

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

For



**ADVANCED METERING SERVICES**

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 25 October 2018

Date audit report completed: 22 November 2018

Audit report due date: 23-Nov-18

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## EXECUTIVE SUMMARY

**AMS** is a Metering Equipment Provider (MEP) and is required to undergo an audit by 23 November 2018, in accordance with clause 1(1)(b) of schedule 10.5.

AMS has four MEP codes and two distinct operations. AMCI is the code for the Commercial and Industrial (C&I) operation and NGCM is the code for the mass market operation. The other two codes NGCS and STRM have no ICPs in the registry except 0000545280NRE79 which is an unmetered load ICP, therefore these codes are only mentioned in relevant sections.

The quantity of non-compliances has increased from 16 during the last audit to 20 in this audit, with the future risk rating increasing from 44 to 60. Some additional matters were found, as follows:

- monitoring of metering installations certified as a lower category was not conducted for two months, resulting in cancellation of certification
- statistical sampling has been conducted for recertification, but the registry has not been updated
- some incorrect compensation factors were identified
- insufficient Category 1 sample inspections were conducted
- clock errors were outside the allowable threshold for some AMI installations
- the sum-check validation does not record “negative” errors (sum of intervals less than difference between registers) as failures.
- During the Wells ATH audit in November 2017 I found that ICP 0005170923RN2E6 was certified for two years despite a measured error of 32.39% fast. NGCM notified the trader but the issue has not been corrected yet. The Code does not appear to include a timeframe for remedial action. Certification was not cancelled at the time NGCM became aware of the issue, but it has since expired and remains expired. The metering installation at this ICP has now been over recording since at least 02/03/16, more than 2.5 years.

Improvements have been made in the following areas since the last audit:

- the timeliness of registry updates has improved, and
- the total quantity of installations with expired certification has reduced.

Those with the highest breach risk rating are as follows:

- there are 69,390 ICPs with incorrect registry data
- over 150 installations have cancelled certification and the registry is not updated
- certification is expired for 49,758 ICPs - 427 were previously fully certified
- some inspections were conducted outside the allowable window.

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 longer frequency of at least six months to allow sufficient time to resolve the issues resolved, many of which require system changes or field visits.

## AUDIT SUMMARY

### NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Provision of accurate information	2.5	11.2 and 10.6	Registry not always updated as soon as practicable.  Sum-check process does not identify “negative” errors as a failure.	Moderate	Medium	4	Investigating
Payment of costs to losing MEP	3.1	10.22	Payment not made to the losing MEP within 20 business days.	None	Low	5	Disputed
Registry updates	3.2	2 of Schedule 11.4	Some registry updates later than 15 business days.	Strong	Low	1	Identified
Metering Installation Design & Accuracy	4.3	4(1) of Schedule 10.7	Error and uncertainty calculations not conducted correctly for one Category 2 metering installation.  ICP 0000012022EA0B0 has an error greater than 2.5%.	Moderate	Low	2	Identified
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Moderate	Low	2	Identified
Meter reading for decommissioned ICPs	4.12	11.18B(3)	Trader not advised to carry out final meter read for decommissioned ICPs.	Strong	Low	1	Disputed
Provision of Registry Information	6.2	Clause 7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Moderate	Medium	4	Identified
Correction of Errors in Registry	6.3	Clause 6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Moderate	Medium	4	Identified
Cancellation of certification	6.4	6 of Schedule 11.4	Certification cancelled, and registry not updated for:  NGCM - 2,290 Category 1 ICPs	Weak	Medium	6	Investigating

			<p>with inspections not conducted</p> <p>AMCI – 333 Category 1 ICPs with inspections not conducted</p> <p>AMCI - 3 installations with inspections completed early</p> <p>AMCI - 2 installations with inspections completed late</p> <p>NGCM - 5 three phase installations with only one phase metered</p> <p>NGCM - 8 Category 2 installations with overdue inspections</p> <p>NGCM - 65 installations where meters were bridged</p> <p>AMCI - 1 installation with an error greater than that allowed</p> <p>NGCM – 6 installations with low burden</p> <p>AMCI – 9 installations with low burden</p> <p>NGCM – 132 installations certified as a lower category but monitoring report wasn't produced for July and August 2018.</p> <p>NGCM – ICP 0005170923RN2E6 with an error over 30%</p> <p>NGCM - Uncertainty higher</p>				
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			than 0.6% for 5 installations certified by Wells.				
Certification of metering installations	7.1	10.38 (a), clause 1 & clause 15 of Schedule 10.7	Certification expired for 43,294 NGCM ICPs. Certification expired for 13 AMCI ICPs.	Moderate	Medium	4	Identified
Certification as a lower category	7.6	6(1)(b) and (d), and 6(2)(b) of Schedule 10.7	Monitoring not conducted and reported for 132 ICPs certified as a lower category during July and August 2018.	Moderate	Low	2	Identified
Statistical sampling	7.13	16(5) of Schedule 10.7	Registry not updated following statistical sampling certification.	None	Low	5	Identified
Compensation factors	7.14	24(3) of Schedule 10.7	One incorrect compensation factor for NGCM.  Incorrect compensation factors of 1 for AMCI.	Moderate	Low	2	Identified
Interim certification	7.19	18 of Schedule 10.7	41,848 ICPs with expired interim certification.	Moderate	Medium	4	Identified
Category 1 inspections	8.1	45 of Schedule 10.7	Insufficient Category 1 sample inspections conducted.	Strong	Low	1	Investigating
Inspections	8.2	46(1) of Schedule 10.7	Inspections not conducted within the required window for: <ul style="list-style-type: none"> <li>• 8 NGCM installations where inspections were not conducted</li> <li>• 2 AMCI installations with inspections completed early</li> <li>• 1 AMCI installation with inspection not conducted.</li> </ul>	Moderate	Medium	4	Identified
Investigation of Faulty Metering Installations	9.1	10.43(4) and (5)	Faulty meters not reported to traders within 20 business days	Moderate	Low	2	Identified



			for 8 NGCM ICPs.				
Testing of faulty metering installations	9.2	10.44	Statement of situation not arranged for NGCM ICPs.	Moderate	Low	2	Identified
Statement of situation	9.3	10.46(2)	Statement of situation not provided to the Authority within 3 business days for one ICP.	Moderate	Low	2	Identified
Max interrogation cycle	10.5	8(2) of schedule 10.6	2,375 metering installations not read within the maximum interrogation cycle.	Moderate	Low	2	Identified
Time errors	10.7	Clause 8(4) of Schedule 10.6	266 examples of clock errors outside the allowable thresholds in the most recent reports.	Strong	Low	1	Disputed
Future Risk Rating						59	
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
		Nil	

## 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 two exemptions in place (224 and 259).

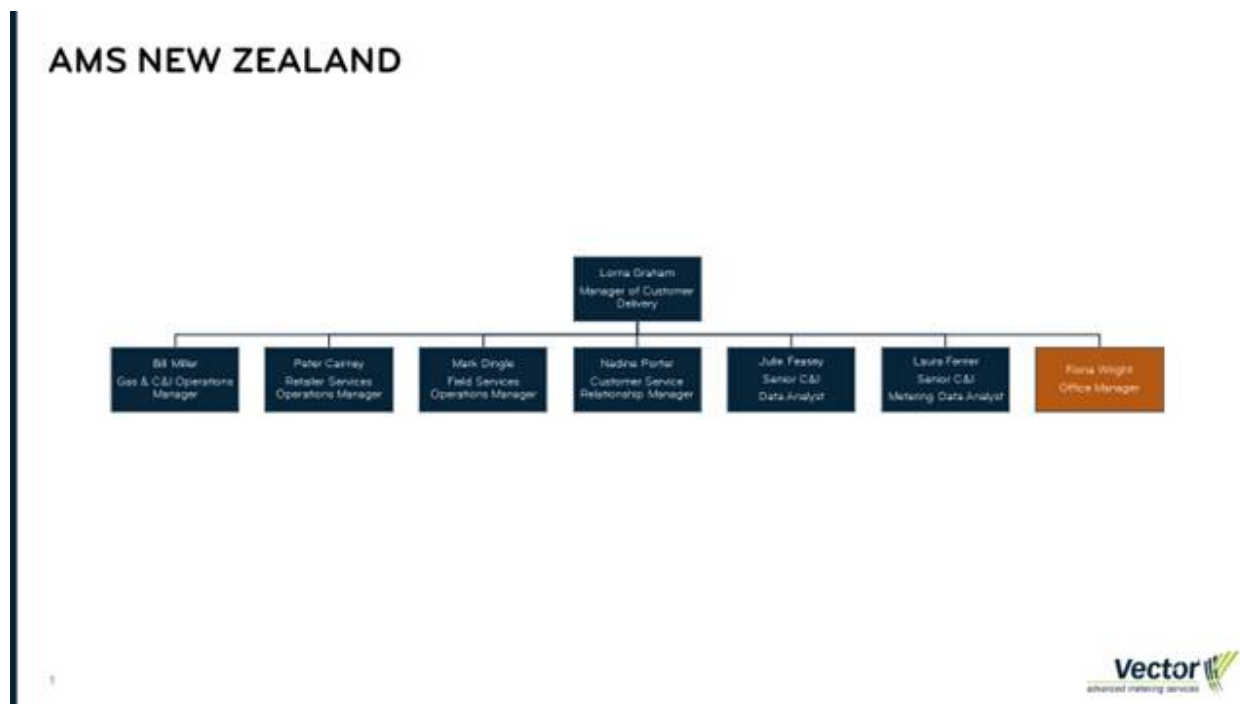
#### Audit commentary

Exemption 224 relates to clause 10.24 (c) of Part 10, allowing the use of subtraction to determine submission information for ICP 0000840407WE388. This exemption expires on 31 December 2024, or when Contact is no longer the trader, or when Contact no longer has an agreement to receive half hour metered data with the retailer of any ICP required in the subtraction calculation at Solid Energy's Rotowaro mine, or the date on which any embedded generation is installed on any part of Solid Energy's Rotowaro mine between Contact's outgoing and incoming metering points. Embedded generation is not installed; therefore, this exemption is still valid

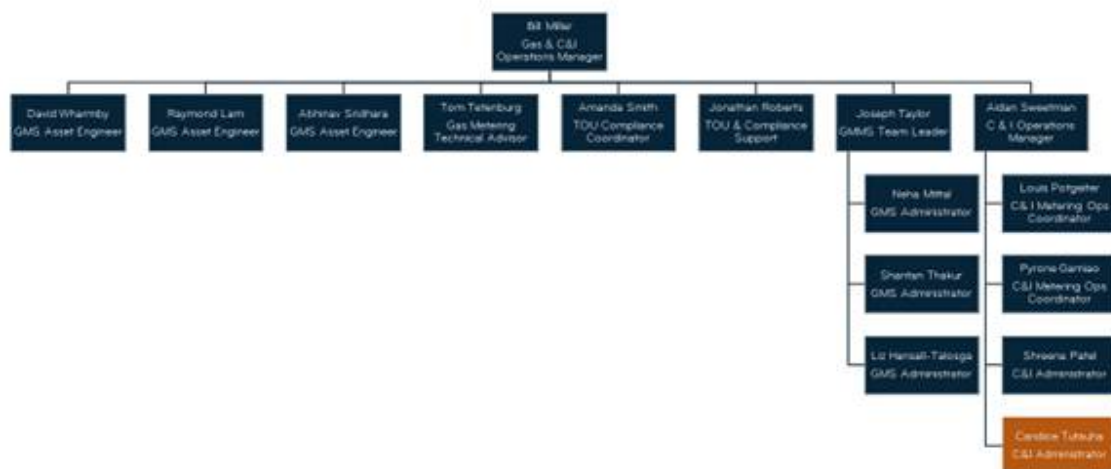
Exemption 259 was in place during the last audit to allow the metering installation at ICP 0800539060LCBFF to be uncertified. The site is Auckland hospital and the supply configuration needs to be changed before a shutdown can be arranged. This exemption has now expired, and non-compliance is recorded in **section 7.1**.

### 1.2. Structure of Organisation

NGCM and AMCI structure diagrams,



## GAS & C & I TEAM



## RETAILER SERVICES OPERATIONS



## FIELD SERVICES OPERATIONS



### 1.3. Persons involved in this audit

Auditor: Steve Woods

Supporting Auditor: Brett Piskulic

**Veritek Limited**

**Electricity Authority Approved Auditors**

AMS personnel assisting in this audit were:

Name	Title
Andrew Baken	Compliance Manager
Rachel Pearce	Data Services Team Leader
Faazil Kaidawala	C & I Metering Data Analyst
Andrea Grant	Senior Data Analyst
Aidan Sweetman	C & I Metering Operations Manager

## 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

#### NGCM

NGCM engages ATHs to conduct certification activities. These parties are not considered agents for this activity.

ATHs are also engaged to store records in accordance with clauses 4(1)(v)&(viii) of schedule 10.6. I checked that records were available from the relevant ATHs.

The ATHs engaged are as follows:

- Wells
- Delta
- Vircom-EMS
- Wel Networks
- Trustpower
- Indeserve
- ELeatrix

#### AMCI

AMCI engages ATHs to conduct certification activities. These parties are not considered agents for this activity.

### Audit commentary

#### NGCM

The agreements between NGCM and ATHs clearly specify that the ATHs are acting as an agent for these activities and they are required to produce records within five business days. The provision and accuracy of records is discussed further in **section 5.1**.

#### AMCI

AMCI engages ATHs to conduct certification activities. These parties are not considered agents for this activity.

### 1.5. Hardware and Software

NGCM MEP data is held in JDE and Salesforce. AMCI data is held in ServiceMax. All systems are subject to backup arrangements in accordance with standard industry protocols.

### 1.6. Breaches or Breach Allegations

AMS confirmed there are no breach allegations related to the scope of this audit.

### 1.7. ICP Data

#### NGCM

Metering Category	Number of ICPs 2018	Number of ICPs 2017
1	1,102,244	1,019,761
2	11,868	10,145
3	0	0
4	0	0
5	0	0
9	8	5

#### AMCI

Metering Category	Number of ICPs 2018	Number of ICPs 2017
1	1,603	1,709
2	5,730	5,676
3	3,579	3,543
4	1,447	1,377
5	172	174
9	18	13

The previous audit report recorded that ICP 1001252164UNB02 was in the registry with NGCS as the MEP. This ICP has now switched to NGCM.

ICP 0000545280NRE79 is in the registry with STRM as the MEP, but it is an unmetered load ICP and does not have metering installed.

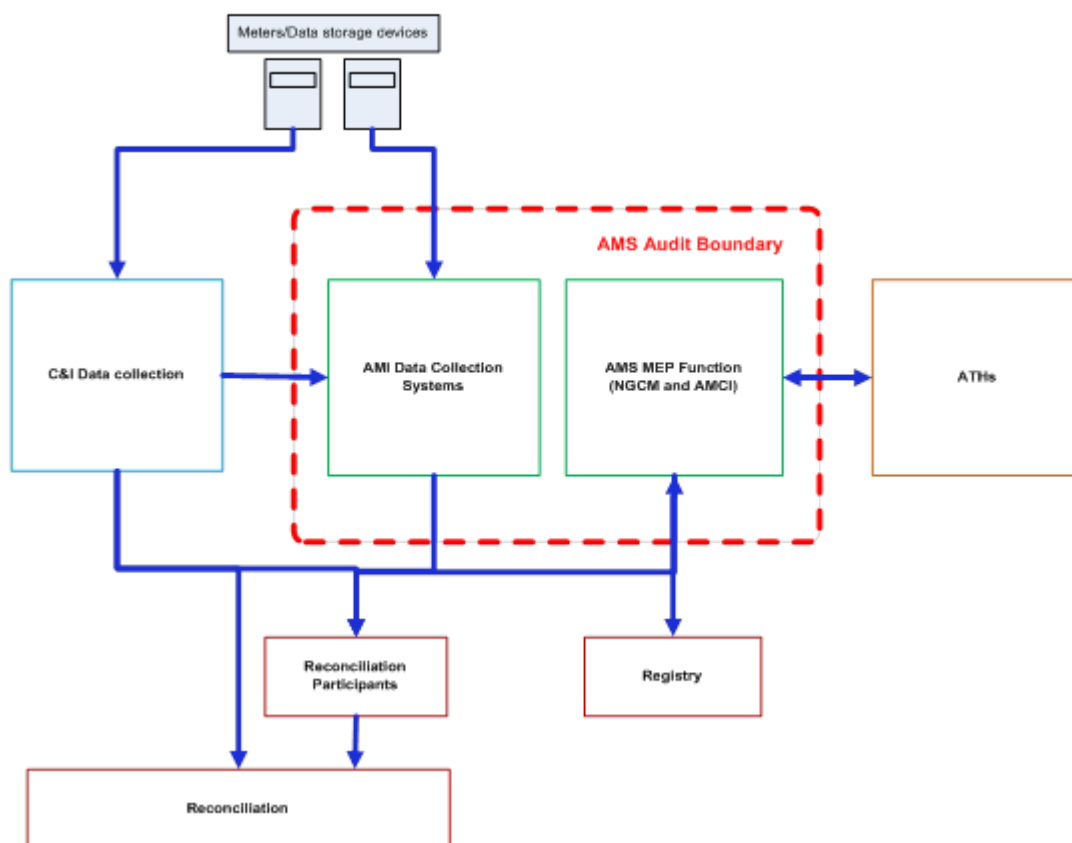
### 1.8. Authorisation Received

A letter of authorisation was not required or requested.

## 1.9. Scope of Audit

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

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



### 1.10. Summary of previous audit

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

#### NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Status
Provision of accurate information	2.5	11.2 and 10.6	Registry not always updated as soon as practicable by NGCM.	Still existing
Payment of costs to losing MEP	3.1	10.22	Payment not made to the losing MEP within 20 business days.	Still existing
Registry updates	3.2	2 of Schedule 11.4	Some registry updates later than 15 business days.	Still existing
Metering Installation Design & Accuracy	4.3	4(1) of Schedule 10.7	Error and uncertainty calculations not conducted correctly for most Category 2 metering installations.  Design report not recorded for one installation.	Still existing
Changes to registry records	4.10	3 of Schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
Meter reading for decommissioned ICPs	4.12	11.18B(3)	Trader not advised to carry out final meter read for decommissioned ICPs.	Still existing
Accurate and complete records	5.1	4(1) of Schedule 10.6	Metering records not populated on registry for one ICP.	Cleared
Provision of Registry Information	6.2	Clause 7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Still existing
Correction of Errors in Registry	6.3	Clause 6 of Schedule 11.4	Discrepancies not resolved within 5 business days.	Still existing
Cancellation of certification	6.4	6 of Schedule 11.4	Certification cancelled, and registry not updated for:  2 Category 3 installations with inspections completed early  2 Category 4 installations with inspections completed late  3 Category 5 installations with inspections completed early  4 three phase installations with only one phase metered  68 Category 2 installations with overdue inspections  94 installations where meters were bridged.	Still existing



Certification of metering installations	7.1	10.38 (a), clause 1 and clause 15 of Schedule 10.7	Certification expired for 49,750 NGCM ICPs. Certification expired for 8 AMCI ICPs.	Still existing
Interim certification	7.19	18 of Schedule 10.7	49,331 ICPs with expired interim certification.	Still existing
Inspections	8.2	46(1) of Schedule 10.7	Inspections not conducted within the required window for:  19 NGCM installations where inspections were not conducted  2 Category 3 installations with inspections completed early  2 Category 4 installations with inspections completed late  3 Category 5 installations with inspections completed early.	Still existing
Investigation of Faulty Metering Installations	9.1	10.43(4) and (5)	Faulty meters not reported to traders within 20 business days.	Still existing
Testing of faulty metering installations	9.2	10.44	Statement of situation not arranged.	Still existing
Statement of situation	9.3	10.46(2)	Statements of situation not provided to the Authority or participants within 3 business days.	Still existing
Max interrogation cycle	10.5	8(2) of schedule 10.6	1,930 metering installations not read within the maximum interrogation cycle.	Still existing

## RECOMMENDATIONS

Subject	Section	Recommendation	Description
		Nil	

## 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

##### NGCM

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.

##### AMCI

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.

#### Audit commentary

##### NGCM

NGCM has an AMI system and for many installations the services access interface will be “remote”. For non-AMI installations (including C&I installations) the services access interface is “local”. I checked 50 certification records and found the services access interface was recorded by all ATHs.

##### AMCI

AMCI conducts HHR data collection as an agent to reconciliation participants, not as an MEP. Therefore, the services access interface is “local” in all cases. The design reports include the services access interface location and AMCI considers the design report forms part of the certification record once certification is complete. This approach achieves compliance with the requirements of the Code because the location of the services access interface is documented. I checked 30 certification records and found the services access interface was recorded by all ATHs.

#### Audit outcome

Compliant

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

#### Code reference

*Clause 10.50(1) to (3)*

#### Code related audit information

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

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

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

#### Audit observation

##### NGCM

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

##### AMCI

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

#### Audit commentary

##### NGCM

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

##### AMCI

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

#### Audit outcome

Compliant

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

#### Code reference

*Clause 7(1) of Schedule 10.6*

#### Code related audit information

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

#### Audit observation

##### NGCM

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

##### AMCI

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

#### Audit commentary

##### NGCM

NGCM uses the NGCM identifiers for all MEP functions.

##### AMCI

AMCI uses the AMCI code for all MEP functions. There is one STRM ICP, which is unmetered and does not contain a metering installation.

#### 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

#### NGCM

Relevant documentation was checked to ensure the compatibility of communication equipment.

#### AMCI

Relevant documentation was checked to ensure the compatibility of communication equipment.

### Audit commentary

#### NGCM

NGCM ensures all communication equipment is appropriately certified with the relevant telecommunications standards. This is recorded in type test certificates and other approval documents. Testing is also conducted by their telecommunications provider, Vodafone to ensure compliance.

#### AMCI

AMCI ensures all communication equipment is appropriately certified with the relevant telecommunications standards. This is recorded in type test certificates and other approval documents. Testing is also conducted by Vodafone to ensure compliance.

### 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

#### NGCM

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

## AMCI

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

## **Audit commentary**

### NGCM

As mentioned in **section 6** there are some registry records which are not complete and accurate. NGCM is attempting to correct information as soon as practicable, bearing in mind that there is often liaison with other parties and/or fieldwork involved. There are some metering installations with cancelled certification and the registry has not been updated as soon as practicable.

As recorded in **section 10.9**, NGCM has a “sum-check” process where the “billable registers” from midnight reads are compared with HHR data. If the difference is more than 0.1 kWh this is considered a “fail”. It was recently identified that the 0.1 kWh threshold only applies for “positive” errors but does not apply for “negative” errors (where the sum of the intervals is less than the difference between register reads). The Code does not stipulate a pass/fail threshold or the content of reporting to retailers, however clause 10.6 requires that information must not be misleading or deceptive. Feedback from one retailer is that the information provided is misleading because a file can have intervals missing but can show as a “pass”, therefore retailers may use incorrect information for settlement and may not replace this information because they believe it is accurate. I have recorded non-compliance.

## AMCI

As mentioned in **section 6** there are some registry records which are not complete and accurate.

## **Audit outcome**

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6  From: 01-Dec-17 To: 12-Nov-18	Registry not always updated as soon as practicable.  Sum-check process does not identify “negative” errors as a failure.  Potential impact: Medium  Actual impact: Medium  Audit history: Multiple times  Controls: Moderate  Breach risk rating: 4
Audit risk rating	Rationale for audit risk rating
<b>Medium</b>	Controls are recorded as moderate because there is room to improve the timeliness of registry updates and the sum-check failure threshold.  The impact on other participants could be moderate due to the use of potentially incorrect data, thinking it is correct; therefore, the audit risk rating is medium.
Actions taken to resolve the issue	
Completion date	Remedial action status

AMS were made aware this is a problem for the first time this audit. AMS fail any sum check that is greater than 0.1, any sum check that results in a negative value is considered a pass. This is due to the way the system was built at the time.  To fix this we require a change in the core system, a project will be raised to complete this work.	May 2019	Investigating
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	
Once system correct issue will not occur as this is a fully automated process.	May 2019	

### 3. PROCESS FOR A CHANGE OF MEP

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

##### Code reference

*Clause 10.22*

##### Code related audit information

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

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

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

##### Audit observation

###### NGCM

I checked if NGCM had received any claims for costs.

###### AMCI

I checked if AMCI had received any claims for costs.

##### Audit commentary

###### NGCM

NGCM has not sent or received any invoices yet.

###### AMCI

AMCI received a claim from a losing MEP for four ICPs where AMCI was the gaining MEP during one of the previous audit periods. The costs have not been paid; therefore, AMCI remains non-compliant with clause 10.22(2) until payment is made. There has been some discussion about the meaning of this clause; however, the wording in the Code appears to be clear and unambiguous. The wording is as follows:

*The gaining metering equipment provider must, within 20 business days of assuming responsibility for a metering installation, pay the losing metering equipment provider the proportion of the costs described in subclause (3).*

There is no doubt AMCI is the gaining MEP and they have assumed responsibility for one or more metering installations, therefore payment is required to be made to the losing MEP. AMCI has yet to pay; it has been internally escalated to legal team. The Authority provided written clarification that if the gaining MEP (AMCI in this instance) replaces some of the metering components on or after the date on which they accept responsibility for the metering installation. The gaining MEP is required to pay for the certification and calibration testing costs, for any component of the metering installation, including those that the gaining MEP replaces.

There have been no additional claims received in the current audit period.

AMCI have not issued any claims in relation to this clause.

##### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.1</p> <p>With: Clause 10.22</p> <p>From: 01-Feb-17</p> <p>To: 11-Oct-17</p>	<p>Payment not made to the losing MEP within 20 business days.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: None</p> <p>Breach risk rating: 5</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>AMCI dispute this non-compliance. I have relied on the Authority's advice that payment is required, therefore I have recorded that controls are not in place to ensure payment is made within 20 business days.</p> <p>The impact on one other participant is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>VAMS disputes this non-compliance, The last email received from the losing MEP regarding this was the 17 October 2016. VAMS believe there was no breach because the losing MEP are still claiming lease fees on the CT's, and the other components were displaced, therefore, they are not entitled to claim compensation. There has been no further correspondence from FCLM since 2017, and no requests in the 2018 audit period.</p> <p>AMCI also requested a further breakdown of the initial compensation tabled (not invoiced) from FCLM to validate the chargeable amount but that was not forthcoming. Correction to audit report – no invoice was received from FCLM just a spreadsheet with an initial high-level costs breakdown - costs which we questioned and required more details on. Vector believes that this is a commercial issue that should be addressed commercially, and intends to discuss it with the Authority.</p>		Ongoing	Disputed
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>We will review each request for compensation on a case by case basis and if the claim meets the requirements of the code, VAMS will pay as required. There were no claims during the 2018 audit period.</p>		Ongoing	<p>The breakdown of costs was checked during the audit of the losing MEP and the breakdown complies with the Code.</p> <p>I have changed the wording in the report to "claim" rather than "invoice".</p> <p>The wording of the Code does not contain conditions, therefore this matter is not "cleared" because payment has not been made.</p>



### 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

##### NGCM

I checked the event detail report for the period 01/12/17 to 30/09/18 for all records where NGCM became the MEP to evaluate the timeliness of updates.

##### AMCI

I checked the event detail report for the period 01/12/17 to 30/09/18 for all records where AMCI became the MEP to evaluate the timeliness of updates.

#### Audit commentary

##### NGCM

I examined an event detail report for a sample of 1,241 ICPs for the audit period in relation to this clause and the findings are shown in the table below. The registry was updated within 15 business days for 84% of the sample. 197 updates were later than 15 business days and late nomination by the trader was the cause for 187 of the 197 ICPs. The remaining 10 were late due to processing issues.

Year	ICPs Switched	Notified to registry within 15 days	Percentage compliant	Average days
2015	16,126	14,671	91%	9.2
2016	37,411	31,810	85%	18.9
Feb 2017	3,307	3,155	95%	9.7
Oct 2017	1,285	1,078	84%	8.6
<b>Oct 2018</b>	<b>1,241</b>	<b>1,044</b>	<b>84%</b>	<b>17</b>

##### AMCI

I examined an event detail report for 39 switches in relation to this clause and the findings are shown in the table below. Late nomination by the trader was the cause of the late update for seven of eight late updates.

Year	ICPs	Notified to registry within 15 days	Percentage compliance	Average days
2015	90	41	46%	
2016	125	52	42%	
Feb 2017	71	49	69%	
Oct 2017	41	26	63%	
<b>Oct 2018</b>	<b>39</b>	<b>31</b>	<b>80%</b>	<b>26.6</b>

#### Audit outcome

## Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Dec-17 To: 30-Sep-18	Some 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		
<b>Low</b>	Controls are in place to ensure the timeliness of updates, but AMS is often prevented from updating the registry due to late field notification. 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
Late nominations by traders still a problem for VAMS, Our update percentage would be over 99% for both NGCM and AMCI if retailers nominated on time.		Ongoing	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>		Completion date	
We continue to produce and share with the retailers a weekly report showing all ICPs where nominations are outstanding. This has proven to be effective in prompting retailers to nominate on time, just not 100% effective. For AMCI we are moving towards not accepting SRs from the Retailer without a matching nomination from that retailer.		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**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

Nova MEP requested metering records for 227 ICPs on 31 July 2018. NGCM replied with a list of information on 14 August 2018, which was within 10 business days. A further request was made on 16 August 2018 for “ripple channel” information, which NGCM was unable to provide. NGCM provided register content and period of availability information, but the Code does not specifically state that channel information is a required to be recorded by MEPs. I have therefore recorded compliance.

##### AMCI

This has not occurred, and no examples are available to examine.

#### **Audit outcome**

Compliant

### **3.4. Termination of MEP Responsibility (Clause 10.23)**

#### **Code reference**

*Clause 10.23*

#### **Code related audit information**

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

*The MEP is responsible if it:*

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

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

*An MEP’s obligations terminate only when;*

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

#### **Audit observation**

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

#### NGCM

NGCM has ceased to be responsible for some metering installations and they still continue with their responsibilities, mainly in relation to the storage or records, which are kept indefinitely. As mentioned in **section 2.1**, some of these responsibilities will be met by ATHs on behalf of NGCM.

#### AMCI

AMCI has ceased to be responsible for some metering installations and they still continue with their responsibilities, mainly in relation to the storage or records, which are kept indefinitely. I checked records from 2015 for five ICPs to confirm compliance.

#### **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

##### NGCM

NGCM has engaged several ATHs for certification activities. The ATHs have provided design reports for this work, which I have checked.

##### ACMI

AMCI has engaged the VEMS, Accucal, Delta, Metrix and Electrix ATHs for certification activities. The ATHs have provided design reports for this work which I have checked.

#### Audit commentary

##### NGCM

NGCM has prepared design reports and has provided these to all ATHs. The reports include all of the requirements noted above and they were prepared by a person with the appropriate level of skills, expertise, experience and qualifications. I checked 50 certification records and confirmed that the design report was recorded in all 50 records.

##### ACMI

AMCI has a generic design report. This design report contains most of the information above but does not include configuration scheme. It is considered that the certification records become part of the design report once the certification is complete. The certification records include the configuration information.

#### 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

###### NGCM

I confirmed that NGCM uses the ATHs recorded in **section 1.4**.

###### AMCI

I confirmed that AMCI uses VEMS, Accucal, Delta, Metrix and Electrix ATHs.

##### Audit commentary

###### NGCM

NGCM has the scope statements on record for all ATHs to ensure they are appropriate.

###### AMCI

AMCI has the scope statements on record for all ATHs to ensure they are appropriate.

##### 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

###### NGCM

I checked the processes used by NGCM to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 34 metering installations.

###### AMCI

I checked the processes used by AMCI to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 30 metering installations.

## Audit commentary

### NGCM

NGCM does not fully comply with the requirements in relation to error determination. Most ATHs now have compliant practices, but Delta's process is still non-compliant because temperature is 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".

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

14 Well Category 2 certification reports were checked, and it was discovered that five had total uncertainty figures greater than the maximum allowable 0.6%. One of the five had an uncertainty of 0.71% for just the working standard and clamps, then when the temperature was considered it was 0.72%. Certification is cancelled for these five metering installations.

The table below shows the level of compliance for all ATHs who have conducted comparative certification since 29 August 2013. The table also shows the total number of category 2 certifications conducted during this period, however it is not known how many of these are comparative and how many are selected component.

ATH	Number of certifications	Number of certifications during the audit period	Compliance Status
Delta	758	1	This matter has been disputed by Delta.
Electrix	17	0	Compliant
Indeserve	461	93	Compliant
Northpower	18	0	Not compliant
VEMS	1,248	171	Compliant since late 2016
Wells	4,472	866	Compliant since late 2017

The design report was recorded for all 50 installations checked.

#### AMCI

AMCI has used Delta for Category 2 comparative certification during the audit period. As mentioned in the “NGCM” section above, Delta does not comply with the Code in relation to their uncertainty calculations. This results in non-compliance for AMCI. The sample of certification records checked included five for Delta and they were all non-compliant. In total Delta has certified 15 Category 2 installations during the audit period.

ICP 0000012022EA0B0 was certified by VEMS with a measured error of 2.2% and an uncertainty of +/- 0.413%. The certification records assume the uncertainty is a “minus” figure and the total error is stated as 1.783% but it could also be 2.613%. This installation is outside the allowable tolerance and certification is cancelled. The installation may be recording accurately, and it may just be that the test needs to be conducted for a longer period.

With regard to the design of the installation (including data storage device and interrogation system), AMCI 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. Data from meters and data storage devices has a minimum of two decimal places.

There is a requirement for AMCI to ensure the metering installation complies with the design report and the requirements of Part 10. The ATHs have a field in their certification reports to record the design report reference. I checked 30 certification reports and the design report was recorded for all installations.

#### **Audit outcome**

Non-compliant



Non-compliance	Description		
<p>Audit Ref: 4.3</p> <p>With: Clause 4(1) of Schedule 10.7</p> <p>From: 29-Aug-13</p> <p>To: 30-Oct-18</p>	<p>Error and uncertainty calculations not conducted correctly for one Category 2 metering installation.</p> <p>Uncertainty higher than 0.6% for 5 installations certified by Wells.</p> <p>ICP 0000012022EA0B0 has an error greater than 2.5%.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>I have recorded the controls as moderate because there is room to improve the records provided by ATHs and their processes.</p> <p>There could be a minor impact on metering installation accuracy; therefore, the audit risk rating is low</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>The commissioning report for the Delta job includes the temperature and humidity, we understand Delta are still disputing this. There has been a change to Delta staff so this will be a good time to push them again to follow correct procedure.</p> <p>From an AMCI perspective we have requested Vircom who utilise Delta in the C&amp;I space a sub-contracted ATH to ensure this issue is resolved to Vircom ATH standards. For ICP0000012022EA0B0 further comment has been requested from the certifying test house Vircom.</p>		March 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Vector run monthly technical compliance forums at our offices in Wellington, where all ATHs attend. We will put a standing business item on the agenda around metering installation certificates, this will allow ATHs to discuss issues they are having and share ideas.</p> <p>AMCi will not be accepting Delta paperwork until this is resolved.</p>		February 2019	

#### 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

###### NGCM

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

###### AMCI

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

##### Audit commentary

###### NGCM

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

###### AMCI

There is an exemption in place for ICP 0000840407WE388 which uses subtraction (exemption 224). Other than this AMCI does not have any metering installations where subtractive metering is used.

##### Audit outcome

Not applicable

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

##### Code reference

*Clause 4(2)(b) of Schedule 10.7*

##### Code related audit information

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

##### Audit observation

###### NGCM

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

###### AMCI

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

##### Audit commentary

###### NGCM

I checked NGCM's list file to confirm compliance with this requirement. There are no installations over Category 2.

#### AMCI

I checked AMCI's list file and I confirm compliance with this requirement.

#### **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**

##### NGCM

I checked if NGCM is responsible for any NSP metering.

##### AMCI

I checked if AMCI is responsible for any NSP metering.

#### **Audit commentary**

##### NGCM

NGCM is not the MEP for any NSP metering.

##### AMCI

AMCI is the MEP for 194 Embedded Networks with NSP Metering. I checked and confirm that subtraction is not used to determine submission information.

#### **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**

##### NGCM

NGCM is not responsible for any grid metering.

##### AMCI

AMCI is not the MEP for any grid metering.

#### Audit commentary

##### NGCM

NGCM is not responsible for any grid metering.

##### AMCI

AMCI is not the MEP for any grid metering.

#### Audit outcome

Not applicable

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

#### Code reference

*Clause 4(4) of Schedule 10.7*

#### Code related audit information

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

#### Audit observation

##### NGCM

NGCM's instructions to ATH's include several clauses in relation to physical and electrical characteristics.

##### AMCI

AMCI's instructions to ATH's include several clauses in relation to physical and electrical characteristics.

#### Audit commentary

##### NGCM

NGCM's instructions to ATH's include several clauses in relation to physical and electrical characteristics.

##### AMCI

AMCI's instructions to ATH's include several clauses in relation to physical and electrical characteristics.

#### 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**

##### NGCM

NGCM has provided copies of the design reports to all distributors and traders in order to achieve compliance with this requirement.

##### AMCI

AMCI has provided copies of the design reports to all distributors and traders in order to achieve compliance with this requirement.

#### **Audit commentary**

##### NGCM

NGCM has provided copies of the design reports to all distributors and traders in order to achieve compliance with this requirement.

##### AMCI

AMCI has provided copies of the design reports to all distributors and traders in order to achieve compliance with this requirement.

#### **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**

##### NGCM

I checked the event detail report for the period 01/12/17 to 30/09/18 to evaluate the timeliness of registry updates.

##### AMCI

I checked the event detail report for the period 01/12/17 to 30/09/18 to evaluate the timeliness of registry updates.

#### **Audit commentary**

##### NGCM

I examined the event detail report for the period 01/12/17 to 30/09/18 and the table below shows the results.

Event type	Year	Total	Total within 10 days	% Compliant	Average days
Update	2015	67,719	62,950	93%	13.5
	2016	41,190	25,983	63%	127
	Feb 2017	79,049	70,634	89%	27.7
	Oct 2017	59,360	52,948	89%	39
	<b>Oct 2018</b>	<b>73,361</b>	<b>69,249</b>	<b>94%</b>	<b>17.7</b>
New connection	2015	2,043	1,698	83%	8
	2016	7,366	6,538	89%	6.7
	Feb 2017	1,581	1,471	93%	5.4
	Oct 2017	2,415	1,955	81%	8.6
	<b>Oct 2018</b>	<b>2,348</b>	<b>2,143</b>	<b>91%</b>	<b>6.0</b>

9% of new connection updates were later than 10 business days. Late nomination by the trader (over five business days) was the cause for 188 of the 205 late updates. The rest were late due to processing issues.

I checked the records in detail for 14 ICPs where new connections had occurred and where the certification date was different to the initial energisation date or the retailer's active date. I found the following:

- initial energisation date is incorrect for 7 of 25 ICPs
- active date is incorrect for 7 of 25 ICPs
- certification date was incorrect for 4 of 14 ICPs.

#### AMCI

I examined ICPs where new connections had occurred, or metering records had changed on the registry during the audit period. The table below shows the results. 22 of the 27 late updates were caused by late nomination by the relevant trader.

I examined the event detail report for the period 01/12/17 to 30/09/18 and the table below shows the results.

Event type	Year	Total	Within 10 days	% Compliance	Average days
Update	2015	1,373	309	23%	
	2016	2,040	908	45%	
	Feb 2017	3,828	868	23%	
	Oct 2017	6,403	3,616	56%	
	<b>Oct 2018</b>	<b>1,470</b>	<b>638</b>	<b>43%</b>	<b>327</b>
New Connection	2015	118	26	22%	
	2016	82	28	34%	
	Feb 2017	64	38	59%	
	Oct 2017	53	14	26%	
	<b>Oct 2018</b>	<b>41</b>	<b>14</b>	<b>34%</b>	<b>19</b>

#### Audit outcome

Non-compliant

Non-compliance	Description	
<p>Audit Ref: 4.10</p> <p>With: Clause 3 of Schedule 11.4</p> <p>From: 01-Dec-17</p> <p>To: 31-Oct-18</p>	<p>Some records updated to the registry later than 10 business days.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>	
Audit risk rating	Rationale for audit risk rating	
<b>Low</b>	<p>I have recorded the controls as moderate in this area because there is room for improvement.</p> <p>Late updates for new connections can have a minor impact on participants and settlement, therefore the audit risk rating is low.</p>	
Actions taken to resolve the issue		Completion date
<p>NGCM: Late nominations by traders still a problem for VAMS, Our update percentage would be over 99% if retailers nominated on time.</p> <p>AMCI: Late nominations by traders is also a factor for AMCI but additional to this is certification updates made to existing legacy Stream sites with updated certification information which ended up triggering false metering update period – average of 327 is the result of these NHH legacy updates</p>		Ongoing
Preventative actions taken to ensure no further issues will occur		Completion date
<p>We continue to produce and share with the retailers a weekly report showing all ICPs where nominations are outstanding. This has proven to be effective in prompting retailers to nominate on time, just not 100% effective.</p>		Ongoing

#### 4.11. Metering Infrastructure (Clause 10.39(1))

##### Code reference

Clause 10.39(1)

##### Code related audit information

The MEP must ensure that for each metering installation:

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

- *each metering installation is correctly and accurately integrated within the associated metering infrastructure.*

#### **Audit observation**

##### NGCM

NGCM's metering infrastructure was examined as part of this audit to confirm compliance.

##### AMCI

AMCI's metering infrastructure is examined as part of reconciliation participant agent audits and I confirm compliance. Output to host checks confirm the system operates as intended before certification is applied.

#### **Audit commentary**

##### NGCM

NGCM's metering infrastructure was examined as part of this audit and I confirm compliance.

##### AMCI

AMCI's metering infrastructure is examined as part of reconciliation participant agent audits and I confirm compliance. Output to host checks confirm the system operates as intended before certification is applied.

#### **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**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM



Some ICPs have been decommissioned since 29 August 2013 and NGCM has not notified the trader that a final interrogation is required. For AMI installations, there is always a “midnight read” and this is provided to traders as required. For non-AMI installations, NGCM does not normally have knowledge of upcoming decommissioning events and therefore has difficulty complying with this clause. This appears to be an industry wide issue, and MEPs do not appear to have found a solution.

#### AMCI

Some ICPs have been decommissioned since 29 August 2013. I examined examples where ICPs were decommissioned and in all cases, the final interrogation was arranged by AMCI, which I believe meets the intent of this clause. In the rare event that metering is removed prior to a download, the download occurs by powering up the device and collecting the data, which also meets the intent of this clause.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
Audit Ref: 4.12 With: Clause 11.18B(3) From: 01-Dec-17 To: 31-Oct-18	Trader not advised to carry out final meter read for decommissioned ICPs. Potential impact: None Actual impact: None Audit history: Multiple times Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	I have not identified any controls NGCM could put in place to achieve compliance with this clause.		
Actions taken to resolve the issue		Completion date	Remedial action status
This appears to contradict Clause 11.18(3) which states ‘If an ICP is to be decommissioned, the trader who is responsible for the ICP must, a) Arrange for a final interrogation to take place before or on removal of the meter and, b) Advise the MEP responsible for the ICP that it is to be decommissioned. We raised this with the EA on 15 Feb 2017.		Ongoing	Disputed
			<u>Auditor comment</u> The contradiction in the Code is taken into account with regard to this non-compliance when the final next audit date recommendation is made.
Preventative actions taken to ensure no further issues will occur		Completion date	
As per above		N/A	

#### 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

###### NGCM

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

###### AMCI

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

##### Audit commentary

###### NGCM

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

###### AMCI

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

##### Audit outcome

Compliant

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

##### Code reference

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

##### Code related audit information

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

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

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

- *carry out the change in accordance with the methodology and conditions identified by the approved test laboratory under clause 39(1)(b)*
- *keep a list of the data storage devices that were changed*

- *update the metering records for each installation affected with the details of the change and the methodology used.*

#### **Audit observation**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

During previous audits, I had examined two examples of changes in accordance with these clauses and I confirmed all of the requirements above were met. There have been no additional examples.

##### AMCI

This activity is conducted by the Technical Support team in Christchurch. I examined two examples of changes in accordance with these clauses during previous audits and I confirm all of the requirements above were met. No changes have occurred during the audit period.

#### **Audit outcome**

Compliant

### **4.15. Temporary Energisation (Clause 10.28(6))**

#### **Code reference**

*Clause 10.28(6)*

#### **Code related audit information**

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

#### **Audit observation**

##### NGCM

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.

##### AMCI

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

#### **Audit commentary**

##### NGCM

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.

##### AMCI

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. AMCI advised that their processes do not allow for temporary energisation to be used.

**Audit outcome**

Not applicable

## 5. METERING RECORDS

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

#### Code reference

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

#### Code related audit information

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

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

#### Audit observation

##### NGCM

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

##### AMCI

I checked certification records for 30 metering installations and I also checked all available inspection records to evaluate compliance with this clause.

#### Audit commentary

##### NGCM

NGCM has validations in their system (JDE) and monitors a number of reports in relation to the accuracy of records and data. The following checks are in place:

- meter change request and NGCM is not the meter owner
- meter changed but MEP switch has not been initiated by the trader (eight days after meter change)
- overdue meter changes (KPI is five days plus one day for the provision of records)
- validation against the "meter in stock" once metering is installed, to ensure meter dials, phases, registers etc. is correct

- tariff validation – configurations are specific to NSPs to ensure a match between switching times and configurations
- validation of CT ratio to ensure NHH installations are not certified as a lower category.

As mentioned in **section 1.4**, agreements between NGCM and ATHs clearly specify to the ATHs that they are acting as an agent for the management of certification records, and they are required to produce these within five business days. I requested records for 50 metering installations and complete records were supplied for all 50.

Several of the records were difficult to read and some of the critical fields were difficult to identify. I recommend AMS 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 agent)
5. Metering Category
6. Certification type (selected component, comparative, fully calibrated, alternative, low load, lower category).

The inspection reports I checked were signed and contained the required information.

#### AMCI

During the previous audit, there was one ICP (0000431409TU76E) where AMCI was recorded in the registry as the MEP but the metering records had not been populated. This ICP is now decommissioned. There were no ICPs during this audit without records populated in the registry.

#### **Audit outcome**

Compliant

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

#### **Code reference**

*Clause 4(2) of Schedule 10.6*

#### **Code related audit information**

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

#### **Audit observation**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

NGCM has not been requested to supply any Category 1 inspection reports.

NGCM has not conducted any Category 2 inspections since 29 August 2013, although some are now overdue, and certification has been cancelled. NGCM intends to recertify any Category 2 installations where inspections are due, but this did not occur for some ICPs as recorded in **section 6.4**.

#### AMCI

AMCI has signed inspection reports and these can be provided as required. Most participants have access to AMCI's web portal.

AMCI has not been requested to supply any inspection reports.

#### **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**

##### NGCM

I checked a directory of metering records from 2015 to confirm compliance.

##### AMCI

I checked a directory of metering records from 2015 to confirm compliance.

#### **Audit commentary**

##### NGCM

NGCM intends to keep records indefinitely and the ATHs are required to keep them for seven years after the installation is decommissioned or components are removed.

##### AMCI

AMCI intends to keep records indefinitely.

#### **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

###### NGCM

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

###### AMCI

AMCI will comply with this requirement as it arises. There are no current examples where this has occurred. ATHs can log in to the web portal to get these records.

##### Audit commentary

###### NGCM

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

###### AMCI

AMCI will comply with this requirement as it arises. There are no current examples where this has occurred. ATHs can log in to the web portal to get these records.

##### 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

##### NGCM

I checked the event detail report for the period 01/12/17 to 30/09/18 to confirm whether all responses were within 10 business days.

##### AMCI

I checked the event detail report for the period 01/12/17 to 30/09/18 to confirm whether all responses were within 10 business days.

#### Audit commentary

##### NGCM

NGCM has automated the MEP switch acceptance process based on certain NSPs where they approve the installation of their metering. This means the switch acceptance timeframes are mostly immediate. I checked all ICPs where NGCM had become the MEP and the acceptance was provided within 10 business days for all of them. If a nomination is received for an NSP where NGCM does not install metering, it is rejected.

##### AMCI

I checked all ICPs where AMCI had become the MEP (including new connections) and the acceptance was provided within 10 business days for all of them.

I also checked the switch breach history detail report for the audit period. This report contained two ICPs, but neither were actual breaches. The details are shown below.

- ICP 0110115010AP7E4 has a trader event with AMCI nominated but this was reversed and AMCI had not accepted or declined.
- ICP 0000043030WEC2A has a trader event with AMCI nominated but AMCI had not accepted or declined. The ICP is not yet electrically connected.

#### Audit outcome

Compliant

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

### Code reference

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

### Code related audit information

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

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

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

### Audit observation

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

I checked NGCM's Category 1 inspection records for 807 ICPs inspected in 2017, which recorded the following findings:

- 36 illegible or missing certification stickers
- one incorrect component serial number in asset database
- three sites with no LCD recorded, no LCD found on site, but tariff recorded as IN24.

The 2018 inspections are not yet complete.

Analysis of the list file and an event detail report for all ICPs found some discrepancies. The table below shows these and includes a comparison with the previous audit results.

Issue	2016 Quantity	Feb 2017 Quantity	Oct 2017 Quantity	Oct 2018 Quantity
NGCM is recorded on the registry as the MEP but the metering records have not been populated on the registry.  2 are unmetered, 6 have meters physically removed and the remainder have other MEPs metering installed.	14	57	16	17
Category 1 ICPs with CTs installed, indicating an incorrect Category.	32	114	15	12
Compensation factor of 3, certified after 29/08/13.	4	4	4	5

Category 3 ICPs have an RPS profile, indicating an incorrect metering category.	0	0	0	0
HHR profile with NHH installation type.	22	14	0	12
Category 2 interim certified.	Unknown	19	53	38
Day + Night not equal to 24.	0	1	3	0
ICP has a "day 16" without a "night 8".	1	0	0	
ICPs have a "night 8" without a "day 16".	0	0	0	
Day with no night.	46	25	20	6
Night with no day.	982	700	530	325
ICPs have "IN24". The Authority has indicated this combination should not be used.	65,493	64,567	64,650	65,535
ICPs have CN only (residential only).	354	454	286	201
Category 2 or above without CTs.	43	72	101	88
Incorrect certification expiry.	14	5	7	9
Incorrect certification date.	2	2	1	4
Generation ICPs with no injection register.	236	220	173	294
Invalid ATH recorded.	0	0	0	0
No control device for register content requiring a control device (excluding AMI where the control device may be internal).	5,376	4,239	3,304	3,092
No control device for IN register content (excluding AMI where the control device may be internal).	1,025	1,046	400	368
Profile requiring a certified control device and flag is "N".	2,834	3,874	4,919	4,630

4,988 ICPs were certified on 24 August 2018 by statistical sampling, but the registry is not yet updated with the correct certification and expiry dates. This is recorded as non-compliance.

## AMCI

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

Issue	Quantity 2016	Quantity Feb 2017	Quantity Oct 2017	Quantity Oct 2018
AMCI is recorded on the registry as the MEP but the metering records have not been populated on the registry.	1	1	0	0
Category 3, 4 or 5 installations "interim certified".	3	0	0	0
HHR profile but NHH metering installation.	0	0	0	0
Category 5 with a certification period longer than 3 years.	1	0	0	0
Category 4 with incorrect certification duration.	5	9	0	2
Category 3 with certification period longer than 10 years.	4	2	0	2
Category 2 with incorrect certification duration.	13	4	0	2
Category 1 with incorrect certification duration.	16	3	0	2
Incorrect certification dates for new connections.	0	1	0	0
Generation installations without an injection register.	68	51	41	43 3 confirmed as incorrect
Over Category 1 with no measuring transformers on the registry.	8	2	1	2
Incorrect compensation factors.	1	0	3	Refer to section 7.14
Incorrect ATH.	0	0	0	3

## Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4  From: 01-Dec-17 To: 31-Oct-18	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4

Audit risk rating	Rationale for audit risk rating		
<b>Medium</b>	<p>I have recorded the controls as moderate in this area. There are still a small number of areas where improvement can be made.</p> <p>Some of the discrepancies have a moderate impact on participants, customers or settlement. The relevant ones in this regard are tariff related. The audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>We are continually addressing the discrepancies on the table, the following are proving difficult to clear so we are looking at other ways to we meet our compliance obligations. As stated previously;</p> <ul style="list-style-type: none"> <li>• Discrepancies such as 'ICPs have CN only (residential)'. Where they are residential we are working with the retailers to correct the register content code. Where the Retailer has used the wrong ANSIC code, (actually industrial or irrigation sites) we will request they update to the correct code.</li> <li>• 'Generation ICP with no injection register' This is because Distributor setting load type to 'B' but Retailer has never raised a job for imp/exp metering.</li> <li>• Profile requiring a certified control device and flag is "N" We identified an issue where some of the paperwork did not contain the correct flag, this was mostly where the load control device was internal. For an LCD Cert flag to be returned as Y, an LCD must be provided in the return data set. If an ATH returned LCD Cert flag as Y with no LCD present they received a rejection message and couldn't close the job, so they were incorrectly set to 'N'. We will be bulk uploading these shortly to correct the data in the registry.</li> </ul> <p>AMCI have shown an overall improvement in exceptions and inaccurate records - current processes require daily Registry case exception handling which has supported better overall controls.</p>		April 19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Ongoing reconciliation with the registry to minimise these. I have escalated this with the MEP team to increase the effort in this area to ensure we have correct data in our systems and the registry.		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

##### NGCM

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.

##### AMCI

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

#### Audit commentary

##### NGCM

NGCM has a number of checks in place to ensure registry data is correct. They are as follows:

- mandatory data missing from files being sent to registry
- awaiting MEP nomination after eight days (there are a large number of these because files from the registry are not processed automatically in JDE)
- registry rejections
- MEP responsibility is lost, leading to a removal of assets and a stop of interrogation
- a new MEP has accepted a switch request but NGCM has a works order in progress
- difference between NGCM and the registry data for files sent
- MEP switch reversal but a works order is in progress
- ICP status is not valid on the registry (e.g. ready instead of active)
- no MEP switch response file within the time period.

In addition to the points noted above, NGCM is also conducting a complete validation for all fields in accordance with this clause. Whilst the validation processes are robust, corrections are not made within five business days, which is recorded as non-compliance.

##### AMCI

AMCI runs a registry list file and checks Service Max against these records and vice versa. Compliance is achieved with the requirement to conduct a complete validation as required by this clause. However, discrepancies are not resolved within five business days.

#### Audit outcome

## Non-compliant

Non-compliance	Description		
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4  From: 01-Dec-17 To: 31-Oct-18	Discrepancies not resolved within 5 business days.  Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
<b>Medium</b>	I have recorded the controls as moderate in this area. There are still a small number of areas where improvement can be made.  Some of the discrepancies have a moderate impact on participants, customers or settlement. The relevant ones in this regard are tariff related. The audit risk rating is medium.		
Actions taken to resolve the issue		Completion date	Remedial action status
We strive to resolve all discrepancies within the 5 day window however we accept we are not always resolving these issues within the required time frame. We continue to look for ways to improve the way we report and subsequently resolve these. AMCI: Daily registry case exception handling supports faster delivery of correct information to Registry.		Ongoing	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>		Completion date	
Continue pushing hard to get resolution within the 5 days.		Ongoing	

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

### Code reference

Clause 20 of Schedule 10.7

### Code related audit information

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

- 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
- 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**

##### **NGCM**

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.

##### **AMCI**

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

#### **Audit commentary**

##### **NGCM**

There are eight Category 2 metering installations overdue for inspections. Certification is therefore cancelled, and the registry has not been updated.

I checked the process and records for Category 1 inspections conducted by the sampling method. Clause 45(1) of Schedule 10.7 provides two options for inspections. Each Category 1 metering installation must be inspected at 10 years, or a sample can be conducted. NGCM chose the sampling method, but they combined the records for both AMS (AMCI and NGCM) and ARC Innovations MEPs. The Authority has recently confirmed that ARC Innovations is a separate MEP, therefore each MEP must conduct a separate inspection process. 807 total inspections were conducted but NGCM is required to conduct at least 800 inspections just for the NGCM code, therefore insufficient inspections were conducted for NGCM. As mentioned above, the Code provides two options for inspections and NGCM did not meet either option, therefore certification is cancelled for all Category 1 ICPs due for inspection in 2017, which is 2,290 ICPs. NGCM has adopted the incorrect process during 2018 and this is likely to lead to cancellation of certification for a further 17,090 ICPs.

There are five installations incorrectly certified by the selected component or statistical sampling method since 29 August 2013, which are also three phase with one phase metered. Certification has been cancelled because the installations are not fit for purpose and not all electricity conveyed is quantified in accordance with the Code. The registry has been updated.



The matter of “bypassed” metering was evaluated during the audit. The previous audit report recorded that 94 ICPs had been bridged and recertification has not occurred. Certification should therefore have been cancelled. AMS’s response was that registry errors caused the relevant installations to appear that they were not re-certified and that the registry was corrected, however I’ve re-checked all 94 and the table below shows that 57 have not been recertified if the registry details are correct.

ICP	Certification date	Reconnection date	Contractor comments
0001564450PC73B	11/10/2010	18/04/2016	Bridged meter as could not connect remotely as per retailer request. Meter 09A083215 Rdg 006249 003660 007253
0001920770PC6B6	15/04/2015	2/05/2016	Meter bridged as per Shailesh at AMS and Shaun at Retailer as meter had comms fault. Rdg 005066
0000503291CE464	12/02/2016	13/05/2016	Meter bridged as per Retailer contractor helpline, they were unable to remote reconnect
0000001651CP99E	29/07/2015	26/05/2016	Meter bridged as instructed by Hock at AMS. Meter 15A021187 Rdg 7311
0000143872UN62A	11/11/2009	2/06/2016	tech went to site, tried 5 times to get through to ams. smart mtr bridged rdg 039165
1000548054PC28B	18/09/2014	7/06/2016	bridged remotely disconnected smart meter as after 9pm
0000037115HBF43	19/11/2015	16/06/2016	Tech reco'd pedestal and Meter was bridged as per AMS (Tech noted it had been disco'd at pedestal and remotely). Rdg 14
0001542700PC03D	14/02/2011	11/07/2016	meter bridged as requested, meter#10A020253 rdg 033442
0033302114PCD81	6/09/2011	26/09/2016	 METER#10A032330. READING 53694. BRIDGE METER AS PER AMS REQUEST.
0001446429UN0B0	29/04/2016	23/09/2016	ams system down, calum @ ams advised to bridge meter. rdg 773
0000500207NRA4C	12/01/2015	26/09/2016	recod meter bridged as per ams rdg 009034
0000025321TR8C0	16/08/2010	22/07/2016	Meter bridged as AMS unable to reconnect. Meter 09A004036 (209117036) Rdg 027065
0000021493EA18A	13/10/2015	22/09/2016	Bridged meter - Pierre talked to Retailer. AMS not answer phone. Meter 214516559 Rdg 002100. Tech noted existing relay serial # 150602618 on site. Tech noted meter location - R/H Wall - Common Box
0000243514UN1E9	9/07/2010	27/09/2016	call centre advised tech to bridge meter as he was unable to activate
0000541456NR232	12/05/2015	25/08/2016	Meter bridged as per Retailer
0000058580TRA05	1/12/2011	18/10/2016	Meter bridged as Tech could not reach AMS. Meter 11A089808 (211316258) Rdg 39184
0000160103EN557	9/09/2014	27/09/2016	Meter bridged as per Kaylee
0006452337RNFDE	1/03/2009	23/09/2016	AMS Meter bridged. Meter 208029999
0006401929RND76	10/07/2008	30/09/2016	Meter bridged as remote reco failed. Meter 208020894 Rdg 026431

0007174000RN188	30/05/2016	18/10/2016	Meter bridged as remote reco failed. Meter 215506825 Rdg 001229
0000914006BU8A1	2/06/2015	7/10/2016	Tech went to site, rang AMS who said meter already reco'd. Customer switching from Globug to Retailer and wants to change from globug prepay (top up) to monthly bill. VEMS spoke to Hadleigh at Retailer who advised Tech to bridge meter so customer has power for weekend. Meter bridged. Tech noted meter read wrong on job is not 1704 should be Rdg 7106
0000159638TRC6C	14/03/2016	7/11/2016	Meter bridged as AMS unable to remotely reco Rdg 003093
0006786928RN6C2	28/07/2008	28/10/2016	Meter bridged as remote reco failed. Meter 208021218 Rdg 67055
0000224001UN536	14/06/2014	12/12/2016	smart mtr reco no signal tech had to bridge
0000195883TR931	26/05/2011	16/12/2016	Meter bridged as AMS unable to reconnect. Rdg 020029
0000044451UNBBF	12/02/2016	2/12/2016	Meter bridged. Rdg 011156 003464
0007156566RN07F	13/03/2014	23/11/2016	Meter bridged as AMS unable to remote reco Meter 213507801 Rdg 018968
1000017955BP4F0	30/07/2015	15/11/2016	Smart meter bypassed. Meter 15A035558 (215216421) Rdg 006791
0006201440RN8B8	6/09/2016	9/12/2016	Meter bridged as AMS not answering phone calls. Meter 216278885 rdg 000195
0000003056ENDC0	1/05/2015	23/11/2016	Meter bridged as per AMS
0161072879LC599	13/04/2013	9/12/2016	Metering tech was called to site as customer was concerned about cover being left off fuse box. Tech advised ok to safely reconnect. Unbridged meter and remotely reco'd reading 023831
0000197530UNBD3	12/11/2009	12/12/2016	Smart meter bridged as AMS has comms error, they tried 4-5 times. Rdg 032047
0000311868WEABB	19/07/2010	29/11/2016	Meter bridged as remote reco failed. Meter 09A081551 (210062321) Rdg 021031
0000035764UN912	13/01/2011	14/12/2016	Smart Meter bridged. Rdg 002877
0000012807CPC13	14/05/2012	7/12/2016	Bridged meter as AMS not open Saturday @ meter reading 016433/009527
0000742398TUF23	22/05/2013	6/12/2016	Meter bridged. Rdg 016052
0000684671UN93A	15/06/2015	16/12/2016	Meter bridged. Rdg 001768. No reception
0005379504RNA0D	14/01/2009	16/12/2016	Meter bridged as per AMS as they could not remote reco. Meter 208030089 Rdg 16614
0000136138WA6E2	2/09/2015	10/01/2017	**Property was disconnected remotely. Unable to get through to Vircom to arrange reconnection. Bridged meter to get power back on. No reads**
0000190105EN144	22/01/2015	13/01/2017	Meter bridged as per AMS. Meter 214264672

0000164097UNC7F	2/11/2010	11/01/2017	no signal smart meter bridged rdg 02636204 landlord ph 027 459 8900 PJ Please call PJ when unbridging Meter as lives in Albany and he has key for access to meters inside building
0000211202UN5FD	16/09/2010	17/02/2017	smart meter bridged rdg 02518631
0000037093WE4CC	20/10/2014	24/02/2017	Meter bridged as per Max at AMS. Meter 14A017601 Rdg 014273 013557
0000674701UNOFF	6/05/2014	2/03/2017	Meter bridged as instructed by Faasil at AMS as could not activate meter. Meter 213571178 Rdg 007266 003376
0000523294WE0B3	8/04/2010	17/02/2017	Meter bridged as AMS had no signal to meter. Tech was unable to locate paperwork to advise reads
0008003021TUA2B	23/08/2012	16/02/2017	Meter bridged as per AMS as signal wouldn't go through. Meter 11A132481 (211631891) Rdg 013013
0001933290PC308	10/05/2012	24/02/2017	Meter bridged as per AMS, could not connect remotely. Meter 12A003500 Rdg 027393
0001424241UNA4A	25/11/2010	9/03/2017	Meter bridged (Fuasil AMS). Meter 08A039786 Rdg 016086
0000040962UN30F	30/10/2012	2/03/2017	Meter bridged after a request from AMS. Rdg 004141 05934 004668
0000150441WE75E	15/06/2012	3/03/2017	Meter Bridged with minor asbestos procedure. Meter 11A098359 (211324809) Rdg 017879
0005130182RND24	12/11/2008	10/03/2017	Meter bridged. Meter 208032852 Rdg 026041 051241
0006571670RNAF5	3/12/2008	14/03/2017	Reco'd at meter. Called Electrician, gave permission to take off lock off site. Noticed seal had been crimped asked him if he did it he said he had entered meter. Advised him to let Retailer know what he had done. Sue of Switched On witness to conversation. Broken seal job needs to be raised.
0000640255WPF92	2/09/2016	16/03/2017	15/3 - Tech went to site and found smart meter needed bridging. On call electrician was called to go out and bridge meter. Meter bridged Rdg 5030 3597. Electrician returned 16/3 at 9am and unbridge meter and reconnected - Retailer to raise paperwork only for unbridge job on 16/3
0000104162WE63A	26/11/2013	17/03/2017	Meter bridged as AMS unable to remote reco signal very low in that area and barely any coverage. Tech did not gain reads. Meter 13A005841 (213005841)
0000239369UN910	19/08/2013	25/03/2017	Meter bridged. Meter - RD10161848 - rdg 051270
0005175034WA1DF	8/12/2011	20/04/2017	Meter bridged as per AMS. main switch off, unable to gain reads
0000004005UN529	12/09/2014	28/04/2017	Meter bridged as per AMS

There were a further eight ICPs found during this audit where recertification had not occurred. They are shown in the table below.

ICP	Bridge removal date	Certification date
0000377983TUEE3	1/12/2017	9/03/2015
0000047653UN3DD	13/12/2017	7/12/2012
0000039410UN5C6	13/12/2017	19/04/2016
0001257170UNBCA	28/01/2018	28/09/2011
0015774401EL119	18/02/2018	12/10/2012
0000652907UNB76	19/02/2018	19/08/2009
0007021801RNDF8	15/03/2018	18/08/2016
1001150655CK434	26/03/2018	16/08/2011

The next 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.<sup>1</sup>

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.

The Authority confirmed on 01/03/18 that certification is cancelled for installations where low burden is not addressed.

Analysis of the certification records for 34 Category 2 metering installations found that six 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. The ICPs are shown in the table below.

ICP	ATH	Certification date
0000043908DEE81	WELL	3/09/2018
0005411157RN897	WELL	3/09/2018
0000100263UN3BD	VEMS	2/08/2018
0441173039LCDAA	VEMS	22/05/2018
0000013176CPDA2	INDS	24/06/2018
0000039818TR106	INDS	1/02/2018

As recorded in **section 7.6**, there are 132 ICPs certified as a lower category where monitoring is required. The monitoring reports were not produced for July and August 2018, therefore certification is cancelled for all 132 ICPs.

During the Wells ATH audit in November 2017 I found that ICP 0005170923RN2E6 was certified for two years despite a measured error of 32.39% fast. NGCM notified the trader but the issue has not been corrected yet. The Code does not appear to include a timeframe for remedial action. Certification was not cancelled at the time NGCM became aware of the issue, but it has since expired and remains expired.

#### AMCI

I checked the inspection reports for 20 completed inspections that were due within the audit period. Two ICPs had early inspections (0007090002DF296 and 0007090021DF303) and one had the inspection missed (0000029287WE54D). Certification is therefore cancelled for these three ICPs. The previous audit report recorded five early inspections and two late inspections. There are still three of these ICPs where recertification has not occurred. ICP 0006679226RNEC7 had an early inspection and has not been recertified. ICP 0000100581UN680 now has expired certification. ICP 0000020485WEF6E has not been recertified and the registry is not updated with the cancellation date.

AMCI's Category 1 inspections were included in the same population as NGCM inspections, therefore non-compliance extends to their ICPs as well. 333 AMCI Category 1 ICPs were certified in 2007 and 271 were certified in 2008.

ICP 0000012022EA0B0 was certified by VEMS with a measured error of 2.2% and an uncertainty of +/- 0.413%. The certification records assume the uncertainty is a "minus" figure and the total error is stated as 1.783% but it could also be 2.613%.

AMCI also have some ICPs certified with low burden, leading to cancellation of certification. They are shown in the table below.

ICP	ATH	Certification date
0000002007EP8E1	ACCL	15/02/2018
0000008595UN44B	ACCL	15/08/2018
0000057977UN86C	ELTX	2/03/2018
0167010506LC493	MTRX	2/05/2018
0321292022LC0EE	MTRX	6/08/2018
0038819020LC4DC	MTRX	6/06/2018
0104309555LCC5F	MTRX	29/05/2018
0104912006LC93A	MTRX	12/07/2018
0000013175CP162	VEMS	7/02/2018

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 6.4</p> <p>With: Clause 6 of Schedule 11.4</p> <p>From: 01-Dec-17</p> <p>To: 31-Oct-18</p>	<p>Certification cancelled, and registry not updated for:</p> <p>NGCM - 2,290 Category 1 ICPs with inspections not conducted</p> <p>AMCI – 333 Category 1 ICPs with inspections not conducted</p> <p>AMCI - 3 installations with inspections completed early</p> <p>AMCI - 2 installations with inspections completed late</p> <p>NGCM - 5 three phase installations with only one phase metered</p> <p>NGCM - 8 Category 2 installations with overdue inspections</p> <p>NGCM - 65 installations where meters were bridged</p> <p>AMCI - 1 installation with an error greater than that allowed</p> <p>NGCM – 6 installations with low burden</p> <p>AMCI – 9 installations with low burden</p> <p>NGCM – 132 installations certified as a lower category but monitoring report wasn't produced for July and August 2018</p> <p>NGCM – ICP 0005170923RN2E6 with an error over 30%</p> <p>NGCM - Uncertainty higher than 0.6% for 5 installations certified by Wells.</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Weak</p> <p>Breach risk rating: 6</p>		
Audit risk rating	Rationale for audit risk rating		
<p><b>Medium</b></p>	<p>I have recorded the controls as weak in this area. Many of the examples found were present during previous audits and risks are not being mitigated.</p> <p>The issues found can all potentially have a moderate impact on other participants and on settlement. The audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status

<ul style="list-style-type: none"> <li>• Due to a miscommunication with the Authority, AMS and AMCI only inspected around 70% of the required minimal number of ICPs during the 2017 period. As we are currently working with the Authority to identify possible ways to mitigate this breach, we have not updated the certification cancellation in the registry yet.</li> <li>• Installations certified as a lower category but monitoring report wasn't produced for July and August 2018, this is due to an IT error that caused the report to not email automatically. Whilst we understand that according to the code, these sites are now cancelled, they have been monitored and are within their required limits.</li> <li>• X3 installations that cannot be corrected without input from the customer are UTI'd now and referred back to the Retailer.</li> <li>• AMCI: The early and late reported inspections reported have been reviewed and the certification will be cancelled) where applicable. AMCI: With respect to site with low burdening further review of the Code highlights that the requirement for additional burdening is clear for sites certified via the selected component certification method but unclear with respect to the CAT2 comparative certification method as the CTs are not, according to ATH and MEP, Code interpretation being certified so the additional burdening of none TWS CAT2 CTs don't apply. For these CAT2 sites the overall error on the site is within the allowed category tolerance.</li> <li>• AMCI: Metrix have informally highlighted their objection to this requirement for CAT2 sites.</li> </ul>	Ongoing	Investigating
<b>Preventative actions taken to ensure no further issues will occur</b>	Completion date	
<ul style="list-style-type: none"> <li>• AMCI - Action has been taken to rectify – Overall we issue inspection work 3 months in advance and provide a target date with Code required window period.</li> <li>• AMCI - Low burdened sites will be followed up with the appropriate ATH and corrected. Advice</li> </ul>	Ongoing	



## 6.5. Registry Metering Records (Clause 11.8A)

### Code reference

*Clause 11.8A*

### Code related audit information

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

### Audit observation

#### NGCM

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 NGCM not using the prescribed form.

#### AMCI

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 AMCI not using the prescribed form.

### Audit commentary

#### NGCM

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 NGCM not using the prescribed form and did not find any exceptions.

#### AMCI

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 AMCI 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

##### NGCM

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.

##### AMCI

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

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

#### Audit commentary

##### NGCM

At the time of my analysis, NGCM has 1,446 previously fully certified ICPs with expired certification and 41,848 previously interim certified installations that have now expired. 43 of the previously certified ICPs are Category 2.

4,988 ICPs were certified on 24 August 2018 by statistical sampling, but the registry is not yet updated with the correct certification and expiry dates. This is recorded as non-compliance in **section 6.2**.

The following two ICPs have expired alternative certification. This is raised as non-compliance.

ICP	Certification Type	Category	Expiry Date	Current status
0006927629RN8D6	A	1	31-03-11	CCC Tramway site, non-standard LV installation with six phases to be metered, metering is located in an Orion HV substation, only Accucal have access permission.
0900087528PC733	A	2	31-05-12	This site is a network substation with 9 meters – some Cat 2 and Cat 3 meters. PowerCo advised not safe to access the CT's while the panel is 'live' – large steel panels need to be removed to access. To do the job it needs to be organised with PowerCo for a FULL Shutdown – this will also affect building supplied by this substation.

I requested correspondence from NGCM regarding retailers not providing access information to confirm whether retailers were compliant with clause 10.7 which requires them to arrange access to the premises. No correspondence was provided.

#### AMCI

The registry showed 13 ICPs with expired certification. The table below contains the ICPs with their status.

ICP	Category	Expiry date	Comments
0007090031DF9AE	2	21-12-16	AMCI equipment removed – NGCM metering installed. NGCM not nominated by Trader, therefore AMCI still has MEP responsibilities.
0800462068LC113 (alternative certification)	5	02-11-15	Unsafe access issue to 11kV substation - substation will be decommissioned on 24th Oct and the new 11kV supply on ICP1002054403LC0FA is currently being commissioned with new metering installed on 15th Oct with final commissioning and certification on the 23rd Oct.
0800539060LCBFF (1 of 2 metering installations, alternative certification)	4	01-09-16	Hospital recently completed upgrade with two new 11kV incomers - metering has been installed and certification underway on new ICP1002050361LC60D - Old supply on ICP0800539060LCBFF will revert to a back-up. Once the new supply is fully commissioned we will be able to get a safe shutdown on the back-up to fully certify the site - Aidan Sweetman has received guidance from the EA around

			options in the interim to apply for another exemption until the back-up can be shutdown. Current exemption expired? Have requested formal response with a plan to get the back up supply shutdown for recertification and will start fresh exemption and self-breach action to cover the site in the interim.
0800539060LCBFF (2 of 2 metering installations, alternative certification)	4	18-07-16	Hospital recently completed upgrade with two new 11kV incomers - metering has been installed and certification underway on new ICP1002050361LC60D - Old supply on ICP0800539060LCBFF will revert to a back-up. Once the new supply is fully commissioned we will be able to get a safe shutdown on the back-up to fully certify the site - Aidan Sweetman has received guidance from the EA around options in the interim to apply for another exemption until the back-up can be shutdown. Current exemption expired? Have requested formal response with a plan to get the back up supply shutdown for recertification and will start fresh exemption and self-breach action to cover the site in the interim.
0007090031DF9AE	2	21/12/16	Site downgraded to NGCM metering - paperwork sent to NGCM with advice that Registry MEP needs to be updated from AMCI to NGCM.  NGCM not nominated by Trader, therefore AMCI still has MEP responsibilities.
1001120007UN47B	4	13/03/18	Earthquake Damaged Site - ICP decommissioning as Per Meridian advice - demolition planned in the next 4-5 months.
1001147035CK143	4	13/03/18	Earthquake Damaged Site - ICP decommissioning as Per Meridian advice - demolition planned in the next 4-5 months.
1001147236CK784	3	13/03/18	Earthquake Damaged Site - ICP decommissioning as Per Meridian advice - demolition planned in the next 4-5 months.
1001147237CKBC1	3	13/03/18	Earthquake Damaged Site - ICP decommissioning as Per Meridian advice - demolition planned in the next 4-5 months.
1001147242CK3D3	2	13/03/18	Earthquake Damaged Site - ICP decommissioning as Per Meridian advice - demolition planned in the next 4-5

			months.
0009999001MLDC2	4	11/09/18	Vircom trying to arrange access and shutdown with Customer.
1001148427LC063	4	30/09/18	Meter change out planned for 23/10/2018.
1001148436LC68B	4	30/09/18	Meter change out planned for 23/10/2018.

I also checked the records for recently certified metering installations and found some had certification gaps, meaning certification had expired prior to recertification occurring. The table below shows the findings.

ICP	Previous expiry	Certification date	Days uncertified
0080012846PC851	23/06/18	12/09/18	81
0003360300ML0B5	19/07/18	27/09/18	70
0253824788LC7D1	17/09/18	08/10/18	21
0000004247DEF01	24/09/18	19/10/18	25
0000020519EAEF5	26/09/18	02/10/18	6
0000025859EAE78	24/09/18	01/10/18	7
0000013377EA754	26/09/18	28/09/18	2

I also checked AMCI's records and the Network Supply Points Table on the Authority's website and confirmed all NSP metering had current certification, although the responsible party (not AMCI) has not updated the NSP table in three cases.

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a), clause 1 and clause 15 of Schedule 10.7</p> <p>From: 12-Aug-14</p> <p>To: 31-Oct-18</p>	<p>Certification expired for 43,294 NGCM ICPs.</p> <p>Certification expired for 13 AMCI ICPs.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: Multiple times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 4</p>		
Audit risk rating	Rationale for audit risk rating		
<p><b>Medium</b></p>	<p>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.</p> <p>The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification. The test results for the 4,988 ICPs certified by statistical sampling showed that 8 of 206 failed the 2.5% threshold at full load. If this result is applied to all 41,848 ICPs with expired certification, assuming annual consumption of 10,000 kWh per annum, the total "error" outside 2.5% could be at least 80,000 kWh per annum, assuming the error was 0.5%, which is very conservative. The audit risk rating is recorded as medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status

<ul style="list-style-type: none"> <li>For the 41,848 previously interim certified installations that have now expired, AMS will be conducting a statistical sampling program on the entire population. We have been pushing really hard to get these recertified but have hit many barriers that we have regularly shared with the Electricity Authority. So whilst our ideal scenario would be to recertify all 42,000 with smart meters, a stat sampling program is our best hope at certifying.</li> <li>We are working to update the near 5,000 ICPs that were stat sampled, we would normally do this immediately following but our bulk upload tool had issues and IT have had issues getting it working.</li> <li>NGCM has 1,446 previously fully certified ICPs with expired certification, and we have identified a gap in our process. The majority of these ICPs were unsuccessfully attempted as part of our deployment program which was focussing on expired interim certified meters. So rather than going back into the mix, they were put in a bucket that neither deployment nor BAU was watching. We will close this gap and get these into the compliance team for recertification.</li> </ul> <p>AMCI: Non-compliance is at a level of less than 1% of total installation base;</p> <p>AMCI: Due to the loss of one active metering test house and a requirement to re-allocate at least 200 existing compliance work orders to alternative metering field service providers this has resulted in a larger amount of sites falling non-compliant before recertification – these re-allocated jobs are currently being completed and we expect this occurrence to become an exception again.</p>	Ongoing	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>	Completion date	
<p>If we can achieve a successful stat sampling program this will clear the previously expired interim certified meters.</p> <p>We have identified a lot of data entry errors from the previously certified, uncertified ICPs, this is likely from newer staff members or incorrect expiry dates returned from ATH's not being picked up. We will review our training of new staff to ensure they capture these and clear up the backlog.</p> <p>AMCI: 11 remaining expired sites all have actions against them to recertify, decommission or change MEP status/responsibility. The majority of these ICPs are either undergoing major 11kV upgrade or site have the sites have safe site access issues (5 x ICPs at Centreport/BNZ in Wellington). This site will be demolished in due course.</p>	Ongoing	

## 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

#### NGCM

I checked the certification records for 50 metering installations to confirm compliance. ATHs have shown that their processes include all tests, and reports confirm tests are completed.

#### AMCI

I checked the certification records for 30 metering installations to confirm compliance. ATHs have shown that their processes include all tests, and reports confirm tests are completed.

### Audit commentary

#### NGCM

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

#### AMCI

Most certification activities have been conducted by AMCI using VEMS, Accucal, Metrix, Delta and Electrix ATHs. The most recent audit reports for all ATHs confirm the appropriate testing is conducted.

### Audit outcome

Compliant

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

### Code reference

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

### Code related audit information

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

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

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

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

*All other installations must measure and separately record:*



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

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

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

#### **Audit observation**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

Category 2 AMI metering installations are predominantly “consumption only” and therefore the meters are required to measure and separately record export reactive energy. The data storage devices are capable of this but are not configured this way, however compliance is achieved because the Code does not require the reactive energy channel to be interrogated and returned.

##### AMCI

All metering installed since 29 August 2013 records all four quadrants.

#### **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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

There are no examples of burden changes having occurred. In **section 6.4** I have recorded non-compliance due to low burden not being addressed.

#### AMCI

There are no examples of burden changes having occurred. In **section 6.4** I have recorded non-compliance due to low burden not being addressed.

### Audit outcome

Not applicable

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

### Code reference

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

### Code related audit information

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

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

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

*If a meter is certified in this manner:*

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

#### **Audit observation**

##### **NGCM**

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

##### **AMCI**

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

#### **Audit commentary**

##### **NGCM**

NGCM has certified 132 metering installations as a lower category. Monitoring has been in place, but the reporting was not provided for July and August 2018, therefore non-compliance exists for this clause and certification is cancelled for all 132 ICPs.

##### **AMCI**

AMCI has certified some metering installations as a lower category and monitoring is in place in accordance with this clause for all ICPs.

#### **Audit outcome**

Non-compliant

<b>Non-compliance</b>	<b>Description</b>
<p>Audit Ref: 7.6</p> <p>With: Clauses 6(1)(b) and (d), and 6(2)(b) of Schedule 10.7</p> <p>From: 01-Jul-18</p> <p>To: 31-Aug-18</p>	<p>Monitoring not conducted and reported for 132 ICPs certified as a lower category during July and August 2018.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>
<b>Audit risk rating</b>	<b>Rationale for audit risk rating</b>

<b>Low</b>	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.		
	The impact on settlement and participants could be minor if the threshold was exceeded and not identified; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The monitoring report is automatically generated and emailed to the tech team for review. The email automation had issues earlier in the year which was fixed but it failed again. Manual reports are now being retrieved and sent to the Tech team but two months were missed. Cause of fault is system limitation and new system expected soon, in the meantime a report will be manually extracted every month.  Current ICPs will be cancelled and recertified however the latest report shows ICPs are still within the required limits.		March 19	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Once new system is in place and report fully automated again, issue will be cleared.		June 19	

#### 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

###### NGCM

I checked if there were any examples of Insufficient load certifications.

###### AMCI

I checked if there were any examples of Insufficient load certifications.

##### Audit commentary

###### NGCM

NGCM's instruction to ATHs is to connect a load bank if insufficient load is available. No examples of insufficient load certification were identified.

#### AMCI

I found two examples of insufficient load certification. The certification records and monitoring process was confirmed as compliant.

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

#### **Audit observation**

#### NGCM

There are no examples of tests conducted demonstrating that the metering installation is not within the relevant maximum permitted error.

#### AMCI

There are no examples of tests conducted demonstrating that the metering installation is not within the relevant maximum permitted error.

#### **Audit commentary**

#### NGCM

There are no examples of tests conducted demonstrating that the metering installation is not within the relevant maximum permitted error.

#### AMCI

There are no examples of tests conducted demonstrating that the metering installation is not within the relevant maximum permitted error.

#### **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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

Alternative certification was applied to two ICPs and is now expired. This is raised as non-compliance in **section 7.1**.

#### AMCI

Alternative certification has been applied for 38 ICPs where AMCI is the MEP. Certification has expired for three of these ICPs and this is recorded as non-compliance in **section 7.1**.

I checked the alternative certification application forms for ICPs 0000003490TE5AE and 0000161585TREAA. Both examples were due to CT access issues.

### Audit outcome

Compliant

## 7.10. Timekeeping Requirements (Clause 23 of Schedule 10.7)

### Code reference

*Clause 23 of Schedule 10.7*

### Code related audit information

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

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

### Audit observation

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

NGCM confirmed there are some metering installations which have time clocks, but these do not switch meter registers.

#### AMCI

AMCI confirmed there are no metering installations that have time clocks but are not remotely read.

### 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

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

##### NGCM

NGCM provided a comprehensive process document which achieves compliance with this clause. Control devices are categorised in the document into those that can be certified, and those that must be removed.

NGCM provided five examples of bridged control devices. In all five cases they were notified by the trader, there was no requirement for notification of any other participants.

##### AMCI

AMCI does not have any control devices used for submission purposes.

#### **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**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

NGCM provided a comprehensive process document which achieves compliance with this clause.

##### AMCI

AMCI does not have any control devices used for submission purposes.

#### **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

##### NGCM

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

##### AMCI

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

#### Audit commentary

##### NGCM

NGCM arranged for statistical sampling to be conducted by the Delta ATH during 2018. The report provided by Delta was dated 24 August 2018 and related to 4,988 ICPs which were listed on an attachment provided with the report. The registry has not been updated for any of the ICPs listed therefore I have recorded non-compliance with the requirement to update the registry in accordance with Part 11.

##### AMCI

AMCI does not intend to conduct statistical sampling.

#### Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.13 With: Clause 16(5) of Schedule 10.7  From: 24-Aug-18 To: 11-Nov-18	Registry not updated following statistical sampling certification Potential impact: Low Actual impact: Low Audit history: None Controls: None Breach risk rating: 5
Audit risk rating	Rationale for audit risk rating
<b>Low</b>	Controls do not appear to be in place for population of the registry following statistical sampling.  The impact on participants is minor because traders have a responsibility to ensure certification is current following reconnection, and incorrect registry records may incur rework, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
We are working to update the ICPs that were stat sampled, we would normally do this immediately following but our bulk upload tool had issues and IT have had issues getting it working. This update is currently in progress and we expect it to occur in December. We do not agree with the auditors scoring of 'Controls = none', we just have an issue at the moment. As these are all older legacy meters, we will be looking to upgrade them to smart as soon as possible, if they are upgraded by other MEPs in the meantime then this is good for the industry.	31 December 2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Once bulk update tool restored, Bulk updating of ICPs will be quick.	March 19	

#### 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

###### NGCM

I checked the records for 34 Category 2 metering installations to confirm that compensation factors were correctly recorded on the registry. I also checked the registry data for unusual compensation factors.

###### AMCI

I checked all the records to confirm that compensation factors were correctly recorded on the registry.

##### Audit commentary

###### NGCM

Compensation factors were updated accurately on the registry for the 34 ICPs checked. ICP 0006632345ML6EA had an incorrect compensation factor of 6, which was corrected prior to finalization of the audit report.

###### AMCI

I checked the records for 30 ICPs and 24 had a compensation factor of 1, which was incorrect. This may be a hangover from the introduction of new Part 10 when the industry believed all data collection was conducted by MEPs, therefore all compensation factors should be 1 in the registry. This assumption is

not correct and even though AMS is the data collection agent and they apply the compensation factor; the compensation factor is still required in the registry.

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.14</p> <p>With: Clause 24(3) of Schedule 10.7</p> <p>From: 01-Dec-17</p> <p>To: 12-Nov-18</p>	<p>One incorrect compensation factor for NGCM.</p> <p>Incorrect compensation factors of 1 for AMCI.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.</p> <p>The impact on settlement and participants could be minor if a trader uses the incorrect registry factor, therefore the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>NGCM correction factor now corrected.</p> <p>AMCI: All compensations factors currently listed as unity will be updated to actual CF by AMCI</p> <p>AMCI: This issue relates to sites that ae either read and compensated by the VAMS DA or the meters are internally programmed by the ATH hence requiring o external compensation – a decision was made to send unity to communicate the fact that the data was already compensated.</p>		March 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
AMCI: Going forward all sites irrespective of DA will have the compensation factor recorded in the Registry – no unity		March 2019	

## 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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

I checked 50 metering installation certification records and found that meters and data storage devices are being certified by ATHs.

#### AMCI

I checked 30 metering installation certification records and found that meters and data storage devices are being certified by ATHs.

### 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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

Most CTs are supplied pre-certified by the TWS Energy Controls Class A ATH and this was the case for most of the examples I examined. VEMS certifies some CTs in their Class A ATH. All new or recalibrated CTs are 500/5 or above, to eliminate the issue with inaccuracy related to low burden on ratios lower than 500/5.

#### AMCI

In all 30 certification reports that I checked there was confirmation that an ATH had certified the CTs.

#### **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**

##### NGCM

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

##### AMCI

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

#### **Audit commentary**

##### NGCM

The 50 certification records that I checked confirmed that the ATHs that data storage devices are being correctly certified.

##### AMCI

The 30 certification records that I checked confirmed that the ATHs that data storage devices are being correctly certified.

#### **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**

##### NGCM

I checked the ATH register to confirm compliance.

##### AMCI

I checked the ATH register to confirm compliance.

#### Audit commentary

##### NGCM

All relevant ATHs have appropriate approval.

##### AMCI

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

##### NGCM

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

##### AMCI

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

#### Audit commentary

##### NGCM

As recorded in **section 7.1**, there are a 41,848 previously interim certified metering installations where recertification did not occur by 01 April 2015.

##### AMCI

AMCI does not have any interim certified metering installations.

#### Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.19 With: Clause 18 of Schedule 10.7 From: 01-Apr-15 To: 12-Nov-18	41,848 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	<p>I have recorded the controls as moderate in this area because certification has been expired for a number of years for these ICPs.</p> <p>The impact on settlement is recorded as moderate because of the increased likelihood of failure or inaccuracy for metering installations with expired certification. The test results for the 4,988 ICPs certified by statistical sampling showed that 8 of 206 failed the 2.5% threshold at full load. If this result is applied to all 41,848 ICPs with expired certification, assuming annual consumption of 10,000 kWh per annum, the total “error” outside 2.5% could be at least 80,000 kWh per annum, assuming the error was 0.5%, which is very conservative. The audit risk rating is recorded as medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>We continue to manage these sites with retailers and recertify as soon as practicable. Reporting to, and consultation with the EA regarding any blockers to compliance will be maintained until completed.</p> <p>In early 2019 we will undertake a statistical sampling program on the remaining population with the aim to recertify these meters, following successful programs from other MEPs.</p> <p>Again we do not agree with the auditors scoring, We have been very pro-active in displacing these meters and have primarily been held up for reasons out of our control. Not sure we should be held accountable in these situations, we believe our controls are strong.</p> <p>Also we don’t agree that the above calculation can be easily extrapolated due to the randomness of stat sampling.</p>		June 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We are actively managing recertification of these meters with Retailers, and we will run a recertification through stat sampling beginning early 2019.		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

##### NGCM

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

##### AMCI

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



## Audit commentary

### NGCM

NGCM has had their process approved by the Authority and I have reviewed the inspection reports and summary report to ensure compliance. The reporting to the Authority was provided by 01 April 2018, it was sent via email on 28 March 2018.

As recorded in **section 6.4**, the inspection process was not conducted correctly, leading to cancellation of certification. Clause 45(1) of Schedule 10.7 provides two options for inspections. Each Category 1 metering installation must be inspected at 10 years, or a sample can be conducted. NGCM chose the sampling method, but they combined the records for both AMS (AMCI and NGCM) and ARC Innovations MEPs. The Authority has recently confirmed that ARC Innovations is a separate MEP, therefore each MEP must conduct a separate inspection process. 807 total inspections were conducted but NGCM is required to conduct at least 800 inspections just for the NGCM code, therefore insufficient inspections were conducted for NGCM. As mentioned above, the Code provides two options for inspections and NGCM did not meet either option, therefore certification is cancelled for all Category 1 ICPs due for inspection in 2017, which is 2,290 ICPs. NGCM has adopted the incorrect process during 2018 and this is likely to lead to cancellation of certification for a further 17,090 ICPs.

### AMCI

AMCI's Category 1 inspections were included in the sample above, therefore non-compliance extends to their ICPs as well. 333 AMCI Category 1 ICPs were certified in 2007 and 271 were certified in 2008.

## Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 8.1 With: Clause 45 of Schedule 10.7  From: 01-Jan-17 To: 31-Dec-17	Insufficient Category 1 sample inspections conducted.  Potential impact: Low  Actual impact: Low  Audit history: None  Controls: Strong  Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are recorded as strong because AMS believed their process was compliant.  The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
With Electricity Authority's legal team for review		Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Outcome of investigation will determine way forward but for now, we will inspect sufficient ICPs for each MEP.		Ongoing	

## 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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

NGCM does not intend to conduct inspections for Category 2 metering installations because the inspection period is the same as the certification period. As noted in **section 6.4**, there are eight non-compliant metering installations where certification has been cancelled because they were due for inspection.

#### AMCI

I checked the inspection reports for 20 completed inspections that were due within the audit period. Two ICPs had early inspections (0007090002DF296 and 0007090021DF303) and one had the inspection missed (0000029287WE54D). Certification is therefore cancelled for these three ICPs. The previous audit report recorded five early inspections and two late inspections. There are still three of these ICPs where recertification has not occurred. ICP 0006679226RNEC7 had an early inspection and has not been recertified. ICP 0000100581UN680 now has expired certification. ICP 0000020485WEF6E has not been recertified and the registry is not updated with the cancellation date.

### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 8.2  With: Clause 46(1) of Schedule 10.7  From: 01-Dec-17  To: 12-Nov-18	Inspections not conducted within the required window for: <ul style="list-style-type: none"><li>8 NGCM installations where inspections were not conducted</li><li>2 AMCI installations with inspections completed early</li><li>1 AMCI installation with inspection not conducted.</li></ul> Potential impact: Medium  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 for NGCM because reporting is in place but 8 ICPs were overlooked. AMCI’s inspection controls are rated as moderate to strong because there is a regime in place and only a small number were outside the window.  The issues found can potentially have a moderate impact on other participants and on settlement. The audit risk rating is medium.		
Actions taken to resolve the issue		Completion date	Remedial action status
AMCI: Certification has been cancelled where applicable and recertification action has been taken		Dec 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
AMCI: We include the entire window period that an inspection can be conducted for any particular site – this allows the ATH to have visibility of the start and end period for valid inspections to take place		Dec 2018	

### 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

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

#### NGCM

NGCM has completed some inspections for Category 1 metering installations and the process includes a registry comparison.

#### AMCI

AMCI conducts the checks required by this clause and compares data to that shown in Service Max.

#### **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**

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

#### NGCM

NGCM has a documented process in place for the management of seals and any subsequent investigation and reporting. There were two examples of seals being found missing during category 1

inspections. In both cases the ATH determined the meters were functioning correctly, the seals were replaced, and the installations recertified.

#### AMCI

AMCI has a documented process in place for the management of seals and any subsequent investigation and reporting. There were no specific examples to examine.

#### **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) five business days for Category 3 or higher.*

#### Audit observation

##### NGCM

I checked eight examples where NGCM had become aware of faulty metering installations, where meters had been bridged in order to reconnect.

##### AMCI

I checked two examples where AMCI had become aware of faulty metering installations.

#### Audit commentary

##### NGCM

NGCM has a documented process in place to achieve compliance with this requirement; however, this process was not followed for eight ICPs where meters had been bridged. The certification is cancelled but the registry has not been updated and notification was not provided to participants as required by this clause.

During the Wells ATH audit in November 2017 I found that ICP 0005170923RN2E6 was certified for two years despite a measured error of 32.39% fast. NGCM notified the trader but the issue has not been corrected yet. The Code does not appear to include a timeframe for remedial action. Certification was not cancelled at the time NGCM became aware of the issue, but it has since expired and remains expired.

##### AMCI

AMCI has a process in place to achieve compliance with this requirement. I checked two examples, and, in both cases, the appropriate notification was provided to other participants.

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 9.1</p> <p>With: Clause 10.43(4) and (5)</p> <p>From: 01-Dec-17</p> <p>To: 12-Nov-18</p>	<p>Faulty meters not reported to traders within 20 business days for 8 NGCM ICPs.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>I have recorded the controls as moderate in this area because there is room to improve the timeliness of notifications.</p> <p>The impact on settlement is recorded as minor because retailers have processes to estimate the data for the period meters are bridged.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>VAMS attends a failed remote reconnect and bridges the ICP- As a result of a failed remote reconnect VAMS attends site. The on-site process is to call VAMS Data Services team to resolve comms and remotely re-connect. If the tech cannot establish comms and remotely re-connect he may be asked to bridge. VAMS will return the following day to un-bridge and recertify. The issue at site is a comms issue not a faulty meter. Once un-bridged, the meter will correctly record consumption.</p> <p>Action to ensure that if bridged metering does not get re-certified next day, that installation is immediately cancelled. A new report has been created which will identify these on a weekly basis.</p>		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As presented before, we are often kept out of the loop when it comes to bridging of meters. We will raise this again with other participants to ensure they inform the MEP if they bridge a meter.		Ongoing	

## 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

#### NGCM

I checked eight examples where NGCM had become aware of faulty metering installations.

#### AMCI

I checked two examples where AMCI had become aware of faulty metering installations.

### Audit commentary

#### NGCM

NGCM has a documented process in place to achieve compliance with this requirement; however, this process was not followed in the case of installations where meters had been bridged. The certification is cancelled but the registry has not been updated and a statement of situation was not sought or prepared as required by this clause.

With regard to ICP 0005170923RN2E6, which was certified for two years despite a measured error of 32.39% fast. A statement of situation was not required because the certification report clearly stated what the error was.

#### AMCI

AMCI has a process in place to achieve compliance with this requirement. Two examples were checked, and the information provided by the ATH was sufficient to be considered a "statement of situation".

### Audit outcome

Non-compliant



Non-compliance	Description		
Audit Ref: 9.2 With: Clause 10.44 From: 01-Dec-17 To: 12-Nov-18	Statement of situation not arranged for NGCM ICPs. 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 the notification process. The impact on settlement is recorded as minor because retailers have processes to estimate the data for the period meters are bridged.		
Actions taken to resolve the issue		Completion date	Remedial action status
Often bridging occurs without the MEP being informed, usually by networks doing after hours work or Retailers contracting directly with ATHs. Where we are involved or aware of bridging, we have a process to attend and recertify next day. We will investigate this particular situation as it does not appear our current process is being followed, findings will be fed back to staff and training given.		Feb 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Investigation of process to ensure bridging is captured when we as MEP are involved in the bridging, or informed immediately afterward. Review process to request and provide statement of situation to relevant parties where appropriate.		Feb 2019	

### 9.3. Statement of Situation (Clause 10.46(2))

#### Code reference

Clause 10.46(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 Authority (for all category 3 and above metering installations) and any category 1 and category 2 metering installations on request.

#### Audit observation

### NGCM

I checked eight examples where NGCM had become aware of faulty metering installations.

### AMCI

I checked three examples where AMCI had become aware of a faulty metering installation.

### **Audit commentary**

### NGCM

NGCM has a documented process in place to achieve compliance with this requirement; however, this process was not always followed in the case of installations where meters had been bridged. The certification is cancelled but the registry has not been updated and a statement of situation was not sought, or prepared as required by the Code, therefore it could not be provided to other parties. Compliance is therefore confirmed for this clause for NGCM.

### AMCI

Two examples were checked and although the notification to participants was compliant, there was no notification to the Authority as required by this clause for one Category 3 metering installation at ICP 0000028943WE106. The other ICP was Category 2.

### **Audit outcome**

Non-compliant

Non-compliance		Description	
Audit Ref: 9.3 With: Clause 10.46(2)  From: 30-Jul-18 To: 12-Nov-18		Statement of situation not provided to the Authority within 3 business days for one ICP.  Potential impact: Medium  Actual impact: Low  Audit history: Once  Controls: Moderate  Breach risk rating: 2	
Audit risk rating		Rationale for audit risk rating	
<b>Low</b>		The controls are recorded as moderate because there is room for improvement.  The impact on settlement and participants is minor; therefore, the audit risk rating is low.	
Actions taken to resolve the issue		Completion date	Remedial action status
AMCI – This clause states that the MEP needs to provide notification to all affected participants but with respect to the EA on request. AMCI's interpretation of this was that the SOS to the EA is on request only.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	Clause 10.46(2)(b)(i)

AMCI: Going forward we will also be notifying the EA of all situations which require a SOS whether the notice is requested by the EA or not	Nov 2018	requires notification to the Authority for Category 3 and above ICPs.
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#### 9.4. 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

###### NGCM

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

###### AMCI

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

##### Audit commentary

###### NGCM

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

###### AMCI

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

##### Audit outcome

Compliant

## 9.5. 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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

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

#### AMCI

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

### Audit outcome

Compliant

## 9.6. 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

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

#### NGCM

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

#### AMCI

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

#### **Audit outcome**

Compliant

### 9.7. 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**

#### NGCM

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

#### AMCI

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

#### **Audit commentary**

#### NGCM

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

#### AMCI

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

#### **Audit outcome**

Compliant

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

### Code reference

*Clause 8 of Schedule 10.6*

### Code related audit information

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

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

*When raw meter data can only be obtained from an MEP's back office, the MEP must ensure that the internal clock is accurate, to within  $\pm 5$  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

#### NGCM

NGCM conducts AMI data collection as an MEP, because data can only be accessed from their back office.

I conducted a walkthrough of the process and I requested reporting of the following:

- interrogation not conducted within the maximum interrogation cycle
- event report sent to retailers
- clock synchronization reports
- sum-check failures.

## AMCI

AMCI conducts HHR data collection for C&I metering as an agent to reconciliation participants. This activity is not conducted as an MEP.

## Audit commentary

### NGCM

The relevant parts of this clause are maximum interrogation cycle and storage of data. The other parts of the clause are discussed in other sections.

NGCM provided reporting of ICPs where interrogation did not occur within the maximum interrogation cycle of 90 days. There are 2,375 Active ICPs in the report. The following table lists the reasons for inability to interrogate.

<b>AMS &amp; Retailer Comment on Meters That Have Not Communicated For 90+ Days</b>	<b>Count of Meter Serial Number</b>
Advised Retailer of Non-Communicating Meter. Working with Retailers to Validate Why and Raise Field Jobs for Meters That May Have A Communication Fault (Rather Than Known Customer Reason)	<b>1748</b>
Backlog of Meters That Either Require VAMS To Notify Retailers or Re-Notify Current Retailers (Due to Switch Activity and Inaction by Previous Retailer)	<b>475</b>
Vacant Sites - Unable to Perform Comms Fault Job Due to Access Issues and HSE Rules to Not Interfere with Main Power Supply at Vacant Properties (Please note this include Irrigation sites)	<b>152</b>
Inactive in EA Registry	<b>2557</b>
<b>Grand Total</b>	<b>4932</b>

Total Sites Impacted By 90+ No-reads <b>VS</b> Total AMI(Y) Meter Fleet (1,059,923)	0.47%
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The Authority published a memo in July 2017 indicating their expectation that MEPs will manually read metering installations where the AMI flag is set to Y and where the automated interrogation fails. The expectation for investigation and updating the registry is as follows:

- where meters are interrogated daily, MEPs will trigger an investigation of repeated failures to communicate after no more than one week with no communication
- where meters are not interrogated daily, MEPs will trigger an investigation of repeated failures to communicate after no more than three consecutive failed attempts, but within 31 days of the first communication failure
- investigations should begin immediately and conclude within three business days even if a site visit is required; if site access is not available and the meter is still not communicating, the meter should be designated as AMI="N" until a site visit can be arranged



- if communications cannot be restored and the services access interface will not be the MEP's back office system, the registry should be updated as soon as practicable after the investigation is completed, but within three business days.

The Authority has proposed a Code change to clarify the timeframes for completing an investigation and updating the registry.

NGCM has not met the requirements of the memo or the Code requirement to interrogate once within the maximum interrogation cycle for 2,375 ICPs.

NGCM has met the requirement to securely archive data for at least 48 months. This data was viewed during the audit.

#### AMCI

AMCI conducts HHR data collection for C&I metering as an agent to reconciliation participants. This activity is not conducted as an MEP.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
Audit Ref: 10.5 With: Clause 8(2) of schedule 10.6 From: 01-Dec-16 To: 30-Sep-17	2,375 metering installations not read within the maximum interrogation cycle. Potential impact: Medium Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	I have recorded the controls as moderate in this area because there is room to tighten the timeframes for resolution of these matters.  The impact on settlement is recorded as minor because of the low number involved; therefore, the audit risk rating for most retailers is low. For AMI only retailers, the impact would be major and the audit risk rating high.		
Actions taken to resolve the issue		Completion date	Remedial action status

<p>We are actively managing these and for 1748, we are in discussions with the relevant retailers for information to identify whether site is faulty or switched off by the customer. We have communicated many of these to retailers and have had no reply, without their support we cannot determine if there is a fault of if the power is off. We also need a service request to attend site to repair.</p> <p>We accept there are some ICPs that have been inactive for a long period and we are pushing hard to get the correct information to ensure the AMI flag is correctly updated.</p> <p>It should be noted that in some circumstances, where the power is switched off for long periods, i.e. holiday home, the retailers do not want the flag changed as they know once power is restored, the site will start communicating and delivering reads. Changing the flag to 'N' puts the responsibility on them to manually read the meter, which is an unnecessary cost.</p> <p>The EAs memo states "If communications cannot be restored", in these instances it can/will be restored, just after a prolonged period. The code does not take this scenario into consideration.</p> <p>We believe this issue needs further discussion within the industry to find a suitable compromise.</p>	Ongoing	Identified
<b>Preventative actions taken to ensure no further issues will occur</b>	Completion date	
<p>The above table is a back log of ICPs which will be cleared once we can determine the cause for the non-communication. In many cases it is due to the meter being switched off by the customer, because of this, we can't determine whether it is a comms fault of our meter or that the power is off, until the retailer provides this information.</p> <p>Our current process automatically sets the flag based on predetermined rules and any exceptions are then managed manually.</p>	Ongoing	

## 9.9. 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

#### NGCM

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

#### AMCI

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

### Audit commentary

#### NGCM

Most data is provided to reconciliation participants via SFTP or FTP over private VPN. Some data is supplied by password protected email. Password security is in place to prevent unauthorised access prior to data being sent to participants.

#### AMCI

AMCI does not conduct electronic data collection as an MEP.

### Audit outcome

Compliant

## 9.10. 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

#### NGCM

I conducted a walkthrough of the management of time errors and I checked the relevant reports.

#### AMCI

AMCI does not conduct electronic data collection as an MEP.

### Audit commentary

#### NGCM

NGCM's server time is verified against an internet time source several times per day.

Daylight saving adjustment is conducted as follows:

The meters collect all 'Half Hourly Consumption Data' in NZST. MultiDrive (the collection system) records and stores the 'Half Hourly Consumption Data' as NZST. Files are then produced in Coordinated Universal Time (UTC) from MultiDrive to be used in downstream systems including the DWBI (Interval Data Delivery).

		EDMI Meter	MultiDrive (collection system)	File Export (CMEP)	DWBI (Interval Data Delivery)
Half Hourly Consumption Data	Summer	NZST	NZST	UTC (GMT)	DST
	Winter	NZST	NZST	UTC (GMT)	NZST

On cutover from summer to winter (and vice versa), there are either +2 or -2 intervals due to the cutover. For example, additional reads are recorded for 1:59 and 2:29 on the summer to winter transition as shown below.

#### Summer to Winter Transition:

UTC (GMT)	NZST(Summer)			UTC (GMT)	NZST(Summer to Winter)	
Interval End	Interval End	Int.		Interval End	Interval End	Int.
11:30	0:29	1		11:30	0:29	1
12:00	0:59	2		12:00	0:59	2
12:30	1:29	3		12:30	1:29	3
13:00	1:59	4		13:00	1:59	4
13:30	2:29	5		13:30	2:29	5
14:00	2:59	6		14:00	1:59	6
14:30	3:29	7		14:30	2:29	7
15:00	3:59	8		15:00	2:59	8
:	:	:		:	:	:
11:00	0:00	48		11:00	0:00	50

#### Winter to Summer Transition:

UTC (GMT)	NZST (Winter)			UTC (GMT)	DST Starts (Winter to Summer)	
Interval End	Interval End	Int.		Interval End	Interval End	Int.
12:30	0:29	1		12:30	0:29	1
13:00	0:59	2		13:00	0:59	2
13:30	1:29	3		13:30	1:29	3
14:00	1:59	4		14:00	2:59	4
14:30	2:29	5		14:30	3:29	5
15:00	2:59	6		15:00	3:59	6
15:30	3:29	7		15:30	4:29	7
16:00	3:59	8		16:00	4:59	8
:	:	:		:	:	:
12:00	0:00	48		12:00	0:00	46

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. The interrogation log contains this information.

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. The relevant part of this table is shown below.

Metering Installation Category	HHR Metering Installations (seconds)	NHH Metering Installations (seconds)
1	±30	±60
2	±10	±60

During interrogation the system time is compared to the data logger time. Category 2 installations have a setting of 3 to 10 seconds and Category 1 installations have a setting of 3 to 30 seconds. On any given day, there are approx. 200 installations over the maximum threshold. Reporting for the most recent day showed 266 examples. These are all dealt with manually and no interval data is sent until the clock is re-set or the issue is resolved.

Details of time changes are sent to reconciliation participants as required by this clause. I checked the most recent report sent to every relevant retailer.

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.

#### AMCI

AMCI does not conduct electronic data collection as an MEP.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
Audit Ref: 10.7 With: Clause 8(4) of Schedule 10.6  From: 01-Dec-17 To: 12-Nov-18	266 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	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.  The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

While clause 8 (4) of schedule 10.6 requires MEPs to ensure the time is not outside the allowable thresholds, clause 8 (5)(d) of schedule 10.6 makes allowance for instances where the time drift is outside the allowable limits. Therefore we do not agree we are in breach here as we comply with clause 8 (5)(d) of schedule 10.6.	Ongoing	Disputed
<b>Preventative actions taken to ensure no further issues will occur</b>	<b>Completion date</b>	This scenario is similar to many others in the Code, where there is a compliance threshold then there are additional clauses to describe actions and notifications when compliance is not achieved.
We already have a process that monitors meters that regularly drift over the allowed threshold, these meters are dealt with as per clause 10.43, and are typically replaced.	Ongoing	

#### 9.11. 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

###### NGCM

I conducted a walkthrough of the event management process and I checked the most recent report sent to all relevant retailers.

###### AMCI

AMCI does not conduct electronic data collection as an MEP.

##### Audit commentary

###### NGCM

NGCM downloads the event log as required by this clause. All critical events are evaluated, and appropriate action is taken. The list of events is as follows:

- loss of power
- battery low
- pulse overflow
- voltage tolerance
- VT failure (voltage tolerance failure)
- measurement error
- memory failure
- ROM error
- meter hardware error
- possible meter tamper (these are caused by a site visit or meter installation and can be ignored)
- relay stuck
- reverse rotation
- tamper
- phase failure (the voltage tolerance error is filtered by meter category to identify Category 2 phase failure).

The Code requires NGCM to review the event log either manually or by an automated software function which flags exceptions and to:

- take appropriate action where problems are apparent; and
- pass relevant event log entries to the reconciliation participant for the metering installation.

Compliance is achieved with the requirement to take appropriate action where problems may affect the operation or accuracy of the metering installation and NGCM passes relevant event log entries to the reconciliation participant in all cases.

The “reverse power” event is becoming more relevant now that the quantity of distributed generation installations has increased. Reverse power means that “generation” is detected on a “load” register. This is normally caused by distributed generation being connected without notification to the trader. I have encouraged retailers to monitor and act on this event.

The list of events sent to retailers is shown below.

CODE - D7 DEVICE (HEADEND RAW EVENTS)	CODE - D7 DEVICE (HEADEND RAW EVENTS)	NEW EVENT TYPE - TAKING OUT LIES AND CLEANS FROM REPORTING CODE (BY STANDARD) MDM STANDARD EVENT - NEW/UPDATED EVENT DESCRIPTION	NEW DESCRIPTION - TAKING OUT "TRAP" AND CLEANS	ORACLE - MDM REPORTING CATEGORY - UPDATED CATEGORY
EDMI GPRS (MD)	EFA - Pulse Output Overflow	EFA_PULSE_OUTPUT_OVERFLOW	Alarm raised when specified minimum off time is violated	Meter Notification
EDMI GPRS (MD)	EFA - Tamper	EFA_TAMPER	Tamper attempt detected	Tamper
EDMI GPRS (MD)	EFA - Modem Failure	MODEM_FAILURE	This alarm is generated if the modem is found to be faulty	Meter Notification
EDMI GPRS (MD)	Power Off	POWER_OFF	Power to the meter was switched off or lost	Outage
EDMI GPRS (MD)	Power On	POWER_ON	Power to the meter was switched on	Restoration
EDMI GPRS (MD)	EFA - Reverse Power	TBL3_REVERSE_ENERGY	Reverse energy: Received kWh (Table 3: CA400000)	Health and Safety
EDMI GPRS (MD)	Time Changing	TIME_CHANGING	System time is about to be changed by more than 2 seconds	Meter Notification
EDMI GPRS (MD)	EFA - Voltage Tolerance	VOLTAGE_TOLERANCE_ERROR	Default 1 minute time delay is applied to this test	Health and Safety
EDMI GPRS (MD)	EFA - VT Failure	VOLTAGE_TRANSFORMER_FAILURE	Default 1 minute time delay is applied to this test	Health and Safety
EDMI GPRS (MD)	Relay Stuck	RELAY_STUCK	Relay stuck	Meter Failure

## AMCI

AMCI does not conduct electronic data collection as an MEP.

## Audit outcome

Compliant

## 9.12. 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

#### NGCM

I conducted a walkthrough of the event management process and I checked the most recent reporting.

#### AMCI

AMCI does not conduct electronic data collection as an MEP.

### Audit commentary

#### NGCM

NGCM has a "sum-check" process where the "billable registers" from midnight reads are compared with HHR data. If the difference is more than 0.1 kWh this is considered a "fail". It was recently identified that the 0.1 kWh threshold only applies for "positive" errors but does not apply for "negative" errors (where the sum of the intervals is less than the difference between register reads). The Code does not stipulate a pass/fail threshold or the content of reporting to retailers, however clause 10.6 requires that information must not be misleading or deceptive. Feedback from one retailer is that the information provided is misleading because a file can have intervals missing but can show as a "pass", therefore retailers may use incorrect information for settlement and may not replace this information because they believe it is accurate. I have recorded non-compliance in **section 2.5**.

This comparison is conducted in the data warehouse. If a "fail" occurs the data may be sent to the retailer, depending on what agreement is in place. Failures occur due to meters not communicating; it does not mean there is a fault with the device. The main reason for failure is due to data spikes, which can be present in devices with an old firmware version. These events are all identified, and the matter is raised with the relevant retailer. NGCM is in the process of updating the firmware version in all relevant installations.

#### AMCI

AMCI does not conduct electronic data collection as an MEP.

### Audit outcome

Compliant

## 9.13. 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**

##### NGCM

NGCM has a process in place to achieve compliance with this requirement. No specific examples were available to examine.

##### AMCI

AMCI has a process in place to achieve compliance with this requirement. No specific examples were available to examine.

#### **Audit commentary**

##### NGCM

NGCM has a process in place to achieve compliance with this requirement. No specific examples were available to examine.

##### AMCI

AMCI has a process in place to achieve compliance with this requirement. No specific examples were available to examine.

#### **Audit outcome**

Not applicable

## CONCLUSION

The quantity of non-compliances has increased from 16 during the last audit to 20 in this audit, with the future risk rating increasing from 44 to 60. Some additional matters were found, as follows:

- monitoring of metering installations certified as a lower category was not conducted for two months, resulting in cancellation of certification
- statistical sampling has been conducted for recertification, but the registry has not been updated
- some incorrect compensation factors were identified
- insufficient Category 1 sample inspections were conducted
- clock errors were outside the allowable threshold for some AMI installations
- the sum-check validation does not record “negative” errors (sum of intervals less than difference between registers) as failures.

Improvements have been made in the following areas since the last audit:

- the timeliness of registry updates has improved, and
- the total quantity of installations with expired certification has reduced.

Those with the highest breach risk rating are as follows:

- there are 69,390 ICPs with incorrect registry data
- over 150 installations have cancelled certification and the registry is not updated
- certification is expired for 49,758 ICPs - 427 were previously fully certified
- some inspections were conducted outside the allowable window.

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 longer frequency of at least six months to allow sufficient time to resolve the issues resolved, many of which require system changes or field visits.

## PARTICIPANT RESPONSE

Of the additional matters found in this audit, we believe they pose a minor impact on settlement and participants, in particular;

- The automated email system to monitor metering installations certified as a lower category, failed to send for a couple of months, a recent report was manually reviewed and the ICPs found to be still within the required limits. Cancellation of the 132 ICPs whilst a requirement of the code is an additional cost that adds no value to the industry.
- Insufficient Category 1 sample inspections were conducted, this was an honest misunderstanding that was identified too late to resolve. The cancellation of further ICPs is again an unnecessary cost on the industry for no real value.
- Clock errors were outside the allowable threshold for some AMI installations. Our understanding of the code is that if it does go outside the threshold, there is provision in the code (10.43) for MEPs to investigate. We have a robust process for monitoring these and question the wording of clause 8(4) of schedule 10.6.

VAMS would like to see changes to the audit report scoring system so as not to penalize participants multiple times across different clauses, for the same issue. Even though this is taken into account during the report review process, we believe it is too subjective.

We would like to point out that we were again very successful (over 90%) in updating the registry. We are still hampered by late nominations by retailers, which make up 9.9% of the rest. We report weekly on late nominations to relevant retailers which has improved things.