

**ELECTRICITY INDUSTRY PARTICIPATION CODE
METERING EQUIPMENT PROVIDER AUDIT REPORT**

For

MERCURY NZ LIMITED

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 19 July 2018

Date audit report completed: 16 August 2018

Audit report due date: 16-Aug-18

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EXECUTIVE SUMMARY

Mercury NZ Limited (Mercury) is a Metering Equipment Provider (MEP) and is required to undergo an audit by 16/08/18, in accordance with clause 1(1)(b) of schedule 10.5.

Mercury has two separate and distinct MEP operations. Metrix, based in Auckland, manages metering at ICPs and Mercury, based in Whakamaru, manages the generation metering. This audit covers both operations because Mercury is the owner of both operations.

To assist with readability, each section in the report is split into “Mercury” for the generation metering and “Metrix” for the ICP metering.

12 non-compliances were found, and one recommendation is made.

Improvements are evident in the following areas:

1. The timeliness of registry updates following a nomination has improved.
2. There are less previously interim certified metering installations still uncertified.
3. There are less registry discrepancies.
4. Maximum interrogation cycle reporting is now in place and contains the length of time installations have not been read.

The main findings from this audit are as follows:

1. The quantity of installations with expired certification has increased from 2,747 to 3,685.
2. Error and uncertainty calculations conducted by Delta are not compliant because temperature is not considered.
3. 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 nine 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.
4. The matter of bridged AMI metering is still present, where it appears that metering installations are not always being re-certified when the bridge is removed.
5. Metering installations at five Metrix ICPs were uncertified for a period of time following initial electrical connection. The ATH was VEMS in all cases and it appears there was insufficient load for certification tests. VEMS should have connected load in order to test, but instead they recorded that certification tests could not be completed and requested another service order to re-visit the installation. All five installations are NHH and could not be certified under the “insufficient load” clauses. The installations were uncertified for between two and ten weeks. They are now all currently certified.
6. Mercury’s inspection program, whilst robust and well managed, does not achieve compliance with the Code, leading to cancellation of certification for four installations. The inspection program has each installation inspected at 18 months from the previous inspection and the inspections should be conducted at 18 months from the previous certification. Each installation is inspected at least once and often twice during the 36-month certification period, but the Code is clear that inspection should be 18 months from the previous certification.

7. There are 6,986 installations not interrogated within the maximum interrogation cycle. Reporting is now in place to assist with the management of this area, which has an impact on retailers' ability to provide accurate and complete information for reconciliation.

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 three months, my recommendation is that the Authority considers a frequency of nine months to allow enough time to resolve the matters raised.

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.	Moderate	Low	2	Identified
Registry updates	3.2	2 of Schedule 11.4	25 registry updates later than 15 business days.	Strong	Low	1	Identified
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.	Moderate	Low	2	Investigating
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	Investigating
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	Identified

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.	Moderate	Low	2	Identified for bridging. Disputed for low burden
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.	Moderate	Medium	4	Investigating
Interim certification	7.19	18 of Schedule 10.7	1,217 ICPs with expired interim certification.	Moderate	Medium	4	Identified
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.	Moderate	Low	2	Identified
Maximum interrogation cycle	10.5	8 of Schedule 10.6	6,986 installations not interrogated within the maximum interrogation cycle.	Weak	Medium	6	Identified
Time errors	10.7	8(4) of Schedule 10.6	137 examples of clock errors outside the allowable thresholds in the most recent reports.	Strong	Low	1	Identified
Future Risk Rating						30	
Indicative Audit Frequency						3 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
Accuracy of records	5.1	Clause 4(1)(a) and (b) of Schedule 10.	Require ATHs to provide certification records with better clarity.

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

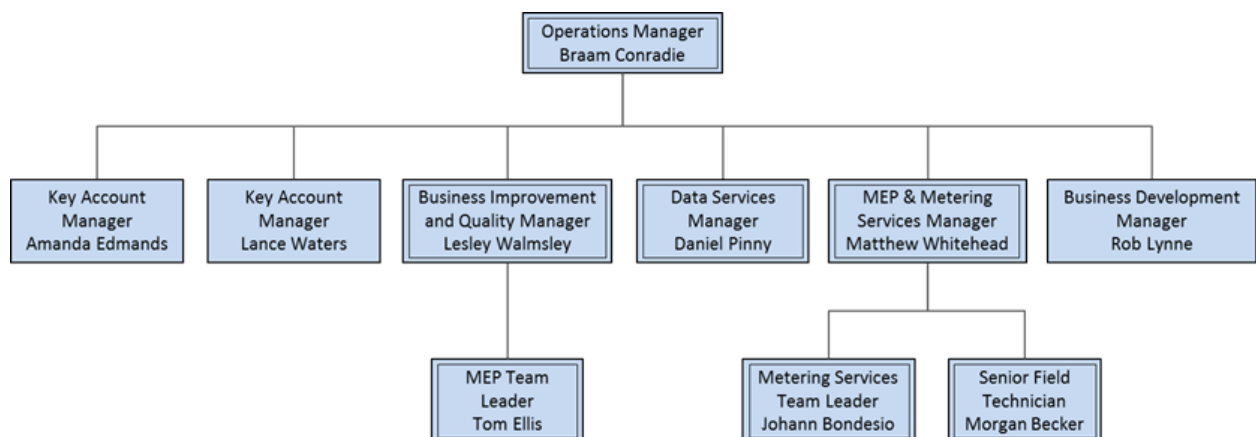
I checked the Electricity Authority website and I confirm there are no exemptions in place.

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.



Noel Woodfield is the only person involved in this particular function for Mercury.

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
Braam Conradie	Operations Manager	Metrix
Lesley Walmsley	Business Improvement and Quality Manager	Metrix

Name	Title	Operation
Tom Ellis	MEP Team Leader	Metrix
Teuila Laika	MEP Specialist	Metrix
Chris Chambers	Compliance Co-ordinator	Metrix
Kaushik Kundu	Deployment Team Coordinator	Metrix
Daniel Pinny	Data Services Manager (AMI)	Metrix
Vinita Ram	CAT 2 Project Services Co-ordinator	Metrix
Aaditi Dubale	AMI Data Analyst	Metrix
Amber Pham	AMI Performance Coordinator	Metrix
Jing Zhang	Asset Engineer	Metrix
Noel Woodfield	Senior Electrical Engineer	Mercury

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

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 50 ICPs to confirm their compliance and availability.

Mercury

I checked whether there were any agents or contractors involved in the performance of functions within the scope of the audit.

Audit commentary

Metrix

All certification records were provided, which achieves compliance with this clause. Some of the content of certification records is unclear, specifically with regard to installation certification dates and energisation dates. There were non-compliant practices employed by some ATHs. These two matters are discussed further in **Sections 4.3 and 5.1**.

Mercury

Mercury engages ATHs to conduct certification activities, but there are no contractors used to perform MEP responsibilities.

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

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

Mercury

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

1.7. ICP Data

Metrix

Metering Category	Number of ICPs
1	408,419
2	2,661
3	11
4	1
5	0

Mercury

Mercury does not have metering installations at ICPs.

1.8. Authorisation Received

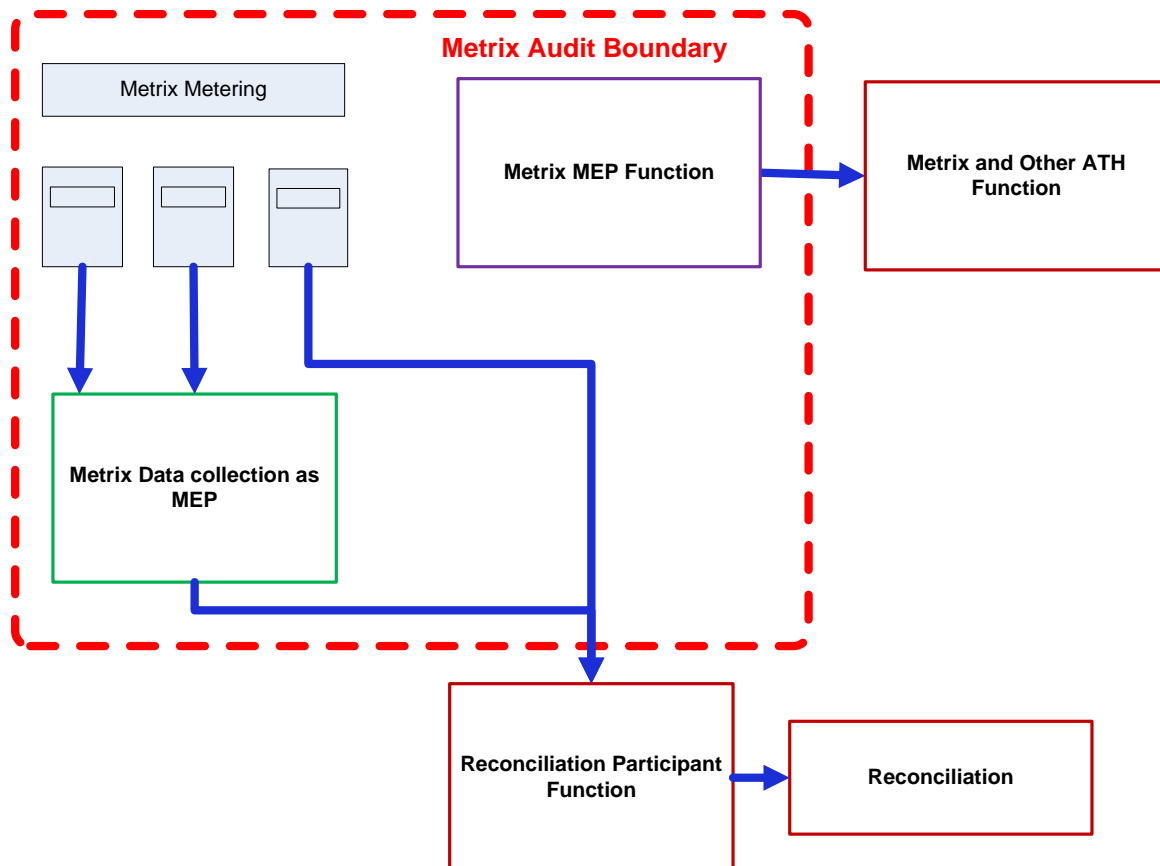
A letter of authorisation was not required or requested.

1.9. Scope of Audit

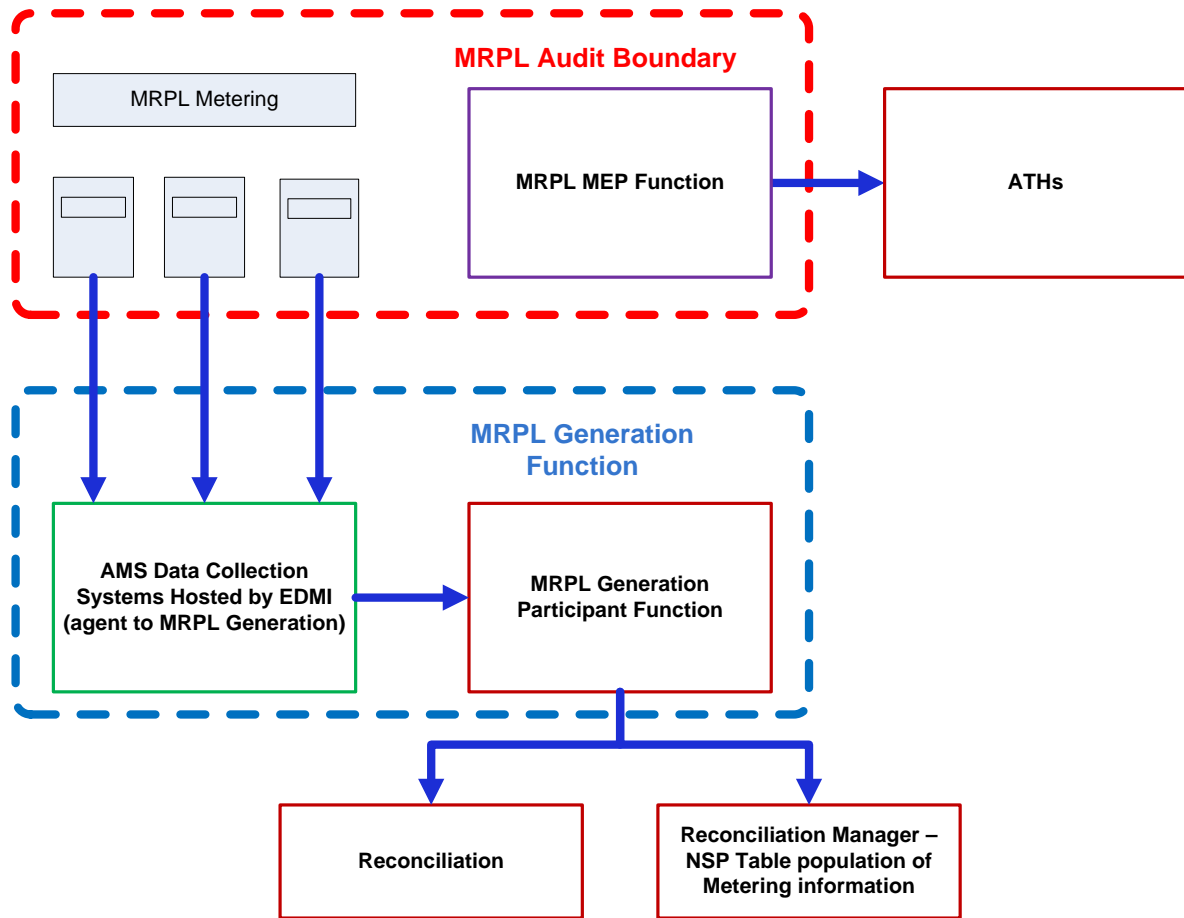
This audit was conducted in accordance with the Guideline for Metering Equipment Provider Audits V2.2, which was published by the Electricity Authority.

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

Metrix



Mercury



1.10. Summary of previous audit

The previous audit was conducted in July 2017 by Steve Woods of Veritek Limited. The table below shows that most of the issues still remain for Metrix.

Mercury did not have any non compliances.

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	Ten 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 consider site-specific conditions. Therefore, Metrix is not ensuring the sum of the measured error and uncertainty does not exceed the maximum permitted error.	Still existing for Delta
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 60 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 2,747 ICPs	Still existing
Interim certification	7.19	18 of Schedule 10.7	1,690 ICPs with expired interim certification.	Still existing
Maximum interrogation cycle	10.5	8 of Schedule 10.6	Some installations not interrogated within the maximum interrogation cycle.	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.	Still existing
AMI events	10.8	Clause 8(7)(b)(ii) of schedule 10.6	Provide retailers with monthly reports of events.	Cleared

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

Metrix

I checked certification records for 50 metering installations, covering all relevant ATHs.

Mercury

I checked certification records for 10 metering installations.

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, for both Metrix and Mercury.

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

Mercury and Metrix have 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.

Mercury uses the MRPL 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

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.

Mercury

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

Audit commentary

Metrix

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 EDM1 Mk 10 models needed a specific modem to be used to ensure compliance. No other issues were identified.

Mercury

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

Audit outcome

Compliant

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

Code reference

Clause 11.2 and Clause 10.6

Code related audit information

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

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

Audit observation

Metrix

The content of this audit report was reviewed to determine whether all practicable steps had been taken to provide accurate information. Several specific points related to AMI data collection were evaluated following identification of areas of interest by the Authority.

Mercury

The main information that is provided is certification dates, which are then passed on to the reconciliation manager. I checked the accuracy of these dates for ten metering installations.

Audit commentary

Metrix

In **section 6.2**, I have recorded that there are some registry data discrepancies. Whilst there has been 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.

Mercury

All MEP related information is complete, accurate and compliant with the Code.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 29-Aug-13 To: 19-Jul-18	All practicable steps not taken to ensure data is correct and that incorrect data is corrected as soon as practicable. 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. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Metrix has undergone a large data cleansing project between 2015 and 2017 to resolve historical data quality issues. Monthly reconciliation processes will be re-implemented to resolve the remaining historical data errors on Registry and within internal systems. A new process has been introduced this year to manage non-communicating AMI meter representation on the Registry as part of the new HHR service capability. There is a focus to improve data quality over the next 12 months which will be monitored through the next audit period.		We intend to improve this each month. Aiming for July 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Data discrepancies that have market impact are identified and dealt with as high priority monthly.		Ongoing monthly	

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

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

Mercury

I checked whether any MEP switches had occurred.

Audit commentary

Metrix

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

Mercury

No switches had occurred and it is unlikely MEP switching will occur for metering installations Mercury is responsible for.

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

Metrix

I checked the event detail for the period 01/07/17 to 31/05/18 for all records where Metrix became the MEP to evaluate the timeliness of updates.

Mercury

Mercury metering is not on the registry therefore this clause does not apply.

Audit commentary

Metrix

The table below shows that there were 25 late updates to the registry out of 188 events. In 22 of 25 cases, the trader had nominated Metrix late causing the late update. For the three examples where the nomination was on time, the reason the update was late was because of late field notification, late paperwork from the trader and rework in the field leading to a late notification.

Event	Year	Total ICPs	ICPs Notified Within 15 Days	ICPs Notified Greater Than 15 Days	Average Notification Days	Percentage Compliant
New MEP	2015	886	121	765		13.7%
	2016	150	39	111	126.5	26.0%
	2017	19	9	10	49	47%
	2018	188	163	25	15	87%

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Jul-17 To: 31-May-18	25 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
Metrix will continue to work with Traders and Contractors to support timely updates to the Registry. Quality checks will remain in place to ensure discrepancies are resolved before updates are made.	On-going	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Metrix will continue to work with Traders to request nominations are in place before issuing field work.	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

Metrix

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

Mercury

I checked whether any MEP switches had occurred.

Audit commentary

Metrix

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.

Mercury

No switches had occurred and it is unlikely MEP switching will occur for metering installations Mercury is responsible for.

Audit outcome

Compliant

3.4. Termination of MEP Responsibility (Clause 10.23)

Code reference

Clause 10.23

Code related audit information

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

The MEP is responsible if it:

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

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

An MEPs obligations terminate only when;

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

Audit observation

Metrix

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 10 ICPs.

Mercury

I checked whether Mercury had ceased to be responsible for any metering installations.

Audit commentary

Metrix

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

Mercury

This has not occurred, but Mercury keeps all records indefinitely and will comply with this requirement.

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

Metrix

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.

Mercury

The design changed at Southdown and this was the only change during the audit period.

Audit commentary

Metrix

The design reports include all relevant details required by the Code and ATHs had correctly recorded the design for all 50 metering installations checked. There were no new design reports produced during the audit period.

Mercury

I reviewed the Southdown design report, which was prepared by Accucal, and it contains all of the points listed above. Compliance is confirmed.

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 and Mercury use 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

Metrix

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 28 metering installations.

Mercury

I checked the design report for Southdown and ten certification reports to confirm compliance.

Audit commentary

Metrix

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

For Category 2 comparative certification, I have summarised the findings below.

Metrix as an ATH has an error and uncertainty calculator for use when conducting comparative certification, which considers working standards and clamps. Metrix is calculating the uncertainty per

installation, as required by this clause. Metrix has reviewed and updated the uncertainty calculations to include the consideration of a temperature range from 3° Celsius to 43° Celsius, based on the working standard's manufacturer's specification for temperature variation. This achieves compliance with the requirement to consider all site-specific conditions.

Delta conducted comparative certification for one metering installation during the audit period. Temperature was not taken into consideration with the uncertainty calculation. Delta has previously disputed the need to consider temperature in their calculations, despite the Code requiring error calculations to include "all sources of measurement error".

VEMS is now correctly calculating error and uncertainty using the MSL calculator, which includes consideration of temperature variances.

Wells' process was non-compliant during their previous audit, but they had taken steps to resolve this matter immediately following their audit. The Wells certification reports do not clearly state the overall installation error and the overall uncertainty. This is raised as a recommendation in **section 5.1**. Compliance is recorded because the calculations occur correctly. The relevant part of the metering installation certification report is shown below and it can be explained as follows:

- The "Tolerance" field is calculated by taking the maximum permitted error (2.5%) minus the maximum permitted uncertainty (0.6%) minus the working standard (including clamps) error. In the example below this is 2.5 minus 0.6 minus 0.314 = 1.586. This is used by Wells as the maximum allowable error for the comparative test, excluding consideration of temperature. The tolerance is conservative because the Code allows 2.5% as the maximum error so the tolerance could be 2.5 minus 0.314, but I support the use of conservative figures because 2.5% is generous considering most meters are Class 1 and most CT sets are Class 0.5.
- The next step in the calculation occurs following the comparative test and uses the tested error (difference between working standard kWh and kWh recorded by the meter) adjusted by the temperature coefficient of 0.03% per degree Celsius. The installation error can be derived by adding the "VALIDATION CHECK" to the tolerance, which gives a result of + 0.536% (0.54% rounded to 2 decimals), which is recorded below as "Pre Post Read Result Value".

It would be preferable if the results were recorded as follows:

Total allowable error – 2.5%

Measured error - 0.54% (including uncertainty due to temperature)

Working standard uncertainty – 0.314%

Better still would be to record the measured error and include temperature uncertainty in with the working standard uncertainty.

Prevailing Load Test 1

Completed: 05 Mar 2018 13:46

Multiplier	1
Hioki Asset No	Set 7 - 500A
Tolerance	1.586
Hioki Connected Photo	YES
Pre Test Read	27
Temperature	27
Post Test Read	31
Seconds	979.2
Equip Reading	3.977
VALIDATION CHECK (must be negative)	-1.05
Pre Post Read Result Value	0.54

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 50 installations I checked.

Mercury

With regard to the design of the installation (including data storage device and interrogation system), Mercury 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.

Mercury ensures the metering installation complies with the design report and the requirements of Part 10 by requiring the ATH to confirm the installation matches the design or by requiring updates to be provided if the installation does not match the design. Compliance is confirmed.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 01-Jul-17 To: 31-May-18	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. 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 they mitigate risk most of the time. The impact on accuracy and therefore settlement is minor because there were only 11 metering installations certified during the audit period without uncertainty calculations being conducted and the total error is within the allowable threshold.		
Actions taken to resolve the issue		Completion date	Remedial action status
Metrix will continue to communicate with all contracted ATHs, ensuring that they are working towards accurate and compliant Category 2 comparative certification.		July 2019	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Metrix has and will continue to issue CAT2 and above certification work, to compliant ATHs only.		Ongoing	

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

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

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

Audit observation

Metrix

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

Mercury

Mercury does not have any metering installations at ICPs.

Audit commentary

Metrix

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

Mercury

Mercury does not have any metering installations at ICPs.

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

Metrix

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

Mercury

Mercury does not have metering at ICPs.

Audit commentary

Metrix

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

Metrix is not responsible for any NSP metering.

Mercury

I checked the NSP table for any NSP metering where Mercury is the MEP and checked the certification records to ensure HHR metering was present.

Audit commentary

Mercury

Mercury is the MEP for some NSP metering at interconnection points and these installations are HHR.

Audit outcome

Compliant

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

Code reference

Clause 10.26(10)

Code related audit information

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

Audit observation

Metrix

Metrix is not responsible for any grid metering.

Mercury

I checked the NSP table for any grid metering where Mercury is the MEP and checked the certification records to ensure HHR metering was present.

Audit commentary

Mercury

Mercury is the MEP for some grid metering these installations are HHR. Compliance is confirmed.

Audit outcome

Compliant

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

Code reference

Clause 4(4) of Schedule 10.7

Code related audit information

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

Audit observation

Metrix

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

Mercury

I checked the certification records for ten installations to confirm the accommodation was recorded as appropriate.

Audit commentary

Metrix

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.

Mercury

Mercury's metering installations are all installed in appropriate accommodation.

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

Metrix

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

Mercury

I checked the NSP table for any NSP metering where Mercury is the MEP and checked whether consultation occurred.

Audit commentary

Metrix

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.

Mercury

Mercury has metering installations at two interconnection points and agreement has been reached between the two responsible parties. There were no new installations 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

Metrix

I checked the event detail report for the period 01/07/17 to 31/05/18 to evaluate the timeliness of registry updates.

Mercury

Mercury does not have any metering at ICPs, therefore the registry is not populated.

Audit commentary

Metrix

The table below shows that registry updates were on time for 85% of new connections. 46 of the 264 late updates were due to late nomination by traders. I checked 20 of the late updates where the nomination was on time, and in all cases the issue was late or no notification from the trader. 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.

There were many corrections conducted and most of these were correctly backdated to 2013, when records were first populated into the registry, or to when the metering was installed. Compliance is difficult to achieve for corrected data updates.

I also checked ICPs where the certification date matched the event date, which were not new connections or where Metrix had become the MEP. These ICPs are expected to be where recertification occurred. Metrix achieved 92.5% compliance for this group.

Event	Year	Total ICPs	ICPs Notified Within 10 Days	ICPs Notified Greater Than 10 Days	Average Notification Days	Percentage Compliant
New connection	2015	1,231	438	793		35.6%
	2016	711	474	237	11.5	66.7%
	2017	897	815	82	5.8	91%
	2018	1,699	1,435	264	7.7	85%
Update	2015	82,787	5,430	77,357		6.6%
	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%
Recertification	2018	15,953	14,753	1,200	5.5	92.5%

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Jul-17 To: 31-May-18	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 contractors and Mercury to support timely updates to the Registry for New Connections. Historical data quality will continue to be updated to reach compliance following data cleansing activity in 2017.		December 2018	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
In areas where Metrix has control of the timeliness of updates, the level of compliance is very good; i.e. recorded Recertification accuracy. Metrix plans to continue working towards updating historical data quality issues as part of a monthly reconciliation effort. For this reason; the compliant percentage against the "Update" mark is expected to remain low through to July 2019.		July 2019	

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

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.

Mercury

Mercury does not operate a data collection system but it is expected that the installation will integrate with the data collection system. I examined compliance by exception, looking at notifications from the data collector to Mercury indicating problems with the installation.

Audit commentary

Metrix

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

Mercury

There were no obvious issues with the integration of metering installations with data collection systems. All components operate as intended in a compliant manner.

Audit outcome

Compliant

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

Code reference

Clause 11.18B(3)

Code related audit information

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

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

Audit observation

Metrix

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

Mercury

Mercury is not responsible for metering at any ICPs.

Audit commentary

Metrix

Metrix has supplied a letter to all relevant traders, advising them of their responsibilities to ensure they carry out a final interrogation of metering installations where Metrix is the MEP.

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

Metrix

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

Mercury

I conducted a walkthrough of the process with Mercury and the ATH, Accucal.

Audit commentary

Metrix

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

Mercury

Current transformers only have metering equipment connected. Some voltage transformers have other equipment connected and this equipment is included in the certification process, including the sealing information.

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

Metrix has not conducted any changes during the audit period.

Mercury

I asked Mercury whether any relevant changes had occurred during the audit period.

Audit commentary

Metrix

Metrix has not conducted any changes during the audit period.

Mercury

No changes occurred during the audit period. Any changes will be conducted by Accucal in their laboratory in accordance with these clauses.

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

Metrix

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.

Mercury

I asked Mercury whether temporary energisation had occurred for any metering installations.

Audit commentary

Metrix

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.

Mercury

Temporary energisation has not occurred for any metering installations during the audit period.

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

Metrix

I checked certification records for 50 metering installations and I also checked all available inspection records to evaluate compliance with this clause.

Mercury

I checked the certification and inspection records for ten metering installations to confirm compliance.

Audit commentary

Metrix

All the records listed above are available and the records were correct for the 50 examples checked and for the inspections checked. Several of the certification records were difficult to read and some of the critical fields were difficult to identify. I recommend Metrix requires 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)
7. Error and uncertainty for Category 2 installations.

Mercury

All the information listed above is available in Mercury's records. Compliance is confirmed.

Audit outcome

Compliant

Recommendation	Description	Audited party comment	Remedial action
Clause 4(1)(a) and (b) of Schedule 10.6	Require ATHs to provide certification records with better clarity.	Metrix will continue to work with ATH's to provide better clarity in paperwork.	Investigating

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

Metrix

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

Mercury

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

Audit commentary

Metrix

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

Mercury

Mercury 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

Metrix

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

Mercury

I checked some metering records from 2012 to confirm compliance.

Audit commentary

Metrix

Metrix keeps records indefinitely and the availability of the 2013 records confirms compliance.

Mercury

Mercury keeps records indefinitely and the availability of the 2012 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

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

Mercury

Mercury 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

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

Mercury

Mercury 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

Metrix

I checked the event detail report for the period 01/07/17 to 31/05/18 to confirm whether all responses were within 10 business days.

Mercury

Mercury does not have metering installations at ICPs; therefore they are not required to supply information to the registry.

Audit commentary

Metrix

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 traders system.

Audit observation

Metrix

I checked the list file for 100% of records and I checked the Category 1 inspection records to identify discrepancies.

Mercury

Mercury does not have metering at ICPs; therefore, the registry is not populated.

Audit commentary

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

Quantity of ICPs July 2018	Quantity of ICPs July 2017	Quantity of ICPs June 2016	Issue
52	0	76	Blank records on the registry.
0	0	6	Category 1 ICPs with CTs.
0	0	1	Interim certified installations over Category 1.
0	0	0	Incorrect compensation factors of 2 or 14, which should have been 1.
0	0	0	Category 3 NHH.
9,044	11,299	120,293	Incorrect interim expiry dates. These appear to be fully certified with incorrect "I" flag.
0	462	19,422	Category 1 with certification duration of more than 15 years.
0	0	3	Category 1 with certification date the same as certification expiry date.
1	0	9	Incorrect certification date or certification expiry date for Cat 2.
4	14	0	Incorrect certification date or certification expiry date for Cat 1.
0	3	35	IN24 as register content code and period of availability.
0	0	5	IN0 as register content code and period of availability.
0	0	32	CN24 as register content code and period of availability. Some of these should be CN13.
0	0	1	D24 and should be D16.
0	0	1	N24.
0	0	639	UN0.
0	0	0	UN12 or UN19.
0	0	110	Day with no night.
0	0	6	Night with no day.
0	10	0	CN only on residential.
78	-	-	UN with a control device
10	3,047	5,731	Max interrogation cycle of zero days. <i>These are correct in SAP and will be updated on the registry.</i>
3,641	2,675	7,701	Expired certification. One Cat 2.
1,248	25,982	39,959	Controlled tariff with no load control device.

4,945	4,338	6,174	Metrix has accepted an MEP nomination but the registry is not updated. <i>Validation is in place for this and none of these have Metrix meters.</i>
31	39	56	Export ICPs with no injection register. <i>Metrix monitors the "B" field and then proactively asks the retailer whether they wish to have an import/export meter installed.</i>
13	139	-	Stat sampled with a certification duration greater than 7 years
7	-	-	Incorrect ATH recorded

Metrix has made considerable progress with regard to resolving discrepancies in the registry data. 16 of the discrepancy categories above now have zero records.

Checks of 50 certification records found seven with incorrect ATHs recorded in the registry. After the audit I analysed the certification number formats in the PR255 report and found several possible discrepancies, as shown in the table below.

Discrepancy	Quantity
Wells format but not recorded as Wells	540
Recorded as Metrix but not Metrix format	9,533
Metrix format but not recorded as Metrix	11,132
VEMS format but not recorded as VEMS	112
Recorded as Electrix but not Electrix format	2,784
Stat sample cert not Metrix	87
Recorded as Trustpower but not Trustpower format	113
Recorded as VEMS but not VEMS format	3,106

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-17 To: 31-May-18	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	<p>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.</p> <p>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.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Monthly reconciliation processes are being re-implemented to ensure recent data quality and historical inaccuracies. A recent update has reduced interim certified metering installations from 9,044 to 1,360 ICPs. ATH certification records are being corrected as part of the new HHR certification of Metrix meters and will be represented on the Registry as part of this monthly activity.		July 2019	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Metrix will continue to work with contractors to improve the accuracy of paperwork and ensure they are meeting this requirement.		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.

Mercury does not have responsibility for metering installations at ICPs.

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-17 To: 31-May-18	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 identifies reconciliation exceptions daily and attempts to resolve these as soon as possible. Some discrepancies require collaboration with other market participants to enable resolution, and this is not always performed in a timely manner. Metrix does not wish to update the Registry until it is confident that the data is of high quality to avoid partial or unnecessary updates.		December 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Streamline monthly reconciliation and ensure exceptions are resolved within 5 business days. Metrix will continue to resolve discrepancies prior to updates made on the Registry, which will not impact the total number of monthly discrepancies.		December 2018	

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:

- the metering installation is modified otherwise than under sub clause 19(3) or 19(6)*
- 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

Metrix

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.

Mercury

I checked for examples of all the points listed above, and checked whether certification had been cancelled, and whether the NSP table had been updated.

Audit commentary

Metrix

During the previous audit, I identified 60 ICPs where meters had been bridged but recertification had not occurred, leading to cancellation of certification. Some of these examples have been recertified or they have been cancelled, but there are still 33 that need to be addressed. There are an additional two examples for the current audit period where recertification has not occurred, and cancellation has not occurred.

The ICPs are shown in the table below.

ICP	Present during 2017 audit	Bridge removal date	Comments
0394304667LC0F2	Yes	17/06/2016	Not recertified or cancelled
0000128785UN940	Yes	2/08/2016	Not recertified or cancelled
0369818539LCCA4	Yes	28/07/2016	Not recertified or cancelled

0379041243LC244	Yes	3/10/2016	Not recertified or cancelled
0130669199LCE52	Yes	17/08/2016	Not recertified or cancelled
0001445033UN66D	Yes	29/09/2016	Not recertified or cancelled
0000214952UN9DB	Yes	29/09/2016	Not recertified or cancelled
0000142202UN8DD	Yes	6/12/2016	Not recertified or cancelled
0000190060UN2BE	Yes	6/12/2016	Not recertified or cancelled
1001104647LC581	Yes	1/12/2016	Not recertified or cancelled
0000112421UNC3A	Yes	13/01/2017	Not recertified or cancelled
0303755709LC90A	Yes	6/03/2017	Not recertified or cancelled
0000249184UNC4F	Yes	1/07/2017	Is recertified but not updated on registry
0000464986UNE4D	Yes	21/04/2016	Not recertified or cancelled
0000190199TRF24	Yes	2/05/2016	Not recertified or cancelled
0293412154LCFD2	Yes	23/06/2016	Not recertified or cancelled
0196191300LCEAC	Yes	16/06/2016	Not recertified or cancelled
0394304667LC0F2	Yes	17/06/2016	Not recertified or cancelled
0000112421UNC3A	Yes	13/01/2017	Not recertified or cancelled
0000128785UN940	Yes	2/08/2016	Not recertified or cancelled
0000177933UN662	Yes	21/04/2017	Not recertified or cancelled
0866263013LCAFE	Yes	8/04/2016	Not recertified or cancelled
0130669199LCE52	Yes	17/08/2016	Not recertified or cancelled
0369818539LCCA4	Yes	28/07/2016	Not recertified or cancelled
0001445033UN66D	Yes	29/09/2016	Not recertified or cancelled
0000214952UN9DB	Yes	29/09/2016	Not recertified or cancelled
1001104647LC581	Yes	1/12/2016	Not recertified or cancelled
0308791355LC230	Yes	23/01/2017	Not recertified or cancelled
0310224934LC828	Yes	30/03/2017	Not recertified or cancelled
0000142202UN8DD	Yes	6/12/2016	Not recertified or cancelled
0000190060UN2BE	Yes	6/12/2016	Not recertified or cancelled

0379041243LC244	Yes	3/10/2016	Not recertified or cancelled
0354239562LC7A5	Yes	29/03/2017	Not recertified or cancelled
0247768057LC440	No	24/04/2017	Not recertified or cancelled
1001294877LCF02	No	30/06/2017	Not recertified or cancelled

The second 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 for 17 Category 2 metering installations 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 current audit period, one additional ICP was identified with the same circumstances as the nine identified during the last audit.

Category 3 ICP 0007147258RN25F was not inspected within the required window and the registry has been updated with the cancelled certification date.

Mercury

Mercury's inspection program, whilst robust and well managed, does not achieve compliance with the Code, leading to cancellation of certification for some installations. The inspection program has each installation inspected at 18 months from the previous inspection and the inspections should be conducted at 18 months from the previous certification. Each installation is inspected at least once and often twice

during the 36-month certification period, but the Code is clear that inspection should be 18 months from the previous certification. The table below shows which metering installations were not inspected within the allowable window. Mercury as an MEP is not responsible for updating the NSP table. This responsibility is for Mercury as a “responsible party” which falls under the reconciliation participant function.

Installation	Certification date	Inspection window start	Inspection window finish	Inspection date
Aratiatia G1	30-09-16	28-02-18	30-04-18	28-06-18
Aratiatia G2	13-11-15	13-04-17	13-06-17	28-06-18
Aratiatia G3	25-08-16	25-01-18	25-03-18	28-06-18
Maraetai 1 G2	17-12-15	17-05-17	17-07-17	22-06-18

There are also a large number that have been recently inspected (earlier than the required inspection window) and these will need to be inspected again within the window to achieve future compliance. Mercury as an MEP is not required to update the RM of certification expiry dates so this matter is recorded as non-compliance in **sections 7.1 and 8.2** but not in this section.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.4 With: Clause 20 of Schedule 10.7 From: 09-Apr-15 To: 26-Apr-17	Certification not cancelled on the registry for 35 ICPs where AMI meters were bridged, and nine 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 they are reactive processes. Metrix could initiate liaison with traders to identify process improvements for bridging. The impact on settlement is unknown in relation to bridging, but this is a trader responsibility not an MEP responsibility. 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

<p>Metrix has investigated the 24 ICPs included in this report to cancel and recertify the metering installations; 15 of which require recertification. There are still gaps in the bridging process where the MEP is not notified by either the Trader or ATH in a timely manner about changes to the metering installation. Metrix is working with Traders to improve this process and avoid cancelled certifications where possible.</p> <p>Metrix ATH still disputes the non-compliance associated with burden tests from the previous audit in 2017.</p>	October 2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Bridging Metrix has instructed contracted ATHs to recertify installations when meters are unbridged. Metrix monitors meter events to identify meters that have been bridged and ask the Trader to confirm bridging and raise a site visit to unbridge and recertify. When Metrix are requested to bridge metering installations, a follow up request is made to the Trader to ensure another job is raised to have the installation unbridged and recertified. Metrix will retrain staff as required, to ensure appropriate process is followed in the event of bridged meters.</p> <p>Burden Metrix understanding is that burden needs to be applied when an individual component is being certified (EIPC Schedule Part 10, Schedule 10.7, Clause 31, (7)). The comparative method of certification does not certify the component. Metrix ATH is confident that sufficient testing is carried out to ensure that installations are classed as within the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, i.e. they meet the requirements of EIPC Schedule Part 10, Schedule 10.7, Clause 20, 1,(b).</p>	October 2018	

6.5. Registry Metering Records (Clause 11.8A)

Code reference

Clause 11.8A

Code related audit information

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

Audit observation

This clause refers to schedule 11.4 which is discussed in **section 6.2**, apart from the requirement to provide information in the “prescribed form”. I checked for examples of 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

Metrix

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

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

Mercury

I checked the NSP table, Mercury's certification schedule and the records for ten metering installations.

Audit commentary

The registry shows 3,640 Category 1 ICPs with expired certification. This is up from 2,672 during the last audit. 1,217 of these show as previously interim certified. 1,109 ICPs are on a list of ICPs where statistical sampling has occurred and new certification dates will be populated in the registry in the near future.

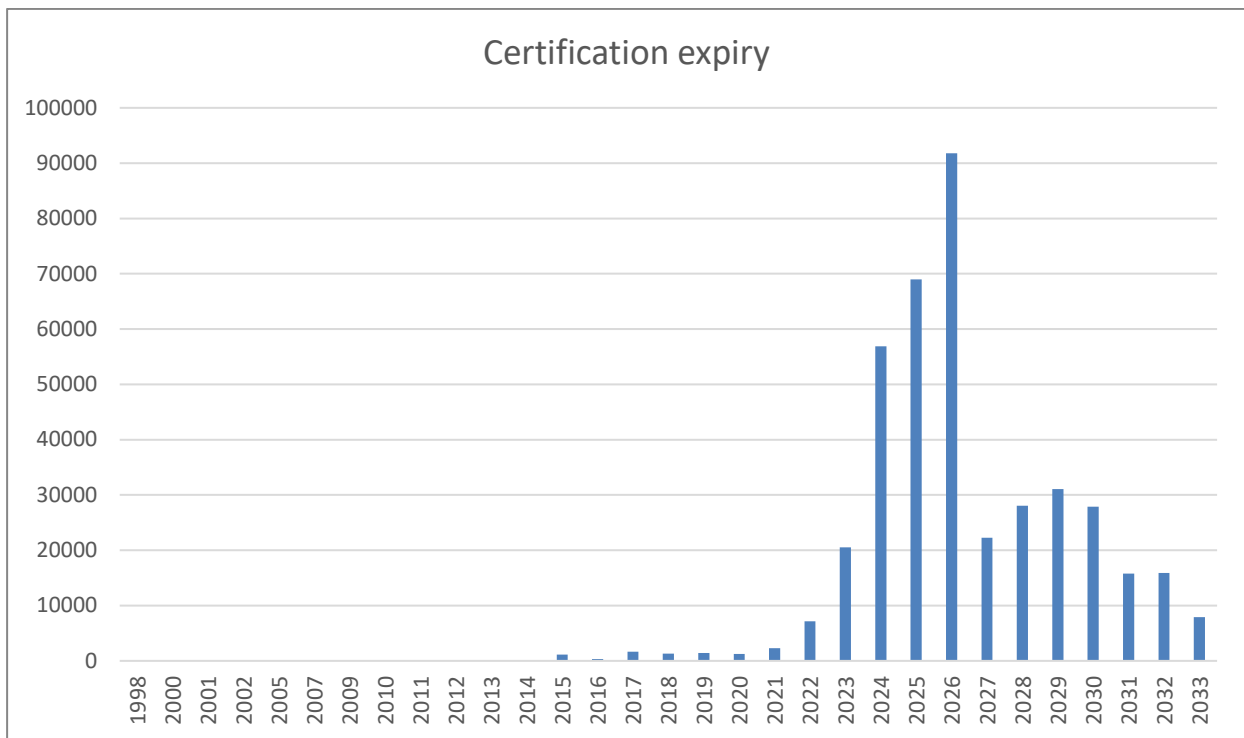
Of the remaining ICPs, 1,009 show as previously interim certified and 1,523 show as previously fully certified. Only one ICP is above Category 1.

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

Reason	Quantity
Already AMI Meter	0
Contractor Turndown	9
Meter Board Obstructed	14
Meter Incompatibility	15

No Access	318
No Power at Site	4
Refusal	123
Safety	88
Site Location	16
Trader switch out	71
Grand Total	658

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.



There is one ICP where it appears the certification occurred more than five days from electrical connection. The ICP is shown in the table below.

ICP	Initial electrical connection date	Active date	Certification date	Comments
1002044787LCF58	13-Mar-18	12-Mar-18	27-Mar-18	Certification was not conducted within 5 business days.

Category 2 ICP 0110408691LCD72, has expired certification from 2017. Metrix has been liaising with the trader because the installation needs to be reconfigured by the customer's electrician before certification can occur.

As recorded in **section 6.4**, 44 metering installations have cancelled certification.

Metering installations at five ICPs were uncertified for a period of time following electrical connection. The ATH was VEMS in all cases and it appears there was insufficient load for certification tests. VEMS should have connected load in order to test, but instead they recorded that certification tests could not be completed and requested another service order to re-visit the installation. All five installations are NHH and could not be certified under the "insufficient load" clauses. The installations were uncertified for between two and ten weeks. They are now all currently certified.

Mercury

All Mercury metering installations have current certification recorded in the NSP table.

As recorded in **section 6.4**, four installations have cancelled 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: 03-Aug-18	Certification expired, cancelled or late for 3,685 Metrix ICPs. Certification cancelled for four Mercury installations. 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
Metrix has a reconciliation tool that identifies interim and expired sites. Expiring Legacy meters are targeted for proactive AMI deployment as part of BAU. A majority of the expired and interim certification sites are due to consumer turndowns or historical data errors. A statistical recertification project will reduce the number of expired certifications by approximately 2,200 ICPs where AMI deployment has not been possible.		December 2018	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	

Metrix are proactively monitoring the RSP notification files in conjunction with internal reporting to manage certification. An ongoing project is in place to recertify Category 2 installations over the next 3 years before they expire.	Ongoing	
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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

Metrix

I checked the certification records for 50 metering installations to confirm compliance.

Mercury

I checked the certification records for 10 metering installations to confirm compliance.

Audit commentary

Metrix

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

Mercury

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

Metrix

I checked the certification records for 28 metering installations to confirm compliance.

Mercury

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

Audit commentary

Metrix

All relevant metering is compliant with this clause.

Mercury

Mercury is the MEP for grid connected metering and it is all four quadrant as required by this clause. Compliance is confirmed.

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

Metrix

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

Mercury

I checked the certification records for ten metering installations and conducted a walk-through of the process.

Audit commentary

Metrix

There are no examples of burden changes having occurred.

Mercury

Current transformers only have metering equipment connected. Some voltage transformers have other equipment connected and this equipment is included in the certification process, including the sealing information. Compliance is confirmed.

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

Metrix

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

Mercury

Mercury has not approved the certification of any metering installations as a lower category.

Audit commentary

Metrix

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

Metrix

I checked the process and one example of insufficient load certification.

Mercury

Mercury has not approved the certification of any metering installations in accordance with this clause.

Audit commentary

Metrix

The example checked had appropriate additional checks conducted to confirm the installation was likely to record accurately. The ICP is on the monitoring list and will be recertified once the load reaches 100A (as stipulated by the ATH).

Audit outcome

Compliant

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

Metrix

I checked the only available example to confirm compliance.

Audit commentary

Metrix

The example checked had appropriate additional checks conducted to confirm the installation was likely to record accurately. The ICP is on the monitoring list and will be recertified once the load reaches 100A (as stipulated by the ATH).

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

Metrix

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

Mercury

I checked with Mercury to confirm whether alternative certification had been applied.

Audit commentary

Metrix

Alternative certification has not been applied to any metering installations.

Mercury

Alternative certification was applied for Atiamuri T6 for a short period to allow time to arrange a shutdown. The process and documentation is compliant.

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:

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

Audit observation

Metrix

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

Mercury

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

Audit commentary

Metrix

Metrix confirmed there are no metering installations with timeclocks.

Mercury

Mercury does not have any metering installations with time clocks.

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 ten 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

Metrix

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

Mercury

Mercury does not have any control devices.

Audit commentary

Metrix

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

Metrix

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

Mercury

Mercury does not have any category 1 metering installations.

Audit commentary

Metrix

Statistical sampling is in progress for two tranches of metering installations. A group of older uncertified meters and a group of currently certified AMI meters which have upcoming certification expiry dates.

The process and records are compliant.

Audit outcome

Compliant

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

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

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

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

Audit observation

Metrix

I checked the records for 28 Category 2 or Category 3 metering installations to confirm that compensation factors were correct.

Mercury

Compensation factors for Mercury metering are all programmed in to the meters.

Audit commentary

Metrix

The compensation factors were correct for all 28 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

Metrix

I checked the certification records for 50 metering installations to confirm compliance.

Mercury

I checked the records for ten metering installations to confirm compliance.

Audit commentary

Metrix

Meters were certified for all 50 installations.

Mercury

Meters were certified in all cases. Compliance is confirmed.

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

Metrix

I checked the certification records for 28 metering installations to confirm compliance.

Mercury

I checked the records for ten metering installations to confirm compliance.

Audit commentary

Metrix

Measuring transformers were certified for all 28 installations.

Mercury

Measuring transformers were certified in all cases. Compliance is confirmed.

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

Metrix

I checked the certification records for 50 metering installations to confirm compliance.

Mercury

I checked the records for ten metering installations to confirm compliance.

Audit commentary

Metrix

Data storage devices were certified for all 50 installations.

Mercury

Data storage devices were certified in all cases. Compliance is confirmed.

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

Metrix

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

Mercury

Mercury does not have any interim certified metering installations.

Audit commentary

There are 1,217 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: 30-Jun-18	1,217 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
A majority of the still existing expired and interim certified sites are due to consumer turndowns or historical data errors. Metrix is working to reduce the number of interim certified installations on the Registry through monthly reconciliation and statistical resampling, as cited in sections 6.2 and 7.1.		December 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Metrix are proactively monitoring the RSP notification files in conjunction with internal reporting to manage certification.		Ongoing	

8. INSPECTION OF METERING INSTALLATIONS

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

Code reference

Clause 45 of Schedule 10.7

Code related audit information

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

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

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

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

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

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

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

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

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

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

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

Audit observation

Metrix

I checked the process, and the results for the Category 1 inspection regime during the previous audit to confirm compliance.

Mercury

Mercury does not have any Category 1 metering installations.

Audit commentary

Metrix

Metrix conducted category 1 inspections by sample in accordance with this clause during the last audit. Metrix is now conducting only statistical sampling for recertification and they have ensured this program works to a 10 year timetable so that inspections are not required.

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

Metrix

I checked the registry information to confirm which ICPs were due for inspection. I checked the records for the three relevant ICPs.

Mercury

I checked the inspection records for ten metering installations and I checked Mercury's inspection schedule.

Audit commentary

Metrix

The three relevant ICPs are Category 3. Two were inspected within the required window but ICP 0007147258RN25F was not and certification is therefore cancelled. The registry has been updated with the correct expiry date.

Mercury

Mercury's inspection program, whilst robust and well managed, does not achieve compliance with the Code, leading to cancellation of certification for some installations. The inspection program has each installation inspected at 18 months from the previous inspection and the inspections should be conducted at 18 months from the previous certification. Each installation is inspected at least once and often twice during the 36-month certification period, but the Code is clear that inspection should be 18 months from the previous certification. The table below shows which metering installations were not inspected within the allowable window.

Installation	Certification date	Inspection window start	Inspection window finish	Inspection date
Aratiatia G1	30-09-16	28-02-18	30-04-18	28-06-18
Aratiatia G2	13-11-15	13-04-17	13-06-17	28-06-18
Aratiatia G3	25-08-16	25-01-18	25-03-18	28-06-18
Maraetai 1 G2	17-12-15	17-05-17	17-07-17	22-06-18

There are also a large number that have been recently inspected (earlier than the required inspection window) and these will need to be inspected again within the window to achieve future compliance.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 8.2 With: Clause 46(1) of Schedule 10.7 From: 01-Jul-17 To: 31-Jul-18	One Metrix and four Mercury metering installations not inspected within the required window. Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate because some improvements are required to ensure Mercury inspections are aligned with certification dates, not the previous inspection date. There is no impact on settlement or other participants because in all cases for Mercury, there is at least one inspection during the certification period. The Metrix installation was not inspected due to an incorrectly recorded date.		
Actions taken to resolve the issue		Completion date	Remedial action status
Metrix has issued a service request to replace the meter and certify ICP 0007147258RN25F. This will be updated to the Registry appropriately. Mercury: Discussions are underway with the ATH to establish a compliant methodology.		September 2018 25/12/18	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

Metrix has updated internal inspection records for Category 3 metering installations and does not expect this error to reoccur. Mercury: Discussions are underway with the ATH to establish a compliant methodology.	August 2018 25/12/18	
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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

Metrix

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

Mercury

I checked the process for confirming the accuracy of records with the ATH, Accucal.

Audit commentary

Metrix

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

Mercury

Inspections are conducted with the previous certification records as the “base data”. If any changes are required (a very rare event) they are made at the time of the inspection. Compliance is confirmed.

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

Metrix

I checked five examples of notification of missing seals.

Mercury

I checked the process for the management of seals with Mercury and with Accucal.

Audit commentary

Metrix

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

Mercury

Mercury has a process in place for the management of seals and any subsequent investigation and reporting. Accucal maintains a database of seal information and Mercury conducts on-site checks of seals and the accuracy of sealing records. There were no examples of missing or broken seals during the audit period.

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

Metrix

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

Mercury

I checked the process for the management of faulty metering installations.

Audit commentary

Metrix

In all cases the issue was found and reported on by the ATH conducting certification activities. They were all Category 1 and the relevant traders were notified within 20 business days.

Mercury

Mercury has a process in place for the management of faulty metering installations and any subsequent investigation and reporting. Validation is in place at the time of interrogation and any issues are likely to be discovered within a short timeframe. No examples were available for the audit period. Compliance is confirmed.

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

Metrix

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

Mercury

I checked the process for the management of faulty metering installations.

Audit commentary

Metrix

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

Mercury

Mercury has a process in place for the management of faulty metering installations and any subsequent investigation and reporting. Validation is in place at the time of interrogation and any issues are likely to be discovered within a short timeframe. No examples were available for the audit period. Compliance is confirmed.

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

Metrix

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

Mercury

I checked the process for the management of faulty metering installations.

Audit commentary

Metrix

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

Mercury

Mercury has a process in place for the management of faulty metering installations and any subsequent investigation and reporting. Validation is in place at the time of interrogation and any issues are likely to be discovered within a short timeframe. No examples were available for the audit period. Compliance is confirmed.

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

Metrix

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

Mercury

Mercury as an MEP does not control access to raw meter data. Mercury as a participant will consider requests for access to data or components.

Audit commentary

Metrix

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

Metrix

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

Mercury

Mercury as an MEP does not control access to raw meter data. Mercury as a participant will consider requests for access to data or components.

Audit commentary

Metrix

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

Metrix

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

Mercury

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

Audit commentary

Metrix

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

Mercury

Mercury can facilitate physical access as required. No requests have been made.

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

Metrix

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

Mercury

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

Audit commentary

Metrix

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

Mercury

Mercury can facilitate physical access as required. No requests have been made.

Audit outcome

Compliant

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

Sections 10.5 to 10.10 are only relevant to Metrix not to Mercury

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 synchronization is discussed in **section 10.7**.

Event logs

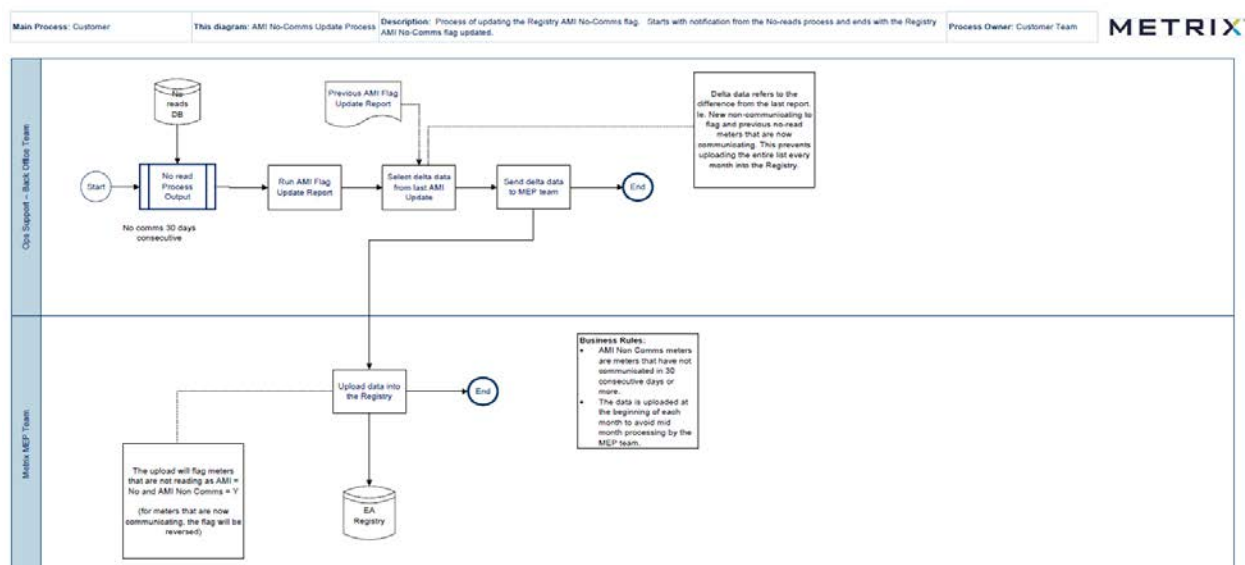
Event logs are discussed in **section 10.8**.

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 (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 is not yet implemented and Metrix provided a report containing 6,986 ICPs where interrogation has not successfully occurred within the maximum interrogation cycle. These ICPs are all “Active” on the registry. Reporting is in place with retailers to ensure they have knowledge of non-communicating meters.



With regard to the security of raw meter data, I checked some data from 2013 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 synchronization processes are discussed in **sections 10.7** and **10.8**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 10.5 With: Clause 8 of Schedule 10.6 From: 01-Jul-17 To: 31-Jul-18	6,986 ICPs not read during the maximum interrogation cycle. Potential impact: High Actual impact: Medium Audit history: Multiple times Controls: Weak Breach risk rating: 6
Audit risk rating	Rationale for audit risk rating

Medium	<p>I have recorded the controls as weak because some improvements are required to identify information such as vacancy and to ensure issues are resolved within a shorter time period and to ensure the registry is populated correctly with “AMI non-communicating”</p> <p>The impact on settlement is considered moderate, because some traders will be required to estimate data. The impact on traders and customers is also moderate because some customers will be required to switch retailers if AMI data is not available. The audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Metrix has ensured that all customers receive a regular report detailing sites that have not had readings for 30 consecutive days, and has provided clear instructions to all Traders that they must arrange manual readings for these sites. The audit has highlighted 6,986 ICPs (>2% of Metrix’s total metering) which were already part of a “no reads” notification to Traders. Following Metrix’s meter demand management system upgrade to provide HHR certified data; 3k ICPs were updated (on 28/07/2018) to reflect the “AMI Comm=N” flag on the Registry. Another 4k ICPs will be updated on 22 nd August 2018.		August 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Metrix will continue to monitor and notify Traders of non-communicating AMI meters. The Registry will also continue to be updated with “AMI Comm=N” for impacted meters when appropriate.		Ongoing	

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 2013 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 10 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 more than 20 times over a five day period. These devices are replaced.
2. Command Centre. The clock setting is 10 seconds, so any error less than 10 seconds is adjusted automatically and those over 10 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 10 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 10 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 137 examples.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 10.7 With: Clause 8(4) of Schedule 10.6 From: 01-Jul-17 To: 31-Jul-18	137 examples of clock errors outside the allowable thresholds in the most recent reports. Potential impact: Medium Actual impact: Low Audit history: None 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
Clocks are synchronized during each successful interrogation. Metrix communicates these “time syncs” with impacted Traders daily.		Ongoing	Identified
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.

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 sumcheck process was examined during the recent material change audit along with the business rules and associated reporting.

This function was not yet in production at the time of the audit, therefore the commentary below is from the material change audit findings.

Audit commentary

Sumcheck occurs when each meter is interrogated. The sum of the intervals is compared to the register read (scalar read) for the same period. Sumcheck 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 sumcheck cannot be performed. In these cases, no read processes commence to resolve the issue. When interval data is received the sumcheck 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 sumcheck 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 will be investigated. No such exceptions have been generated during testing or parallel running.

Screenshots of reporting results were provided, confirming the reporting that is in place and confirming there are no exceptions resulting from genuine failures of devices, systems or processes.

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. All estimates are appropriately identified.

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

12 non-compliances were found and one recommendation is made.

Improvements are evident in the following areas:

1. The timeliness of registry updates following a nomination has improved.
2. There are less previously interim certified metering installations still uncertified.
3. There are less registry discrepancies.
4. Maximum interrogation cycle reporting is now in place and contains the length of time installations have not been read.

The main findings from this audit are as follows:

1. The quantity of installations with expired certification has increased from 2,747 to 3,685.
2. Error and uncertainty calculations conducted by Delta are not compliant because temperature is not considered.
3. 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 nine 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.
4. The matter of bridged AMI metering is still present, where it appears that metering installations are not always being re-certified when the bridge is removed.
5. Metering installations at five Metrix ICPs were uncertified for a period of time following initial electrical connection. The ATH was VEMS in all cases and it appears there was insufficient load for certification tests. VEMS should have connected load in order to test, but instead they recorded that certification tests could not be completed and requested another service order to re-visit the installation. All five installations are NHH and could not be certified under the “insufficient load” clauses. The installations were uncertified for between two and ten weeks. They are now all currently certified.
6. Mercury’s inspection program, whilst robust and well managed, does not achieve compliance with the Code, leading to cancellation of certification for four installations. The inspection program has each installation inspected at 18 months from the previous inspection and the inspections should be conducted at 18 months from the previous certification. Each installation is inspected at least once and often twice during the 36-month certification period, but the Code is clear that inspection must occur within 18 months of certification.
7. There are 6,986 installations not interrogated within the maximum interrogation cycle. Reporting is now in place to assist with the management of this area, which has an impact on retailers’ ability to provide accurate and complete information for reconciliation.

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 three months, my recommendation is that the Authority considers a frequency of nine months to allow sufficient time to resolve the matters raised.

PARTICIPANT RESPONSE

Metrix accepts the findings and recommendations of this audit report. As per our responsibility as an industry participant to the Code, Metrix will work towards correcting and preventing all non-compliances included in this report that have not been stated as disputed. As Metrix continues to improve its level of compliance; it is difficult to foresee pragmatic ways for a large MEP to deliver on all obligations in the Code, i.e. the clock synchronization in section 10.7 when AMI meters resume communicating. This audit also highlights several non-compliances where Metrix's ability to deliver within certain timeframes is directly impacted by other participants, which is outside of an MEP's control. Some of the changes noted in this audit will take time to correct and we request that the Electricity Authority is mindful of this when determining the next audit period.