH conducted the testing and produced the certification reports. The variables option was chosen for all samples.

Clause 8.5 of AS/NZS 1284.13 allows the use of actual light load accuracy of relative light load accuracy. The specific wording is as follows:

"The accuracy at light load may be taken as either the measured value or the relative value. Relative light load accuracy is calculated as the measured accuracy at light load minus the measured accuracy at full load."

The justification for using relative light load accuracy is that light load errors have a lower impact on total measured kWh than the full load errors.

Metrix chose to use actual light load accuracy.

The Code requires that the sample selection and testing methodology of AS/NZS 1284.13 is used but does not require grouping of meters to be conducted in accordance with the standard. The standard requires the following:

8.2 Grouping of meters (Step 1)

Group meters in representative populations and treat each population separately. Meters shall be grouped according to—

(a) manufacturer; and

(b) design or pattern or type.

If necessary (see Step 5) or considered desirable, arrange meters in sub-populations according to a combination of any of the following—

(i) year of installation;

(ii) geographic factors, e.g. on the coast or in the mountains;

(iii) load history, e.g. lightly or heavily loaded;

(iv) connections to supply, e.g. to overhead lines or via underground cables;

(v) any history of refurbishment;

(vi) environmental weather conditions and installation, e.g. in a meter box or exposed; and

(vii) any other appropriate characteristic.

New Zealand *

But the Code states "A metering equipment provider may arrange for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process …", which has been interpreted by the industry as allowing any meter of any type to be included in the "group". The downside of not requiring ATHs to use the process outlined in the standard is that the population can include many different types of meters and meters known to be inaccurate or with unknown characteristics can be included in the population where the chance of them being selected is low. Metrix could have included all of their uncertified meters in the population of 223,980 and it's highly likely the population would still have passed for seven years. Metrix chose to follow the requirements of Clause 8.2 of AS/NZS 1284.13 and they grouped meters into populations based on manufacturer and model (design or pattern or type). The advantage of this is that where a meter type passes statistical sampling, there is a very high probability that the sample represents the population. The

disadvantage is that meters with low quantities were not sampled and 2,730 ICPs will need to be visited to physically certify.

Metrix correctly dealt with the additional three phase test point by testing all meters with the additional test point.

One issue was found with the certification process. For each population, slightly more meters were tested than required, because all meters removed from the field were tested. This is sound practice and is required by the standard, which states:

Section 8.4 (Selection of samples) states: *"It is recommended that the number of meters selected should be 10% more than the required sample size to allow for the replacements if some meters are damaged."*

Section 7.1.2 (Sampling accuracy by variables) states: *"Each meter in a sample shall be tested for accuracy in accordance with Clause 8.4."*

Clause 8.4 of AS/NZS 1284.13 requires the sample to be *"randomly selected to be representative of the selected meter population."*

Whilst all meters in the sample were tested, they were not all used in the variables calculation. One meter type (Schlumberger M2XL4V3) had one meter with a high failure rate amongst those meters not considered. With this meter included, the sample failed. The overall population was 250 and the number of tests required was 15 but there were actually 22 meters tested. Outliers cannot be removed until populations reach 500.

Clause 8.4 of the standard requires the sample to be representative of the population, and with seven meters removed from the sample (including one with a high error), the sample does not represent the population.

The other reason it's desirable to include all meters in a sample is that it removes any selection bias and perception of selection bias when the results are scrutinised.

The wording of the clause is that the MEP "…may arrange for an ATH to recertify a group of category 1 metering installations for which the metering equipment provider is responsible using a statistical sampling process set out in subclause (2)". The process does not comply with sub-clause (2), therefore the ATH is non-compliant but Metrix MEP cannot be non-compliant with this clause. However, certification is not valid, which means certification is cancelled, which is discussed in **sections 6.4** and **7.1**.

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 34 Category 2 or Category 3 metering installations to confirm that compensation factors were correct.

Audit commentary

The compensation factors were correct for all 34 metering installations.

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 54 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 54 installations.

Audit outcome

Compliant

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 34 metering installations to confirm compliance.

Audit commentary

Measuring transformers were certified where required for all 34 installations.

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 54 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all 54 installations.

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 827 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: 05-May-19	827 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
Metrix will continue to data cleanse these sites and make the necessary corrections to the Registry. In some cases, Metrix have not changed certification from "I" to "F" as 'full certification' may exist but have also expired or unable to complete certification due to Retailer and Consumer turn downs. Metrix will continue to monitor these through RSP alerts, the reconciliation tool and look to having these included to the statistical sampling process.	December, 2019	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Metrix will continue to monitor these through RSP alerts, the reconciliation tool and look to having these included to the statistical sampling process.	December, 2019	

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 the process, and the results for the Category 1 inspection regime to confirm compliance.

Audit commentary

Metrix conducted category 1 inspections by sample in accordance with this clause. The process and reporting of results is compliant.

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. None were due for inspection.

Audit commentary

I checked the registry information to confirm which ICPs were due for inspection. None were due for inspection.

Audit outcome

Compliant

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 process and results from inspection regimes to ensure any incorrect records were updated.

Audit commentary

Metrix checked the relevant details during inspections, and I observed evidence that updates had occurred where discrepancies were found.

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 five examples of notification of missing seals.

Audit commentary

In all cases the installation was re-sealed following confirmation that the integrity of the installation was not compromised.

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 five examples where Metrix had become aware of faulty metering installations.

Audit commentary

They were all Category 1 and the relevant traders were notified within 20 business days.

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 five examples where Metrix had become aware of faulty metering installations.

Audit commentary

In all cases the issues were resolved within the required timeframes and notification was made appropriately.

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

I checked five examples where Metrix had become aware of faulty metering installations.

Audit commentary

The statements of situation were all provided within three business days.

Audit outcome

Compliant

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 Metrix 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 Metrix 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 Metrix 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 Metrix 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

Interrogation cycle

I conducted a walk-through of the process and I checked reporting of meters not read during the maximum interrogation cycle.

Clock synchronisation

Clock synchronisation is discussed in **section 10.7**.

Event logs

Event logs are discussed in **section 10.8**.

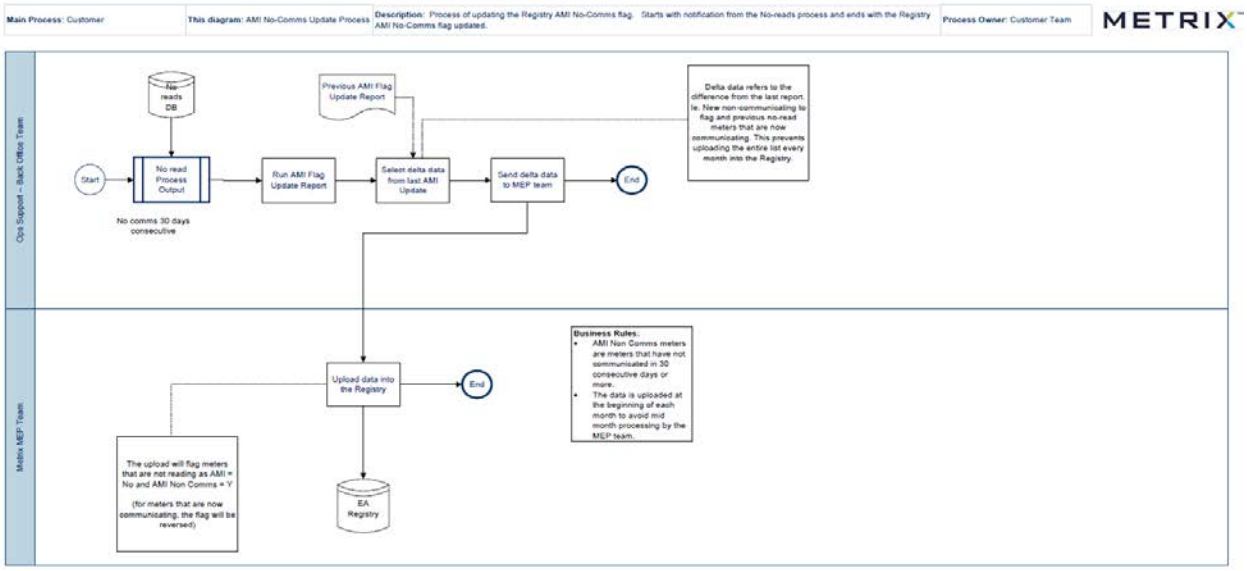
Security of raw meter data

I checked the security and storage of data by looking at examples of data more than 48 months old and by checking security protocols.

Audit commentary

Metrix provided process documentation during the previous audit (inserted below) indicating they will set the AMI Comm flag to "N" for any meter that hasn't read for 30 or more consecutive days. This process has been implemented and many ICPs have had the flag changed to "N". Reporting is in place with retailers to ensure they have knowledge of non-communicating meters.

Metrix provided a report confirming there are no ICPs with an AMI flag of "Y" where interrogation has not been successful.



With regard to the security of raw meter data, I checked some data from 2015 to confirm it was available. All users have login and password to access working data and only certain IT experts can access raw data. There are no business processes that allow data to be edited. Event data is archived along with consumption data. This part of the process is compliant.

Event logs and clock synchronisation processes are discussed in **sections 10.7** and **10.8**.

I checked whether revised information was provided for periods where data is not available and then becomes available. Metrix sends "catch-up" data for a period of 15 days but if data is available outside this timeframe it is not provided. Clause 10 of Schedule 10.6 is not specific regarding the time period for revised data, but Clause 10.6 requires information to be "complete and accurate" and it also requires further or corrected information to be provided as soon as practicable. Therefore, I conclude that a 15-day window for revised data does not comply with Clause 10.6. This is recorded in **section 2.5**.

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 checked the security and storage of data by looking at examples of data more than 48 months old.

Audit commentary

With regard to the security of raw meter data, I checked some data from 2015 to confirm it was available. All users have login and password to access working data and only certain IT experts can access raw data. There are no business processes that allow data to be edited. Event data is archived along with consumption data.

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 checked the clock synchronization processes and reporting for all head ends.

Audit commentary

Metrix has five different systems. Time synchronisation occurs as follows:

1. Multidrive. The clock setting is five seconds to 30 seconds for Category 1 and five seconds to ten seconds for Category 2. All errors in these bands are adjusted automatically and those over the maximum setting are adjusted manually. This task is conducted daily. If the manual adjustment fails due to a communications issue, then a field visit is booked to fix the issue and synchronise the clock. There is a "repeat offenders" list of installations where the clock has drifted outside the threshold every interrogation. These devices are replaced.

2. Command Centre. The clock setting is ten seconds, so any error less than ten seconds is adjusted automatically and those over ten seconds are adjusted manually. A separate "time synchronisation" report is run on a weekly basis to manage clock errors. Repeat offenders are also monitored and managed.

3. EAMS. This is an RF mesh system, which has "Gatekeepers" and "meters". Gatekeepers are synchronised to the server on a daily basis. The Gatekeeper time sync setting is two to 25 seconds. Any large time errors over 25 seconds are managed manually. Every 15 minutes the Gatekeepers broadcast a "time sync" signal to the meters and any errors greater than four seconds are adjusted.

4. Silverspring for Counties. The clock setting is ten seconds to 20 minutes. For errors over 20 minutes a user must manually set the time. This list is run weekly and sent to Silverspring for them to adjust the clock.

5. Silverspring for Metrix. The clock setting is ten seconds to 20 minutes. For errors over 20 minutes a user must manually set the time. This list is run weekly and sent to Silverspring for them to adjust the clock.

Metrix advises affected reconciliation participants of time error adjustments or any potential effect on raw meter data. Metrix monitors devices with multiple clock errors to ensure the meters are replaced.

This clause is slightly different to the clause in Part 15 for reconciliation participants. This clause requires MEPs to ensure the time is not outside the allowable thresholds, therefore non-compliance exists for those examples where time has drifted outside the allowable threshold.

I checked the most recent reports for each head end, and they contained a total of 42 examples.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 10.7 With: Clause 8(4) of Schedule 10.6 From: 01-Jul-18 To: 30-Apr-19	42 examples of clock errors outside the allowable thresholds in the most recent reports. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	I have recorded the controls as strong because clocks are synchronized during every successful interrogation. The impact is considered minor because most clock errors are small and are corrected within one half hour. The audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
Metrix ensure clocks are synchronized during each successful interrogation. Metrix will continue to advise Participants of the impacted meters and take necessary action when devices with multiple clock errors are repeated.	Ongoing	Investigating

Preventative actions taken to ensure no further issues will occur	Completion date	
Metrix accepts that this is a known issue which will be ongoing for the foreseeable future.	Ongoing	

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 checked the interrogation logs and event logs to ensure the items above were managed in a compliant manner.

Audit commentary

The interrogation logs contain all of the information above. I checked all head ends to confirm this.

Metrix downloads the event log as required by this clause. All critical events are evaluated, and appropriate action is taken. Relevant events, including tampering, are sent to reconciliation participants. Metrix provided a table listing all events, which shows "required action". The list appears to be comprehensive and complete.

I examined the process for filtering and managing events and I confirm that this is complete and robust.

Where Metrix acts as an agent to other MEPs, those MEPs are required to investigate and manage event information, Metrix does not conduct this activity for them.

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

The sum-check process was examined along with the business rules and associated reporting.

Audit commentary

Sum-check occurs when each meter is interrogated. The sum of the intervals is compared to the register read (scalar read) for the same period. Sum-check exceptions are reported on and are categorised as follows:

1. No interval data provided by the meter. If there is a scalar read but no interval data, then the sum-check cannot be performed. In these cases, no read processes commence to resolve the issue. When interval data is received the sum-check occurs automatically.
2. Interval data is present, but no scalar reading is collected. MDM will attempt to estimate the scalar reading from interval data or historic scalar readings. If a scalar reading cannot be generated due to insufficient data, then an exception is generated.
3. Scalar reading period is less than a configured percentage of the interval data period. If the scalar register reading period is less than 97% (this is configurable) of the interval data time period, an exception is generated. MDM then performs intervalisation to derive the scalar reading for the same time period as the interval data. A sum-check is performed comparing the scalar reading to the interval data. Reporting is in place for repeat offenders so these can be dealt with.
4. Interval data and scalar consumption do not match. If the interval data and scalar consumption for the same time period do not match (threshold is 1 kWh), an exception is generated. Any of these exceptions are investigated.

Some scalar readings are for times other than midnight therefore the sum-check is based on an estimated midnight read. Where a sum-check failure occurs and the midnight read is estimated, further action is not taken. The Code does not currently specify a threshold or consequence for sum-check failure; therefore, I have recorded this process as compliant. The proposed Code changes are much clearer and it's likely that some devices with non-midnight scalar reads may fail the sum-check and certification may therefore be cancelled. One such issue was identified, where data became corrupt during interrogation, leading to a data spike but the issue was not identified or investigated because the sum-check was conducted using an estimated midnight read. Metrix intends to implement a maximum kW validation to ensure these issues are identified in future.

Metrix is in the process of reconfiguring some meters with non-midnight scalar reads. There will be between 10,000 and 15,000 meters where reconfiguration cannot be conducted.

There are also a large number of meters where the scalar read does not have decimal places. If the sum-check failure threshold is set to 1 kWh, many of these may fail.

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 checked whether correction of raw meter data would occur.

Audit commentary

Data correction will not occur, but an estimation capability has been implemented. The Business rules are as follows:

Scalar reads:

1. **Scalar Derived from Interval:** This rule is applied when there is a missing scalar (register) read. It uses the available interval data to derive the register read.
2. **Scalar Proration:** This rule is applied when there is a missing scalar (register) read. It uses the scalar read before and after the missing value and prorates an estimated value.
3. **Scalar Estimation:** This rule is applied when there is a missing scalar (register) read, and no subsequent read. It uses the historical consumption at the site to provide an estimated value.

Interval data:

1. **Interval Adjustment from Scalar:** Estimates missing interval values based on the scalar usage for the same period, i.e. the missing interval reading values are estimated based on the scalar value for the end of that day.
2. **Interval Interpolation:** When values are missing, Oracle estimates gaps of missing interval values based on linear interpolation i.e. it draws a straight line between the values before and after the gap and estimates consumption based on the values that the line represents.
3. **Interval Average Estimation:** Estimates missing interval values based on an average of the historical usage for that interval over time. i.e. it uses consumption history to estimate the missing values.
4. **Default Estimate:** Estimates are based on one of five different default values depending on customer type.

In situations where interval data has been estimated and actual data is subsequently delivered, the actual reads automatically replace the estimates and the "replacement" file is provided to retailers in the next processing run. Replacement files are provided for a 15-day period. After this period replacement files are not sent, which is raised as non-compliance in Section 2.5. All estimates are appropriately identified.

I confirmed that estimation is not conducted for periods where outages occur. Nulls are replaced with zeros to ensure this is compliant.

The estimation processes are considered compliant. The estimation requirements of Part 15 are outside the scope of this audit because they are the responsibility of Retailers, which means the content of this

section will need to be included in Retailers' next Reconciliation Participant audit reports if these services are used.

Any changes from NHH to HHR will be conducted at midnight to ensure the registry update and reconciliation processes are not adversely affected.

Audit outcome

Compliant

CONCLUSION

Ten non-compliances were identified, which is an improvement on 12 in the last audit. The level of compliance has improved in most areas.

Improvements are evident in the following areas:

1. Error and uncertainty calculations are now conducted in a compliant manner.
2. There are less previously interim certified metering installations still uncertified.
3. There are less registry discrepancies.
4. Data management practices have been strengthened.
5. Recertification has occurred in all cases when bridging has occurred.

The main findings from this audit are as follows:

1. In 2016 the Authority provided a memo in relation to low burden on CT metered installations, clarifying that the certifying ATH for the metering installation must ensure that CTs are accurate at low burden. Many installations have older CTs with high rated burden where the in-service burden is lower than the lowest test point, and confirmation has not been provided by the manufacturer or a Class A ATH that the CTs will continue to operate within their accuracy range. I have therefore recorded non-compliance for at least 17 metering installations in relation to this clause. Metrix disputes this non-compliance; however, I confirmed with the Authority in July 2018 that non-compliance does exist, and certification is cancelled for these installations.
2. Insufficient load certification practices still require some attention. The communication process from the field to the back office needs to be more definite to ensure monitoring occurs.
3. Statistical sampling practices need to be changed to ensure all meters in a sample are included in the pass/fail calculation so that the sample represents the population. Certification is invalid for one meter type where the sample did not represent the population.

Metrix will provide an estimation function, which is confirmed as compliant. The estimation requirements of Part 15 are outside the scope of this audit because they are the responsibility of Retailers, which means the content of **section 10.10** will need to be included in Retailers' next Reconciliation Participant audit reports if these services are used.

PARTICIPANT RESPONSE

Metrix accepts the findings of this audit report.

As per our responsibility as an industry participant to the Code, Metrix will work towards correcting and preventing the non-compliances identified in this report that have not been stated as disputed.

For section 6.4 of this audit report, Metrix supports the need for clarity in the rules as indicated by the proposed rule amendment in the 2018 Omnibus.

As Metrix continues to improve its level of compliance; it is difficult to foresee pragmatic ways for a large MEP to deliver on all its obligations in the Code; Clock synchronization in section 10.7 and Certification and Maintenance in section 7.1.

Where non-compliances have been identified more than once, Metrix are proactively trying to resolve and work with Participants to achieve a better percentage, but non-compliance will always exist where it is required that 100% of records are to be updated within a given 'time period'