

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

For

SMARTCO LIMITED

Prepared by: Brett Piskulic – Veritek Limited

Date audit commenced: 24 April 2019

Date audit report completed: 18 June 2020

Audit report due date: 28-May-20

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EXECUTIVE SUMMARY

SmartCo is a Metering Equipment Provider (MEP) and is required to undergo an audit by 28/05/20, in accordance with clause 16A.17(b). The audit was carried out remotely using Zoom between May 14th and May 18th 2020 due to the nationwide lockdown in response to the COVID-19 pandemic.

SmartCo is an MEP that is owned by a consortium of electricity network companies. SmartCo provides AMI data to retailers in member networks using mesh communications technology. The individual network companies that make up the consortium are the owners of the meters in their networks. Vector Metering (VM) has been appointed by SmartCo to provide metering, data collection and asset management services on SmartCo member networks. SmartCo is the MEP on the registry (SMCO).

The audit identified 13 non-compliances.

There are four areas of non-compliance related to issues arising due to certification practises of ATHs as follows:

- Certification records not accurate and complete for 59 of a sample of 72,
- 33 category 2 installations certified with low burden (30 of these are from the previous audit) and certification not cancelled,
- certification tests not completed for one ICP, and
- monitoring not conducted each month following insufficient load certification.

Whilst most registry fields are correct, there were 15,438 ICPs with “IN24” recorded in the registry in the initial data analysis for this audit at 30/03/2020. SmartCo advised that a project was underway to correct these ICPs. Smartco provided a new audit compliance report dated 19/05/2020 which confirmed the number of ICPs with IN24 had reduced to 505 and it was expected these would all be corrected prior to the finalising of the audit.

SmartCo has shown an improvement in the management of non-communicating meters which ensures that if communications issues cannot be resolved, the AMI flag is changed to “N”.

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 it recommends an audit frequency of six months. To ensure SmartCo has sufficient time to implement changes I recommend an audit frequency of 12 months.

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 Clause 10.6	Registry not always updated as soon as practicable by SmartCo.	Moderate	Low	2	Identified
Registry notification timeframe	3.2	2 of schedule 11.4	Some registry updates later than 15 business days.	Strong	Low	1	Investigating
Installation accuracy	4.3	4(1)(a) of schedule 10.7	Two metering installations with errors greater than 2.5%.	Strong	Medium	2	Identified
Changes to registry records	4.10	3 of schedule 11.4	Some records updated on the registry later than 10 business days.	Strong	Low	1	Investigating
Accurate and Complete Records	5.1	4(1)(a) and (b) of Schedule 10.6	Certification records not accurate and complete for 59 of a sample of 72.	Weak	Low	3	Identified
Response to switch request	6.1	Clause 1(1) of Schedule 11.4	Four late MN files.	Strong	Low	1	Investigating
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Moderate	Low	2	Identified
Correction of registry errors	6.3	6 of schedule 11.4	Corrections not made within five business days.	Strong	Low	1	Identified
Cancellation of certification	6.4	20 of Schedule 10.7	Certification cancelled, and registry not updated within 10 business days for 33 ICPs with low burden.	Moderate	Low	2	Identified
Expired certification	7.1	10.38 (a)	Certification expired for eight ICPs.	Strong	Medium	2	Identified
Certification tests	7.2	10.38(b) and clause 9 of Schedule 10.6	Certification tests not completed for one metering installation.	Moderate	Low	2	Identified

Insufficient load certification	7.7	14(3) and (4) of Schedule 10.7	Monitoring not conducted for one ICP certified with insufficient load.	Moderate	Low	2	Investigating
Time errors	10.7	8(4) of Schedule 10.6	381 examples of clock errors outside the allowable thresholds in the most recent reports.	Strong	Low	1	Identified
Future Risk Rating						22	
Indicative Audit Frequency						6 months	

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

RECOMMENDATIONS

Subject	Section	Recommendation	Description
		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

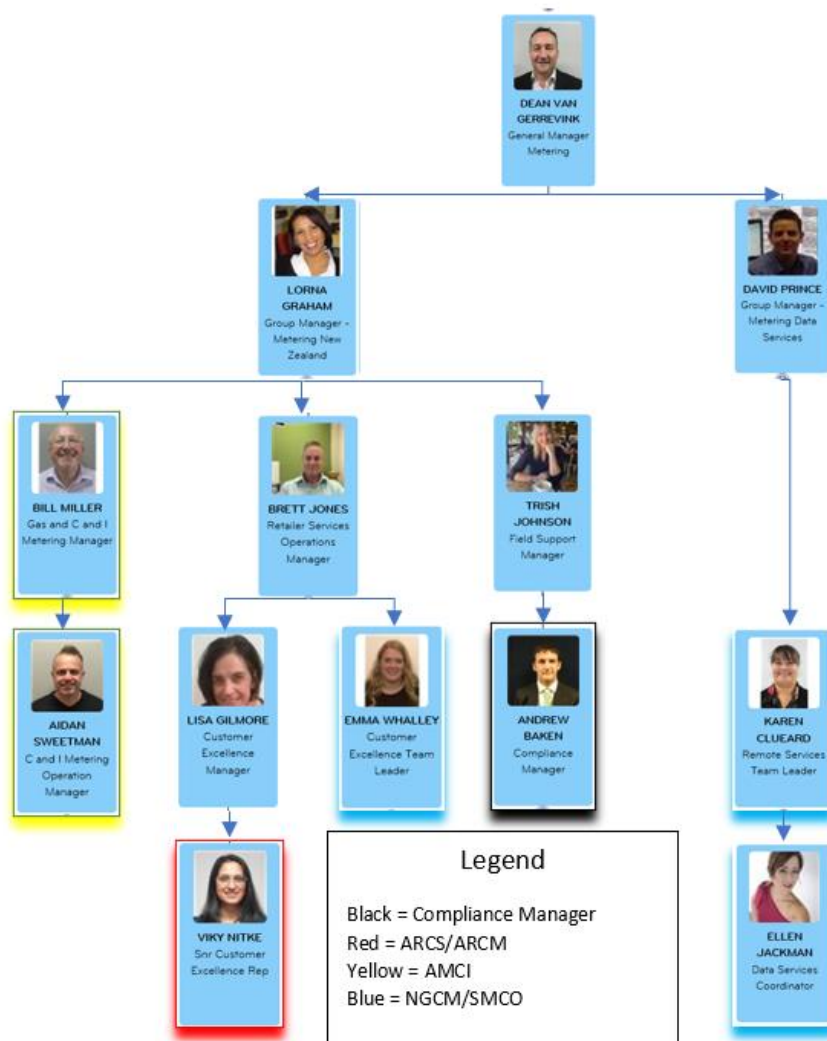
I checked the Electricity Authority website and I confirm there are no exemptions in place.

Audit commentary

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

1.2. Structure of Organisation

All SmartCo functions are performed by Vector Metering; therefore, I have included the Vector Metering organisation chart below.



1.3. Persons involved in this audit

Auditor: Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

SmartCo personnel assisting in this audit were:

Name	Title
Andrew Baken	Compliance Manager
Karen Clueard	Data services Team Leader
Ellen Jackman	Data Service Coordinator

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

SmartCo engages ATHs to conduct certification activities. ATHs are also engaged as agents 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, and
- Vircom-EMS.

Audit commentary

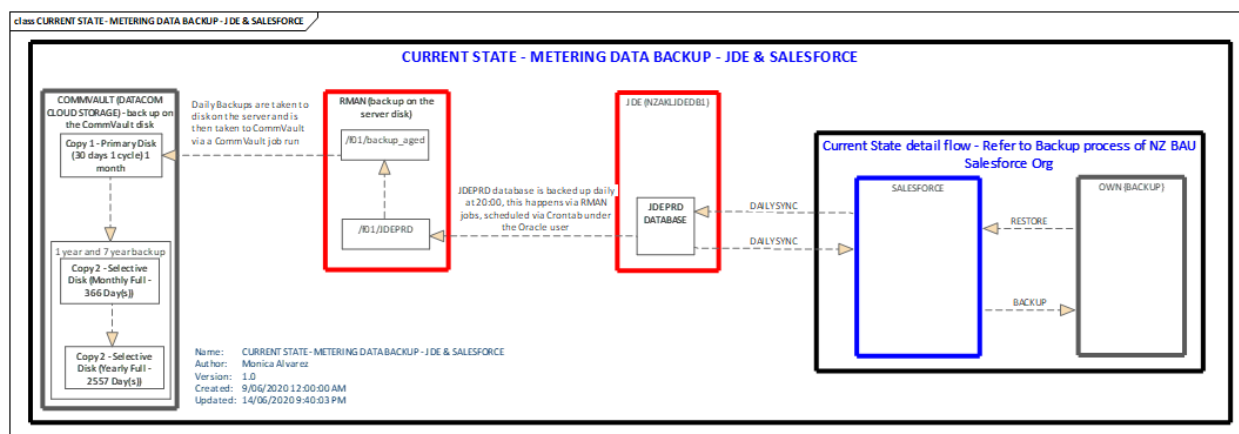
The agreements between SmartCo and ATHs clearly specify that the ATHs are acting as an agent for these activities and they are required to produce records within five business days. The provision and accuracy of records is discussed further in **section 6**.

1.5. Hardware and Software

SmartCo MEP data is held in JDE and Salesforce.

JDE is the Vector Metering master repository, the database is backed up daily to the server then to CommVault. The CommVault archive is kept for seven years.

ServiceMax BAUT (Salesforce) is a cloud-based application used by Vector Metering for work order workflows. A full synchronization occurs daily between Salesforce and JDE. SmartCo provided the following diagram detailing the back up arrangements.



1.6. Breaches or Breach Allegations

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

1.7. ICP Data

Metering Category	Number of ICPs
1	147,065
2	1,551
3	0
4	0
5	0
9	0

1.8. Authorisation Received

A letter of authorisation was not required or requested.

1.9. Scope of Audit

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

SmartCo is an MEP that is owned by a consortium of electricity network companies. SmartCo provides AMI data to retailers in member networks using mesh communications technology. The individual network companies that make up the consortium are the owners of the meters in their networks. Vector

Metering has been appointed by SmartCo to provide metering, data collection and asset management services on SmartCo member networks. SmartCo is the MEP on the registry (SMCO).

The table below shows the relevant networks and metering equipment ownership for legacy and AMI equipment.

Metering Equipment Owner Codes

Network	MEO code (AMI Meters)	MEO Code (relays, legacy meters)	Meter Type
Alpine Network	ALPS	ALPE	L+G
Electricity Invercargill Network	ELIS	ELIN	EDMI
The Power Company Network (including Smart Net embedded network)	TPCS	TPCO	EDMI
OtagoNet Joint Venture	TPCS	TPCO	EDMI
MainPower	MPOS	MPOW	EDMI
Tasman Network	TASS	*	L+G
Top Energy	TOPS	WASN (LCD)	L+G

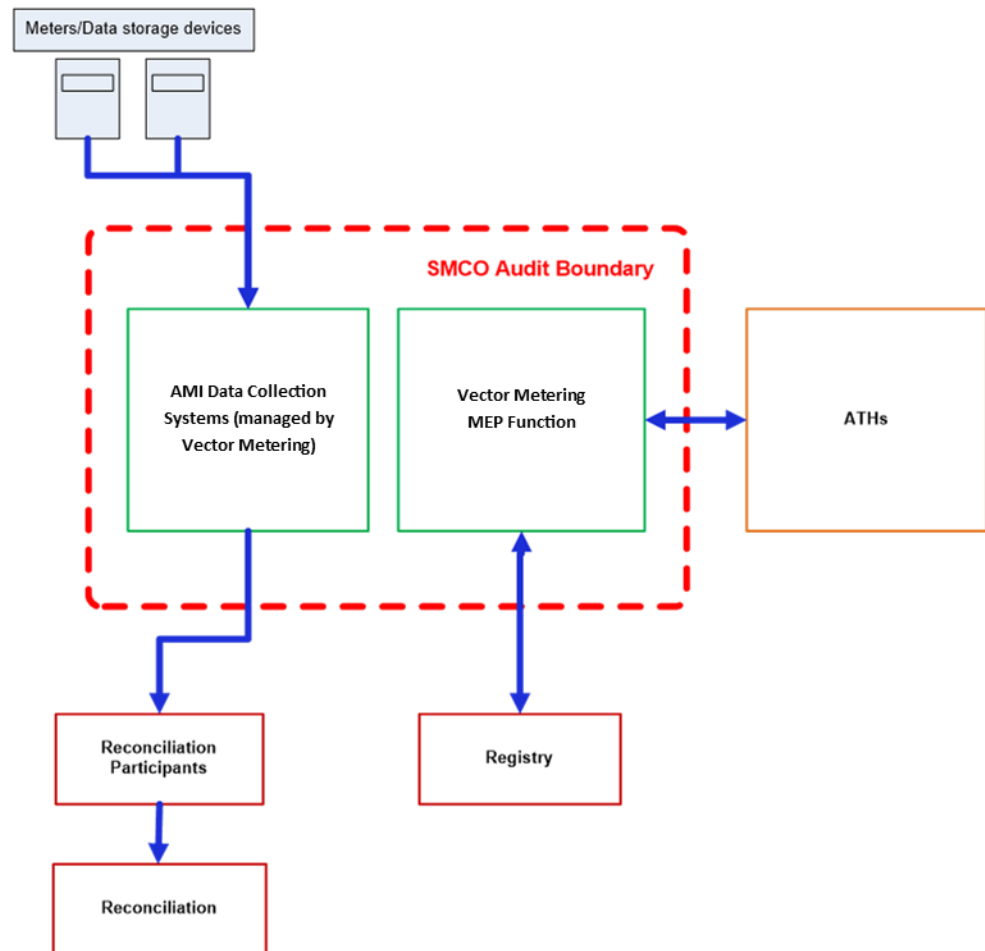
*Tasman Network will not have external load control devices left on site.

The table below shows a breakdown of ICPs per network as at April 2020.

Network	Quantity 2020	Quantity 2019	Quantity 2018	Quantity 2017	Quantity 2016
Top Energy	19,594	18,842	16,863	14,183	8,412
Alpine	26,849	24,888	18,994	12,375	3,685
Electricity Invercargill	14,550	11,697	8,650	5,877	2,316
Mainpower	27,603	26,605	24,690	16,136	6,210
Network Tasman	29,193	26,897	25,836	22,373	10,610
The Power Company	30,682	25,868	18,184	10,635	2,671
Mountain Power	133	107	77	38	0
OtagoNet Joint Venture	1	-	-	-	-

Smart Net Limited	11	-	-	-	-
Total	149,663	134,904	113,294	81,617	33,904

SmartCo collects AMI data as an MEP. The boundaries of this audit are shown below for greater clarity.



1.10. Summary of previous audit

The previous audit was conducted in May 2019 by Steve Woods of Veritek Limited. The table below shows that some of the issues have been cleared.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Provision of accurate information	2.5	11.2 and Clause 10.6	Registry not always updated as soon as practicable by SmartCo. Incomplete HHR data provided for 30,000 records during the change to NZST in April 2019. The 2 nd interval was incorrectly recorded as zero.	Still existing for registry updates
Registry notification timeframe	3.2	2 of schedule 11.4	Some registry updates later than 15 business days.	Still existing
Uncertainty calculations	4.3	4(1)(a) of schedule 10.7	Two metering installations with errors greater than 2.5%.	Still existing
Changes to registry records	4.10	3 of schedule 11.4	Some records updated on the registry later than 10 business days. Five incorrect certification dates.	Still existing
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Still existing
Correction of registry errors	6.3	6 of schedule 11.4	Corrections not made within five business days.	Still existing
Cancellation of certification	6.4	20 of Schedule 10.7	Certification cancelled, and registry not updated within 10 business days for 30 ICPs with low burden.	Still existing
Expired certification	7.1	10.38 (a)	Certification cancelled for three ICPs.	Still existing
Interrogation cycle	10.5	8(2)(a)&(b) of Schedule 10.6	372 installations not interrogated within the interrogation cycle.	Cleared
Time errors	10.7	8(4) of Schedule 10.6	381 examples of clock errors outside the allowable thresholds in the most recent reports.	Still existing

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Sum-check process	10.9	Regarding Clause 8(9) of Schedule 10.6	Investigate reasons for sum-check failure and resolve contributing issues.	Cleared

2. OPERATIONAL INFRASTRUCTURE

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

Code reference

Clause 10.9(2)

Code related audit information

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

Audit observation

I checked the location of the services access interface and how this is maintained.

Audit commentary

The services access interface is located remotely for all SmartCo meters. SmartCo operates an AMI system, operation and maintenance of the AMI system is confirmed in **section 10**.

Audit outcome

Compliant

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

Code reference

Clause 10.50(1) to (3)

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 7(1) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

SmartCo uses the SMCO identifiers for all MEP functions.

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

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 11.2 and Clause 10.6

Code related audit information

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

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

Audit observation

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

Audit commentary

As recorded in **section 6** there are some registry records which are not complete and accurate. SmartCo 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 was not updated as soon as practicable.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 01-May-19 To: 19-May-20	Registry not always updated as soon as practicable by SmartCo. 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	Controls are recorded as moderate because there is room to improve processes. 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
As mentioned in section 6, we have made significant steps in removing all IN24 register content codes over the past 6 months, the remaining ones will be cleaned up over the coming weeks. We wanted to clean up the IN24 ICPs to remove any confusion before addressing the 305 ICPs that should be INEM0 and not UN24. This will happen shortly.		31/07/20	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Weekly reporting has been put in place and additional training for staff to ensure they identify any correct exceptions, i.e. UN24 with a load control device.		Completed	

3. PROCESS FOR A CHANGE OF MEP

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

Code reference

Clause 10.22

Code related audit information

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

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

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

Audit observation

I checked if SmartCo had sent or received any invoices.

Audit commentary

SmartCo has not sent or received any invoices yet.

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 11.4

Code related audit information

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

Audit observation

I checked the audit compliance report for the period 1/05/19 to 30/03/20 for all records where SmartCo became the MEP to evaluate the timeliness of updates.

Audit commentary

I examined the audit compliance report for 18,408 switches in relation to this clause and the findings are shown in the table below. A large number of the late updates are due to corrections. I checked a sample of 40 updates for events which occurred during the audit period in detail and found that 29 were due to late nomination by the trader, two were corrections and nine were due to the MEP being late.

Year	ICPs Switched	Notified to registry within 15 days	Percentage compliant
2016	13,960	12,787	92%
2017	30,460	28,837	95%
2018	15,763	14,021	90%
2019	14,812	11,407	77%
2020	18,408	9,841	53%

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	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
Low	Controls are in place to ensure the timeliness of updates, but SmartCo 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

<p>The reason for the percentage successful drop is due to the SMCO transition program, this is an ongoing process to update ICPs and assets to SMCO owned in our system and the registry.</p> <p>In order to manage this efficiently, we receive a list of sites where the metering has been deployed and this list goes through a series of data validations before we can update the metering in our system. Due to the validations needed we run this process once a month. We also notify the retailer before we run the process so that they can nominate SMCO. The date we install in our system becomes the agreed transition date from the previous MEP to SMCO.</p> <p>For the majority of sites, the previous MEP has already updated the registry with the smart ready assets from the install date however they are not considered SMCO sites until the transition process has been run in our system. Due to this we use the event date and installation date of when the assets are updated in our system, not the physical install date.</p> <p>We are investigating ways of improving the transition process to meet compliance.</p>	30/08/20	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>This is a known process and once complete, there will be no further issues however, we are investigating ways of improving the transition process to meet compliance.</p>	30/08/20	

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

Code reference

Clause 5 of Schedule 10.6

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

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

Audit commentary

SmartCo 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 2.3**, some of these responsibilities will be met by ATHs on behalf of SmartCo.

Audit outcome

Compliant

4. INSTALLATION AND MODIFICATION OF METERING INSTALLATIONS

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

Code reference

Clause 2 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

I checked the design reports provided by SmartCo to the ATHs to confirm compliance.

Audit commentary

VM has prepared design reports for SmartCo and has provided these to all ATHs. I checked a directory of design reports and confirmed that all of the requirements noted above were included and they were prepared by a person with the appropriate level of skills, expertise, experience and qualifications. There have not been any changes to design reports during the audit period.

Audit outcome

Compliant

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

Code reference

Clause 9 of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

VM, on behalf of SmartCo, 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

I checked the processes used by SmartCo to ensure compliance with the design and with the error thresholds stipulated in Table 1. I also checked the certification records for 72 metering installations.

Audit commentary

With regard to the design of the installation (including data storage device and interrogation system), SmartCo 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 SmartCo 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 72 certification reports and the design report was recorded for all installations.

The ATHs have compliant practices and are now calculating uncertainty for metering installations certified using the comparative method. My checks of the metering installation certification reports for 17 category 2 installations certified using the comparative recertification method confirmed that the correct procedures were followed.

In the previous audit two installations had been certified by Wells where the error was not within 2.5%. ICP 0000931760NV71C with an error of 18% and ICP 0003860754TP8CD with an error of 32%. Certification was cancelled in the registry for both ICPs as soon as SmartCo received the certification reports. Smartco has been unable to arrange access to replace the CTs and recertify the installations therefore the non-compliance remains.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 06-Aug-18 To: 30-Mar-20	Two metering installations with errors greater than 2.5%. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Strong Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Medium	I have recorded the controls as strong because the issues were identified immediately. There is a moderate impact on metering installation accuracy; therefore, the audit risk rating is medium.		
Actions taken to resolve the issue		Completion date	Remedial action status
Both sites require a shutdown to replace the CT's, this is currently with the Retailers and Customers to arrange a suitable time to return. Unfortunately, as MEP, SmartCo does not have a direct relationship with the customer therefore we are reliant on the retailer arranging access for us under clause 10.7 (2).		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Both ICPs were incorrectly certified by the same test house, we have discussed this issue with them and provided further comms to all ATHs to ensure they do not recertify at all. In both cases our back-office processes picked up the errors and corrected the cert dates immediately. SmartCo does not have a direct relationship with the customer therefore we are reliant on the retailer arranging access for us under clause 10.7 (2).		Ongoing	

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

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 4(2)(b) of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 4(3) of Schedule 10.7

Code related audit information

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

Audit observation

I checked if SmartCo is responsible for any NSP metering.

Audit commentary

SmartCo is not the MEP for any NSP metering.

Audit outcome

Not applicable

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

Code reference

Clause 10.26(10)

Code related audit information

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

Audit observation

SmartCo is not responsible for any grid metering.

Audit commentary

SmartCo is not responsible for any grid metering.

Audit outcome

Not applicable

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

Code reference

Clause 4(4) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the SmartCo installation guidelines with regard to this clause.

Audit commentary

SmartCo provides ATH's with a "Specific installation requirements and guidelines" document for each network. These are a comprehensive manual which covers all aspects of metering installation and certification. I checked an example for one network and confirmed that the requirements in relation to physical and electrical characteristics were included.

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

VM 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 manager of the registry metering records, or any change to the registry metering records, for each metering installation for which it is responsible at the ICP, no later than 10 business days following:

- a) the electrical connection of the metering installation at the ICP*
- b) any subsequent change to the metering installation's metering records*

Audit observation

I checked the audit compliance report for the period 01/05/19 to 30/03/20 to evaluate the timeliness of registry updates.

Audit commentary

I checked the audit compliance report for the period 01/05/19 to 30/03/20 and the table below shows the results relating to late updates after new connections:

Event type	Year	Total	Total within 10 days	% Compliant
New connection	2016	924	800	87%
	2017	2,055	1,826	89%
	2018	1,471	1,292	88%
	2019	2,158	2,022	94%
	2020	2,789	1,999	72%

A large number of the late new connection updates are due to corrections.

I checked a sample of 15 late updates for new connections which occurred during the audit period in detail and found that eleven were due to late nomination by the trader and four were updated late.

I was unable to accurately determine the total number of updates after recertification due to errors in the audit compliance report. AC020MEP04 (Metering update after recertification) reported 9,115 late updates, of these 8,179 were incorrectly duplicated from AC020MEP01 (New MEP not a new connection), these are recorded in **section 3.2**. I checked a sample of 15 from the remaining 936 late updates for recertification events which occurred during the audit period in detail and found that 13 were due to late updates and two were due to corrections.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	Some records updated to the registry later than 10 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because they mitigate risk to an acceptable level. Late updates for new connections can have a minor impact on participants and settlement, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
As per the non-compliance in clause 3.2, for some of the sites in the SmartCo transition the previous MEP hadn't updated the registry with the smart ready assets from the install date however they are not considered SMCO sites until the transition process has been run in our system. Due to this we use the event date and installation date of when the assets are updated in our system, not the physical install date. As mentioned earlier, for efficiency these were initially updated in bulk monthly so some will be over the allowable time, however we are investigating ways of improving the transition process to meet compliance.		Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
This is a known process and once complete, there will be no further issues however, we are investigating ways of improving the transition process to meet compliance.		Ongoing	

4.11. Metering Infrastructure (Clause 10.39(1))

Code reference

Clause 10.39(1)

Code related audit information

The MEP must ensure that for each metering installation:

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

4.12. Decommissioning of an ICP (Clause 10.23A)

Code reference

Clause 10.23A

Code related audit information

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

- *if the MEP is responsible for interrogating the metering installation, arrange for a final interrogation to take place before the metering installation is decommissioned, and provide the raw meter data from the interrogation to the responsible trader*
- *if another participant is responsible for interrogating the metering installation, advise the other participant not less than 3 business days before the decommissioning of the time and date of the decommissioning, and that the participant must carry out a final interrogation.*

To avoid doubt, if a metering installation at an ICP is to be decommissioned because the ICP is being decommissioned:

- *the trader, not the MEP, is responsible for arranging a final interrogation of the metering installation*
- *the responsible trader must arrange for a final interrogation of the metering installation*

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

There have been no examples of software, ROM or firmware changes for SmartCo, and a compliant process exists.

Audit outcome

Compliant

4.15. Temporary Electrical Connection (Clause 10.29A)

Code reference

Clause 10.29A

Code related audit information

An MEP must not request that a grid owner temporarily electrically connect a POC to the grid unless the MEP is authorised to do so by the grid owner responsible for that POC and the MEP has an arrangement with that grid owner to provide metering services.

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

4.16. Temporary Electrical Connection (Clause 10.30A)

Code reference

Clause 10.30A

Code related audit information

An MEP must not request that a distributor temporarily electrically connect an NSP that is not a POC to the grid unless the MEP is authorised to do so by the reconciliation participant responsible for that NSP and the MEP has an arrangement with that reconciliation participant to provide metering services.

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

4.17. Temporary Electrical Connection (Clause 10.31A)

Code reference

Clause 10.31A

Code related audit information

Only a distributor may, on its network, temporarily electrically connect an ICP that is not an NSP. A MEP may only request the temporary electrical connection of the ICP if it is for the purpose of certifying a metering installation, or for maintaining, repairing, testing, or commissioning a metering installation at the ICP.

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

5. METERING RECORDS

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked certification records for 72 metering installations to evaluate compliance with this clause.

Audit commentary

As mentioned in **section 1.4**, agreements between SmartCo 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 72 metering installations and records were supplied for all 72. I found errors in 59 of the 72 metering installation certification reports. I have recorded this non-compliance as the records with errors are not deemed to be accurate and complete. The errors identified are shown in the table below.

Error	Wells	Delta	VCOM
Comparative certification with CTs recorded as certified	2		
Incorrect maximum interrogation cycle	19	24	16
Incorrect certification method	2		
HHR/NHH missing		6	
Incorrect services access interface			16

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 5.1 With: Clause 4(1)(a) and (b) of Schedule 10.6 From: 01-May-19 To: 30-Mar-20	Certification records not accurate and complete for 59 of a sample of 72. Potential impact: Medium Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3		
Audit risk rating	Rationale for audit risk rating		
Low	The controls require strengthening to ensure record accuracy issues are identified as soon as possible. The impact is minor for most fields. Incorrect certification methods can be misleading and can lead to re-work.		
Actions taken to resolve the issue		Completion date	Remedial action status
I checked a sample of the 59 and the above information appears correct on the registry. This will be raised at our monthly tech forums in which all ATHs attend to ensure they understand what to record on their certs.		17/06/20	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Discussed the errors with the ATHs at the June 17 th technical forum, and clarified with all ATHs they must provide the correct information on their certification records.		17/06/20	

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

Code reference

Clause 4(2) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

SmartCo has not been requested to supply any inspection reports and no inspections were conducted during the audit period.

Audit outcome

Compliant

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

Code reference

Clause 4(3) of Schedule 10.6

Code related audit information

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

Audit observation

I checked historic metering records to confirm compliance.

Audit commentary

SmartCo 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.

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

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

Audit commentary

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

Audit outcome

Compliant

6. MAINTENANCE OF REGISTRY INFORMATION

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

Code reference

Clause 1(1) of Schedule 11.4

Code related audit information

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

Audit observation

I checked the switch breach history detail report to confirm whether all responses were within 10 business days.

Audit commentary

The switch breach history report identified four late responses during the audit period from a total of 3,762 MN events. VM has automated the MEP switch acceptance process for SmartCo based on certain NSPs where they approve the installation of their metering. This means the switch acceptance timeframes are mostly immediate.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.1 With: Clause 1(1) of Schedule 11.4 From: 01-Jun-19 To: 13-Jan-20	4 late MN files. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong because they mitigate risk to an acceptable level. There was no impact; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
This process is automated already, we will review the 4 to see if anything obvious as to why they were late and whether we can adjust process to capture these going forward.		Completed	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	

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

Code reference

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

Code related audit information

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

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

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

Audit observation

I checked the audit compliance report, and the list file to identify discrepancies.

Audit commentary

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

Issue	2020 Quantity	2019 Quantity	2018 Quantity	2017 Quantity	2016 Quantity	Comments
SMCO is recorded on the registry as the MEP but the metering records have not been populated on the registry	0	0	0	0	3	N/A
Night with no day	1	0	0	1	3	
CN only on residential ICP	0	6	1	4	0	N/A
Day and night not = 24	0	0	0	2	0	N/A
ICPs have “IN24”. This is not a valid combination	15,438	15,532	16,205	17,695	10,828	Prior to finalising the audit this had reduced to 505
UN only with a control device.	305	353	266	Not checked	Not checked	SmartCo advised that a lot of these should be

						INEMO not UN24
Incorrect certification duration	0	0	1	0	2	N/A
Category 2 without CTs recorded in the registry	2	1	0	2	0	
Incorrect metering category	0	0	9	0	0	N/A
CTs on Category 1 installation	0	0	1	0	0	N/A
Incorrect certification dates	38	31	5	-	-	
Invalid ATH identifier recorded. (VEMS identifier used after 28/09/2018)	17	-	-	N/A	N/A	
Incorrect ATH	1					Corrected

At the time of the audit a project was taking place to correct the period of availability of ICPs with IN24. In the Audit compliance report provided at 30/03/2020 there were 15,438 ICPs with IN24. Smartco provided a new audit compliance report dated 19/05/2020 which confirmed the number of ICPs with IN24 had reduced to 505.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-May-19 To: 19-May-20	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area. There are still a small number of areas where improvement can be made. Some of the discrepancies have a minor impact on participants, customers or settlement. The relevant ones in this regard are tariff related. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

<p>We have made significant steps in removing all IN24 register content codes over the past 6 months, the remaining ones will be cleaned up over the coming weeks.</p> <p>We wanted to clean up the IN24 ICPs to remove any confusion before addressing the 305 ICPs that should be INEM0 and not UN24. This will happen shortly.</p>	31/07/20	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Weekly reporting has been put in place and additional training for staff to ensure they identify any correct exceptions, i.e. UN24 with a load control device.	Completed	

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

Code reference

Clause 6 of Schedule 11.4

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

SmartCo 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,
- 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 SmartCo has a works order in progress,
- difference between SmartCo 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), and
- no MEP switch response file within the time period.

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

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4 From: 01-May-19 To: 30-Mar-20	Discrepancies not resolved within 5 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because there is a thorough process to identify errors and steps are taken to correct errors as quickly as possible. Some of the discrepancies have a minor impact on participants, customers or settlement. The relevant ones in this regard are tariff related. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
We have a thorough process where we reconcile data between our systems and the Registry daily, however some updates still occur after 5 days, often this is due to reliance on third parties.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Continue to reconcile daily and update within the required timeframes. Chase those cases where third parties are requested for information.		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

- c) *an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation*
- d) *the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested*
- e) *an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part*
- f) *if the metering installation has been determined to be a lower category under clause 6 and the maximum current conveyed through the metering installation at any time exceeds the current rating of its metering installation category as set out in Table 1 of Schedule 10.1*
- g) *the metering installation is certified under clause 14 and sufficient load is available for full certification testing and has not been retested under clause 14(4)*
- h) *a control device in the metering installation certification is, and remains for a period of at least 10 business days, bridged out under clause 35(1)*
- i) *the metering equipment provider responsible for the metering installation is advised by an ATH under clause 48(6)(b) that a seal has been removed or broken and the accuracy and continued integrity of the metering installation has been affected.*

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

Audit observation

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

Audit commentary

Inspection

I checked for Category 2 installations due for inspection. No installations were due for inspection.

Modification of metering installations

The matter of "bypassed" metering was evaluated during the audit. I checked a report identifying seven cases where meters had been bridged during the audit period. In all seven cases the installations were recertified when the bridge was removed therefore cancelling the previous certification.

Low burden

The Authority provided a memo on 04/04/16 clarifying that:

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

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

The memo also states:

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

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

Analysis of the certification records for 35 Category 2 metering installations found three 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 detailed in the table below.

Low burden from this audit		
ICP	ATH	Certification date
0000243970TP1D6	WELL	21/08/2019
0001375145TPD55	WELL	7/06/2019
0004018637TP711	WELL	13/07/2019

There were 30 category 2 metering installations which were identified during the previous audit with burden lower than the lowest test point, without a Class A ATH confirming that the measuring transformers will not be adversely affected. Certification for 28 of these installations has not yet been cancelled, two of the metering installations were decommissioned during the audit period.

I re-checked the certification records for two installations that were checked as part of the last audit. I found that the calculated in-service burden figures were incorrectly reported by the ATH in the previously supplied certification reports. The reports incorrectly concluded that the in-service burden was higher the lowest test point for the CTs. The ATH supplied the correct records for these two installations which confirms the in-service burden is lower than the lowest test point. Certification is therefore cancelled.

Low burden identified in reports re-checked from last audit		
ICP	ATH	Certification date
0000328353MP1FE	VCOM	22/02/2019
0000380766MPCA0	VCOM	20/07/2018

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.4 With: Clause 20 of Schedule 10.7 From: 01-May-18 To: 18-May-20	Certification cancelled, and registry not updated within 10 business days for 33 ICPs with low burden. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area because most processes are managed with sufficient controls to avoid cancellation of certification. The installations with low burden are all recording within the allowable 2.5% therefore the impact on settlement is minor. The responsibility for SmartCo is to cancel certification on the registry once they know certification is cancelled and the impact of not doing this is minor, therefore the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The above ICPs will be reviewed again to confirm none are the TWS 500/5 CTs, and where required, cancellation will take place and recertification work orders raised.		31/07/20	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
ATHs and MEPs are currently working together to establish a common burdening process, ATHs are more aware of the issues around burdening now. This is a regular agenda item at the technical forums hosted by Vector metering and attended by all field service providers.		Ongoing	

6.5. Registry Metering Records (Clause 11.8A)

Code reference

Clause 11.8A

Code related audit information

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

Audit observation

This clause refers to schedule 11.4 which is discussed in **section 6.2**, apart from the requirement to provide information in the “prescribed form”. I checked for examples of SmartCo not using the prescribed form.

Audit commentary

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

Audit outcome

Compliant

7. CERTIFICATION OF METERING INSTALLATIONS

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

Code reference

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

Code related audit information

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

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

Audit observation

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

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

Audit commentary

At the time of my analysis, eight ICPs were showing as having expired certification. The table below shows the details and comments provided by Smartco.

ICP	Certification Type	Category	Expiry Date	Comments
0003860754TP8CD	F	2	7/08/2018	Certification cancelled due to failed certification tests. See section 4.3.
0000931760NV71C	F	2	9/08/2018	Certification cancelled due to failed certification tests. See section 4.3.
0000021432NT37F	F	1	23/04/2018	Single phase meter on 3 phase installation, certification cancelled.
1004686217ALEE4	F	1	16/01/2019	Investigating. May need a site visit for this ICP as we have no record of the install paperwork.
0000135761TP2F8	F	1	23/09/2018	Investigating. May need a site visit for this ICP as we have no record of the install paperwork.

0004922107AL517	F	1	17/04/2019	Cert expired due to mixed assets. Data loaded as part of the SMCO transition process. SMCO advised.
0000655126TPCC2	F	1	13/09/2019	Replacement job cancelled last year as site has brittle VIR cabling. Customer to correct before we can replace the meter.
0000327095TPF9E	F	1	24/09/2019	Cert expired as site has mixed assets as per WO-00205183. TPCO and SMCO assets - multiple metering points. No space to install required 3ph meters to make compliant - customer to complete work.

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a)</p> <p>From: 23-Apr-18</p> <p>To: 30-Mar-20</p>	<p>Certification expired for eight ICPs.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: Once</p> <p>Controls: Strong</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>I have recorded the controls as strong in this area because processes are in place to ensure certification is in place and is cancelled when required.</p> <p>The impact on settlement is recorded as moderate because two installations have inaccurate metering installations; therefore, the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Most of these are reliant on customers completing work on the switchboard, after which time the retailer can make them available for recertification. We regularly monitor these and chase retailers for updates.		31/07/20	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We will chase up access for these sites again and if available, recertify. We regularly run an audit compliance report to ensure expiring sites are addressed prior to their expiry date.		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

I checked the certification records for 72 metering installations to confirm compliance. ATHs have shown that their processes include all tests and reports confirm tests are completed.

Audit commentary

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. I checked the certification reports for 72 metering installations and found that all except one contained confirmation that testing had been completed. The certification report for ICP 0000041357NTC9A had no test results recorded in the "CT Ratio Check" and "Calculated CT Burden at Full Load" sections. I have recorded non-compliance for this ICP as all certification tests were not completed.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 7.2 With: Clause 10.38(b) and clause 9 of Schedule 10.6 From: 07-Jan-20 To: 26-May-20	Certification tests not completed for one metering installation. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area because the ATH processes ensure certification tests are completed most of the time. The impact is minor as the metering accuracy is unlikely to be affected; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The ratio check testing was discussed with the ATH prior to this audit and they understand it is required. Ongoing training of field techs will continue to correct these one off instances.		31/07/20	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

Additional training for field techs, sample audit of certs to ensure training is effective.	30/08/20	
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7.3. Active and Reactive Capability (Clause 10.37(1) and 10.37(2)(a))

Code reference

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

Code related audit information

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

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

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

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

All other installations must measure and separately record:

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

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

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

Audit observation

I checked the certification records for 35 metering installations to confirm compliance.

Audit commentary

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.

Audit outcome

Compliant

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

Code reference

Clause 10.37(2)(b)

Code related audit information

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

Audit observation

This clause relates to Transpower as an MEP.

Audit commentary

This clause relates to Transpower as an MEP.

Audit outcome

Not applicable

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

There are no examples of burden changes having occurred.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

If a meter is certified in this manner:

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

Audit observation

I checked the audit compliance report for examples where the CT ratio was above the metering category threshold to confirm that protection was appropriate or that monitoring was in place.

Audit commentary

The audit compliance report identified eight nominally Category 3 metering installations certified as a Category 2. All eight installations have protection rated at 500A or less therefore monitoring is not required.

The ICPs are shown in the table below:

ICP	ATH	Certification date	CT ratio	Comments
0000365665MP339	VEMS	27/02/17	800/5	Main switch rating is less than 500A
0000373718MPD1A	VEMS	24/08/16	600/5	Fusing is 300A
0001031002AL012	WELL	17/01/17	600/5	315A fuses
0003586034ALCAD	WELL	24/01/17	600/5	400A fuses
0005721110ALC3F	WELL	13/01/17	600/5	400A fuses
0005742234AL3DB	WELL	30/10/16	600/5	400A fuses
0007600616AL3C1	DELT	18/02/20	600/5	355A Fuses
0001072686ALB21	DELT	20/03/20	600/5	Fusing less than 500A

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

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

Audit commentary

During my checks of metering installation certification reports I found one installation (ICP 0000035862NT91A) that had been certified with insufficient load on 21/03/2020. The installation was certified by the VEMS ATH and the certification report included the following statement, "Certified under Schedule 10.7 clause 14 - Insufficient Load". SmartCo has previously instructed ATHs that load must be added to perform certification testing and that insufficient load certification should not be conducted.

SmartCo could not confirm that monitoring for sufficient load had taken place each month since certification, therefore non-compliance is recorded.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.7 With: Clauses 14(3) and (4) of Schedule 10.7 From: 31-Mar-20 To: 05-Jun-20	Monitoring not conducted for one ICP certified with insufficient load. Potential impact: Medium Actual impact: Medium Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating
Low	Controls are recorded as moderate because they mitigate risk most of the time, but some issues still occur. The impact is minor as only one ICP is affected and accuracy is unlikely to be affected; therefore, the audit risk rating is low.
Actions taken to resolve the issue	
Completion date	Remedial action status

Review underway to identify why this occurred and whether there are situations where monitoring would be useful.	30/08/20	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
Depending on review findings, we will either re-confirm with ATHs that they must attach a load for testing or that the MEP must have process for low load monitoring.	30/09/20	

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

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Not applicable

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

Code reference

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

Code related audit information

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

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

- take all steps to ensure that the metering installation is certified before the certification expiry date.

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

Audit observation

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

Audit commentary

Alternative certification has not occurred. I confirmed this by checking the list file.

Audit outcome

Not applicable

7.10. Timekeeping Requirements (Clause 23 of Schedule 10.7)

Code reference

Clause 23 of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

All SmartCo metering installations are remotely monitored, therefore they don't need to be checked every 12 months.

Audit outcome

Compliant

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

Code reference

Clause 35 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

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

Audit commentary

Smartco provided three examples of bridged control devices. In all three cases they were notified by the trader, there was no requirement for notification of any other participants. The table below details the remedial actions taken by the ATH in each case.

Bridged control devices			
ICP	Date bridged	Date resolved	Remedial action
0000202306TP53B	18/07/2019	12/08/2019	Replaced metering and recertified
0001201965TP858	30/01/2020	12/02/2020	Unbridged and resealed control device
0000009908NT7D3	25/06/2019	02/07/2019	Unbridged and recertified metering installation

Audit outcome

Compliant

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

Code reference

Clause 34(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

Most control devices are integrated within the meters and there is back office reporting to confirm switching has occurred, i.e. that a signal has been received. The event is called "relay stuck". This achieves compliance with the intent of this clause. In cases where the control device is not integrated, there has not been any notification under this clause.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

Audit observation

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

Audit commentary

Smartco has not conducted any recertification by statistical sampling.

Audit outcome

Compliant

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

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

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

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

Audit observation

I checked the records for 35 Category 2 metering installations to confirm that compensation factors were correctly recorded on the registry. I also checked the audit compliance report for unusual compensation factors.

Audit commentary

Compensation factors were updated accurately on the registry for the 35 ICPs checked. No examples of incorrect compensation factors were identified by the audit compliance report.

Audit outcome

Compliant

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

Code reference

Clause 26(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 72 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 72 metering installations.

Audit outcome

Compliant

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

Code reference

Clause 28(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 35 metering installations to confirm compliance.

Audit commentary

I checked the records for 35 CT metered installations, and I confirm CTs are certified in accordance with this clause.

Audit outcome

Compliant

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

Code reference

Clause 36(1) of Schedule 10.7

Code related audit information

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

Audit observation

I checked the certification records for 72 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all 72 metering installations.

Audit outcome

Compliant

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

Code reference

Clause 7 (3) Schedule 10.3

Code related audit information

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

Audit observation

I checked the ATH register to confirm compliance.

Audit commentary

All relevant ATHs have appropriate approval.

Audit outcome

Compliant

7.19. Interim Certification (Clause 18 of Schedule 10.7)

Code reference

Clause 18 of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

There are no metering installations with interim certification.

Audit outcome

Compliant

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

SmartCo has not been required to conduct any Category 1 inspections.

Audit commentary

SmartCo has not been required to conduct any Category 1 inspections.

Audit outcome

Compliant

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

Code reference

Clause 46(1) of Schedule 10.7

Code related audit information

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

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

Audit observation

SmartCo has not been required to conduct any Category 2 inspections.

Audit commentary

SmartCo has not been required to conduct any Category 2 inspections.

Audit outcome

Compliant

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

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

SmartCo has not conducted any inspections.

Audit commentary

SmartCo has not conducted any inspections.

Audit outcome

Not applicable

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

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

Audit commentary

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

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

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

Audit commentary

Smartco has a documented process in place to achieve compliance with this requirement.

I checked a report identifying seven cases where meters had been bridged during the audit period. In all seven cases the installations were recertified when the bridge was removed therefore cancelling the previous certification. Appropriate notification was provided to other participants in all seven cases.

Audit outcome

Compliant

9.2. Testing of Faulty Metering Installations (Clause 10.44)

Code reference

Clause 10.44

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

Smartco has a documented process in place to achieve compliance with this requirement. The process was followed for all seven installations. In all of these examples an ATH returned, unbridged the meters and recertified the installations. The information returned by the ATH met the requirement for the provision of a statement of situation in all seven examples.

Audit outcome

Compliant

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

Code reference

Clause10.46(2)

Code related audit information

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

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

Audit observation

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

Audit commentary

The information returned by the ATH met the requirement for the provision of a statement of situation in all ten examples. Smartco provided this information to the trader for all seven examples.

Audit outcome

Compliant

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

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

Code reference

Clause 1 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 3(5) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 8 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

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

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

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

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

in a form that is accessible to authorised personnel.

Audit observation

VM as an agent conducts AMI data collection for SmartCo 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 synchronisation reports, and
- sum-check failures.

Audit commentary

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.

SmartCo's process is to commence investigation into non-communicating meters within three business days. If communications issues cannot be resolved, the AMI flag is changed to "N". When data is continuous for 10 days, the flag is changed back to "Y".

SmartCo provided reporting of ICPs where interrogation did not occur within the maximum interrogation cycle of 90 days. There are 819 "Active" ICPs in the report. The following table lists the reasons provided by SmartCo for inability to interrogate.

SmartCo comment on SMCO meters that have not communicated for 90+ days	Count of Meter Serial Number
Non-Communicating meters where all plausible actions have been taken to restore comms – have been N flagged (Includes Decommissioned).	778
Disconnected - Unable to perform comms fault job due to site being in a disconnected state.	19
Modem Removed – Meter is not communicating due to customer requesting the modem is removed	19
Data Issue – Meter is communicating, but no data is being delivered to the retailer.	3
Inactive in Registry	170
Grand Total	989

I checked the registry information for a sample of 20 ICPs which SmartCo had reported as "N" flagged and confirmed that the "N" flag had been updated in the registry.

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

Audit outcome

Compliant

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

Code reference

Clause 10.15(2)

Code related audit information

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

Audit observation

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

Audit commentary

All data is normally provided to reconciliation participants via SFTP. One-off requests for data from traders are sent as compressed password protected files via email. The passwords are unique and not sent with the data. Data is held indefinitely.

Audit outcome

Compliant

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

Code reference

Clause 8(4) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

VM's server time is verified against an internet time source several times per day to ensure compliance with the requirement to ensure it is within ± 5 seconds.

Daylight saving adjustment occurs as follows:

Meter type	NZST Winter	NZDT Summer (Daylight savings)
EDMI DRR & Interval	Meters record in local time so files will always be midnight for DRR 23:59:59 and 12 to 12 for interval	Meters record in local time so files will always be midnight for DRR and 12 to 12 for interval
L&G DRR	Midnight read 23:59:59	L&G does not adjust to local time and stays on NZST. Therefore, meter cannot provide a midnight read in summer. Instead it provides an ad hoc register read, e.g. 9:45pm
L&G Interval	12am to 12pm intervals Files shows "N" across all L&G	L&G does not adjust to local time and stays on NZST. However, data is 'Adjusted' so are 1 to 1 but are adjusted to represent 12 to 12. File will show an "A"

The files sent to retailers contain a field indicating whether daylight saving has occurred.

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

Clock synchronisation is conducted every four hours as a distinct process, separate to interrogation. Any errors greater than ±10 seconds but less than 20 minutes are automatically corrected and recorded. Errors greater than 20 minutes are recorded but not automatically corrected. The manual corrections are conducted by the software host, Silver Spring Networks, who then advise VM that the changes have been made. This clause is slightly different to the clause in Part 15 for reconciliation participants. This clause requires MEPs to ensure the time is not outside the allowable thresholds, therefore non-compliance exists for those examples where time has drifted outside the allowable threshold.

I checked the most recent reports and they contained a total of 1,069 examples.

There is also a requirement to notify the reconciliation participant of any “...affected raw meter data...” once clock corrections have occurred. This information is provided in accordance with the Code.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 10.7 With: Clause 8(4) of Schedule 10.6 From: 01-May-19 To: 30-Mar-20	1,069 examples of clock errors outside the allowable thresholds. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because clocks are synchronised during every successful interrogation. The impact is considered minor because most clock errors are small and are corrected within one half hour. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The time sync process is fully automated and when the system detects a time drift over an internally set limit but within the allowable limits set out in Table 1 of clause 8(5) of Schedule 10.6, the system corrects it. Sometimes the drift exceeds the allowable limits, in this situation the system corrects the time and sends out an event file to the relevant retailer.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

The system is designed to capture any drifts before they exceed the allowable limits and for the most part this is the case. Sometimes a meter will drift outside the allowable limits and is immediately corrected, and the retailer informed. This process is 99.99% compliant.	Ongoing	
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10.8. Event Logs (Clause 8(7) of Schedule 10.6)

Code reference

Clause 8(7) of Schedule 10.6

Code related audit information

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

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

Audit observation

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

Audit commentary

SmartCo downloads the event log as required by this clause. All critical events are evaluated, and appropriate action is taken. SmartCo provided a list of all 62 event types, which are downloaded during interrogation. Relevant events, including tampering, are now being placed on the SFTP server for each retailer to uplift and action. The most recent event files provided to all SmartCo customers were provided. SmartCo has provided its customers with a "Metering event files user information" document which provides information on events reported to traders. The document includes possible reasons for, an assessment of the risk level and actions taken for of each event type.

Audit outcome

Compliant

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

Code reference

Clause 8(9) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

SmartCo has a "sum-check" process where the scalar interval metering data is compared to the scalar midnight snapshot. The scalar values take daylight savings into account where if the scalar midnight snapshot was compared to the interval data (always midnight to midnight) then there would be comparison problems during the daylight-saving period. If the difference is more than 0.1 kWh this is considered a "fail".

Each file sent to retailer's records whether the sum-check has failed (F), passed (P) or is not able to be checked due to missing intervals or missing midnight reads (N). SmartCo provided a copy of the most recent sum-check failures report sent to retailers which contained 388 examples.

The main issue leading to failure is when there is a power failure during an interval. This does not have an impact on data accuracy.

In the last audit an issue was identified where during daylight saving adjustment in April 2019, at least 30,000 records for one Retailer had consumption in the second interval replaced with a zero.

SmartCo provided the following detail regarding the actions taken to resolve the issue. The missing interval affected the file on 07/04/2019 - 08/04/2019 where the interval that was missing was showing 0 in the consumption and this was consistent throughout all of the SmartCo L+G meter fleet. It was not possible to get the system to regenerate this data automatically, so the data was manually retrieved from the raw files and sent to the retailers within a week. Investigation into the cause of the issue identified inadequate training of staff with regard to the checks required to be undertaken during the DST transition. The processes have been reviewed and SmartCo has taken actions to ensure that all staff are aware of the processes and responsibilities. There have been two DST transitions since the previous issue which have resulted in no problems with the data provided.

Audit outcome

Compliant

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

Code reference

Clause 10.48(2),(3)

Code related audit information

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

CONCLUSION

The audit identified 13 non-compliances.

There are four areas of non-compliance related to issues arising due to certification practises of ATHs as follows:

- Certification records not accurate and complete for 59 of a sample of 72,
- 33 category 2 installations certified with low burden (30 of these are from the previous audit) and certification not cancelled,
- certification tests not completed for one ICP, and
- monitoring not conducted each month following insufficient load certification.

Whilst most registry fields are correct, there were 15,438 ICPs with "IN24" recorded in the registry in the initial data analysis for this audit at 30/03/2020. SmartCo advised that a project was underway to correct these ICPs. Smartco provided a new audit compliance report dated 19/05/2020 which confirmed the number of ICPs with IN24 had reduced to 505 and it was expected these would all be corrected prior to the finalising of the audit.

SmartCo has shown an improvement in the management of non-communicating meters which ensures that if communications issues cannot be resolved, the AMI flag is changed to "N".

The future risk rating of 22 indicates that the next audit be completed in six months. To ensure SmartCo has sufficient time to implement changes I recommend an audit frequency of 12 months.

PARTICIPANT RESPONSE

SmartCo acknowledge the non-compliances found in this report and would like to note that some of them relate to a small number or single ICPs.

A lot of improvement has occurred across the ATHs on burdening over the past 6 months, so we expect burdening issues to be a thing of the past in future audits.

IN24 as a Register content code is over 99% eliminated, this will also not feature in future audits.