

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

For

**SMARTCO LIMITED
(NZBN:9429031538077)**

Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 15 June 2021

Date audit report completed: 28 July 2021

Audit report due date: 31-Jul-21

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EXECUTIVE SUMMARY

SmartCo is a Metering Equipment Provider (MEP) and is required to undergo an audit by 31 July 2021, in accordance with clause 16A.17(b). The audit was carried out at the Advanced Metering Services Ltd (Vector Metering) office in Wellington on 16 June 2021.

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 audit identified 16 non-compliances.

As recorded in the previous audit report, there are still many areas of non-compliance related to issues arising due to certification practises of ATHs as follows:

- certification records not accurate and complete for most examples checked,
- category 2 installations certified with low burden (all from previous audit periods) and certification not cancelled,
- monitoring not conducted each month following insufficient load certification.

The Code changed on 1 February 2021 and SmartCo has not yet completed the system developments required to achieve compliance with some of the new requirements. This has led to cancellation of certification for 1,258 ICPs where sum-check failures were present and where interrogation did not occur with the maximum interrogation cycle.

I have made a recommendation regarding testing of Category 1 metering installations. Table 3 now requires a prevailing load test be conducted using a working standard if recertification occurs with existing meters and the same expiry date. I recommend liaison occurs with ATHs to ensure certification practices are compliant in future if this scenario arises.

Registry accuracy has improved further in this audit, and there are very few discrepancies.

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 three 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 accurate and not always updated as soon as practicable by SmartCo. Certification records not always accurate. Replacement AMI data only provided for 60 days.	Moderate	Low	2	Investigating
Registry notification timeframe	3.2	2 of schedule 11.4	Some registry updates later than 15 business days.	Moderate	Low	2	Identified
Design reports	4.1	2 of Schedule 10.7	Design reports are not signed by the person who prepared the reports. The maximum interrogation cycle is not recorded for each services access interface.	Moderate	Low	2	Identified
Installation accuracy	4.3	4(1)(a) of schedule 10.7	One metering installation certified by Wells ATH with a 32% error. Seven installations with errors greater than 1.5%.	Moderate	Medium	4	Investigating
Net metering and Subtractive Metering	4.4	4(2)(a) of Schedule 10.7	Submission information determined by subtraction for ICP 0000233229MPC5B for the period 03/12/20 to 08/12/20.	Strong	Low	1	Investigating
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	Identified
Accurate and Complete Records	5.1	4(1)(a) and (b) of Schedule 10.6	Certification records not accurate and complete for most certification reports.	Weak	Low	3	Identified
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Strong	Low	1	Investigating
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: <ul style="list-style-type: none"> • 37 ICPs with low burden, • ICP 0003860754TP8CD with an error of 32%, • ICP 0000010432TE735 with insufficient load certification where monitoring was not conducted, • 1097 ICPs not read within the maximum interrogation cycle, and • 161 ICPs where sum-check failures were not resolved within 3 business days. 	Moderate	Low	2	Identified
Expired certification	7.1	10.38 (a)	Certification expired or cancelled for 1,303 ICPs.	Moderate	Medium	4	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
Investigation of Faulty Metering Installations	9.1	10.43(4) and (5)	Trader not notified of faulty metering installation for ICP 0000373816MP18E.	Strong	Low	1	Investigating
Statement of Situation	9.3	10.46(2)	Trader not notified of faulty metering installation for ICP 0000373816MP18E.	Strong	Low	1	Investigating
Electronic Interrogation of Metering Installations	10.5	8(2)(b) of schedule 10.6	1,097 ICPs not read within the maximum interrogation cycle.	Moderate	Low	2	Identified
Time errors	10.7	8(4) of Schedule 10.6	1,472 examples of clock errors outside the allowable thresholds.	Strong	Low	1	Identified
Future Risk Rating						30	
Indicative Audit Frequency						3 months	

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

RECOMMENDATIONS

Subject	Section	Recommendation	Remedial Action
Design reports	4.1	Ensure Delta design report changes have the version date included.	Provide feedback to Delta to update their design report and present corrected version once done.
Certification tests	7.2	Table 3 requires a prevailing load test be conducted using a working standard if recertification occurs with existing meters and the same expiry date. Liaise with ATHs to ensure certification practices are compliant in future if this scenario arises.	Already underway through our regular test house forums.

ISSUES

Subject	Section	Issue	Remedial Action

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

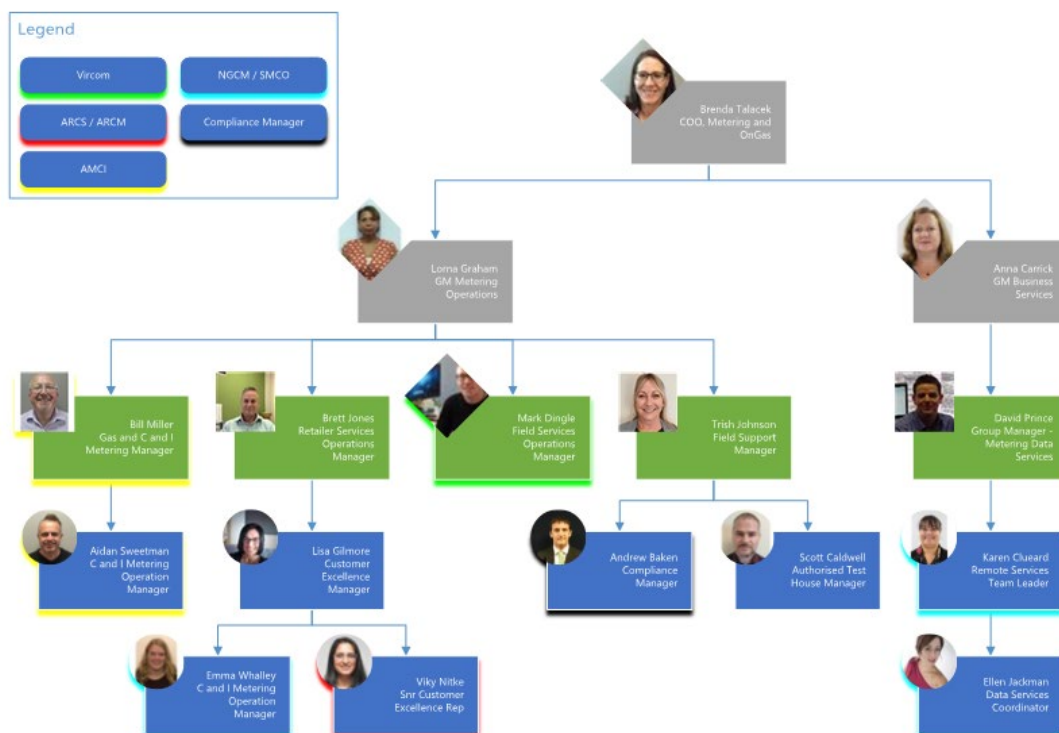
I checked the Electricity Authority website and I confirm there are no exemptions in place.

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 Advanced Metering Services Limited (Vector Metering); therefore, I have included the Vector Metering organisation chart below.



1.3. Persons involved in this audit

Auditor: Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

SmartCo personnel assisting in this audit were:

Name	Title
Andrew Baken	Compliance Manager
David Prince	Group Manager Metering Data Services
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

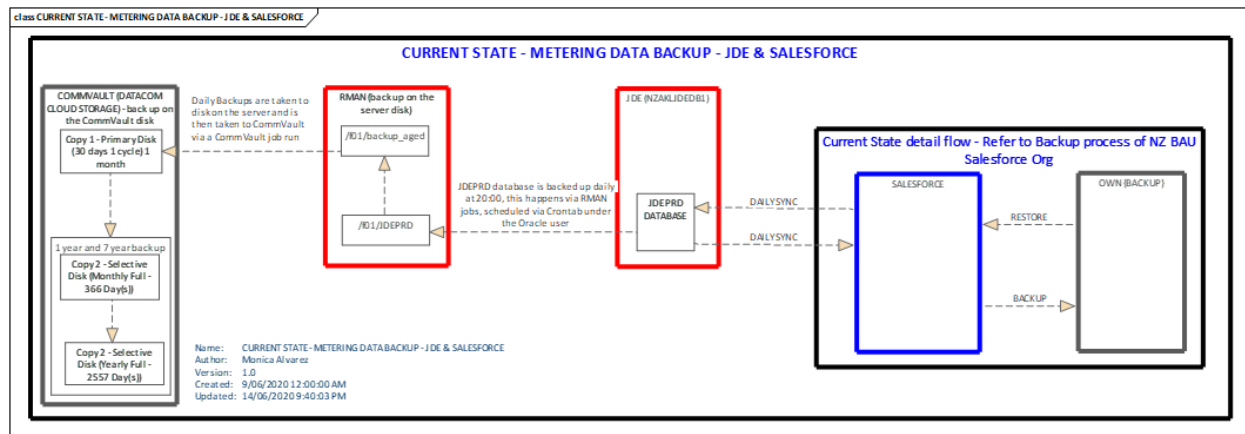
The agreements between SmartCo and ATHs clearly specify that the ATHs are acting as an agent for these activities, and they are required to produce records within five business days. The provision and accuracy of records is discussed further in **section 6**.

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 synchronisation 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	153,578
2	1,731
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

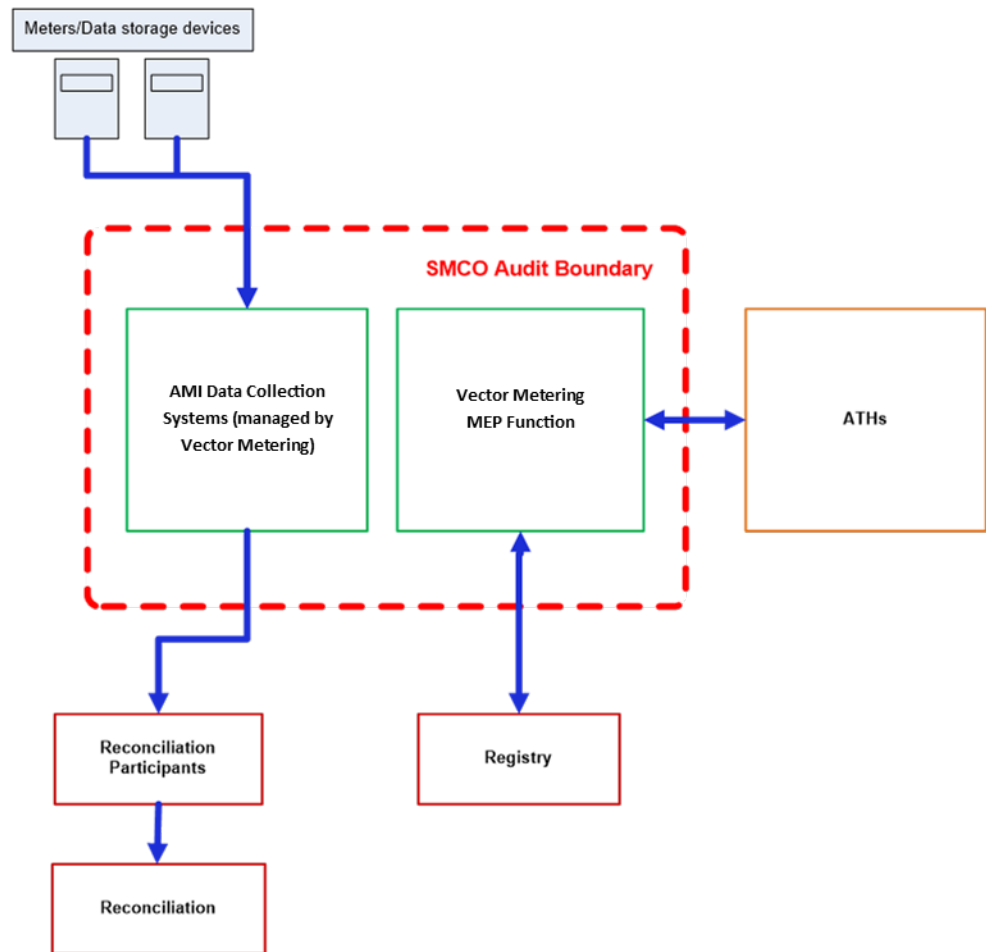
*Tasman Network will not have external load control devices left on site.

The table below shows a breakdown of ICPs per network as of May 2021.

Network	Quantity 2021	Quantity 2020	Quantity 2019	Quantity 2018	Quantity 2017
Top Energy	20,119	19,594	18,842	16,863	14,183
Alpine	27,215	26,849	24,888	18,994	12,375
Electricity Invercargill	15,353	14,550	11,697	8,650	5,877
Mainpower	28,530	27,603	26,605	24,690	16,136
Network Tasman	31,102	29,193	26,897	25,836	22,373
The Power Company	32,591	30,682	25,868	18,184	10,635
Mountain Power	162	133	107	77	38

OtagoNet Joint Venture	1	1	-	-	-
Smart Net Limited	11	11	-	-	-
Total	155,084	149,663	134,904	113,294	81,617

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 2020 by Brett Piskulic of Veritek Limited. The table below shows that most issues are still remaining.

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.	Still existing
Registry notification timeframe	3.2	2 of schedule 11.4	Some registry updates later than 15 business days.	Still existing
Installation accuracy	4.3	4(1)(a) of schedule 10.7	Two metering installations with errors greater than 2.5%.	Cleared
Changes to registry records	4.10	3 of schedule 11.4	Some records updated on the registry later than 10 business days.	Still existing
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.	Still existing
Response to switch request	6.1	Clause 1(1) of Schedule 11.4	Four late MN files.	Cleared
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 33 ICPs with low burden.	Still existing
Expired certification	7.1	10.38 (a)	Certification expired for eight ICPs.	Still existing
Certification tests	7.2	10.38(b) and clause 9 of Schedule 10.6	Certification tests not completed for one metering installation.	Still existing

Subject	Section	Clause	Non-compliance	Status
Insufficient load certification	7.7	14(3) and (4) of Schedule 10.7	Monitoring not conducted for one ICP certified with insufficient load.	Still existing
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
			Nil	

2. OPERATIONAL INFRASTRUCTURE

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

Code reference

Clause 10.9(2)

Code related audit information

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

Audit observation

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 5** and **6** there are some 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.

When AMI data has not all been provided to participants and is later obtained, replacement data is only provided for a period of 60 days. It is expected that there will not be a time limit for the provision of replacement data.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 01-Jul-20 To: 29-Apr-21	Registry not always accurate and not always updated as soon as practicable by SmartCo. Certification records not always accurate. Replacement AMI data only provided for 60 days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	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

<p>We are still seeing a handful of incorrect ATH identifiers coming through (VEMS), should be VCOM. We will identify the incorrect ones and remind VES (old Vircom) staff to use the correct identifier, and not accept jobs from the field with the old identifier on.</p> <p>More scrutiny was placed on certification report information this audit and a number of missing or incorrect fields were found. Vector metering (VM) have already been discussing the accuracy of certification reports with test houses in our regular test house forums. All test houses are actively improving their reports to ensure the missing or incorrect fields are right going forward.</p> <p>Replacement AMI data only provided for 60 days. The Authority's view is that there shouldn't be a limit, so that any data collected, regardless of how old it is, should be supplied to the retailers</p>	20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Actively working with test houses to ensure all required and correct information is included in the certification records.</p> <p>Reviewing field data to understand why VEMS is still being used as an ATH code, once we know why and how we can prevent this.</p>	20 August 2021	

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 requirements are met in relation to updating the registry and advising the reconciliation manager.

The losing MEP must notify the gaining MEP of the proportion of the costs within 40 business days of the gaining MEP assuming responsibility. The gaining MEP must pay the losing MEP within 20 business days of receiving notification from the losing MEP.

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.

The gaining MEP is not required to pay costs if the losing MEP has agreed in writing that the gaming MEP is not required to pay costs, or the losing MEP has failed to provide notice within 40 business days.

Audit observation

I checked if SmartCo had sent or received any invoices.

Audit commentary

SmartCo has not sent or received any invoices. The table below shows that there is only one scenario where costs will be payable, and this is unlikely to occur.

Scenario	Likelihood of occurring	Costs payable
Gaining MEP replaces losing MEPs component	High	No
Gaining MEP removes losing MEPs component	High	No
Gaining MEP recertifies losing MEPs component	High	No
Gaining MEP replaces losing MEPs installation	High	No
Gaining MEP removes losing MEPs installation	High	No
Gaining MEP recertifies losing MEPs installation	High	No
Gaining MEP retains losing MEPs components and metering installation	Zero	Yes

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 July 2020 to 29 April 2021 for all records where SmartCo became the MEP to evaluate the timeliness of updates.

Audit commentary

I examined the audit compliance report for 6,673 switches in relation to this clause and the findings are shown in the table below. 2,648 late updates occurred where the trader had nominated the MEP within five business days.

A large number of the late updates are due to corrections. I checked a sample of 30 late updates where the trader had nominated within five business days and found the following issues were present:

- 15 updates were corrections to the meter location code, backdated to the original data entry date,
- five updates were where the original MEP (TPCO) had updated the registry after installing AMI, then the MEP switched to SMCO and SMCO backdated the metering event to the day after the metering was changed, and
- 10 updates were late, backdated to the meter change date and it appears they were done as a batch on 30 March 2021 for event dates in the first week of March.

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%
2021	6,673	3,082	46%

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.2 With: Clause 2 of Schedule 11.4 From: 01-Jul-20 To: 29-Apr-21	Some registry updates later than 15 business days. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	Controls are recorded as moderate because there is room to improve the timeliness by ensuring more regular updates, and by checking if the changes have to be backdated where the MEP change from TPCO to SMCO occurs. 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
The reason for the percentage successful drop is as per last year and 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. 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. 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.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As above		Ongoing	

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

Code reference

Clause 5 of Schedule 10.6

Code related audit information

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

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

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

Audit observation

I checked with 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 for each services access interface, 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

The Delta design reports include an overall design document called “Delta ATH Certified Designs” and there is reference to “MEP Installation Aids” which are the schematic drawings. The design report contains a version control section at the beginning, which has the last three versions recorded, but does not include the dates these changes were made. I recommend the version control section includes the data of each change.

Recommendation	Description	Audited party comment	Remedial action
Regarding clause 2 of Schedule 10.7	Ensure Delta design report changes have the version date included.	Provide this feedback to Delta so they can update their design document.	Identified

The schematic drawings have the name “VAMS” in the “drawn” field but the person who prepared the drawings is not identified and has not signed the document. There is a signature of the person at Delta who approved the drawings. There is no signature on the design report.

From 1 February 2021 design reports are required to record the maximum interrogation cycle for each services access interface, because it is now possible to have up to four services access interfaces for any given design, depending on whether the installation is AMI = yes, AMI = no, HHR or NHH. The design reports do not have all the possible services access interfaces recorded.

The design reports used by the Vector ATH are authorised and signed by the ATH, but it’s not clear whether the same person also prepared the design reports. As with the Delta design reports, the services access interface combinations are not recorded.

Vector Metering 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

Non-compliant

Non-compliance	Description		
Audit Ref: 4.1 With: Clause 2 of Schedule 10.7 From: 01-Jul-20 To: 19-Jun-21	Design reports are not signed by the person who prepared the reports. The maximum interrogation cycle is not recorded for each services access interface. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Provide feedback to Delta to ensure their design drawings are signed and contain the new requirements regarding service access interfaces.		20 August 2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Review design documents when they are updated to ensure all required information is included and correct.		20 August 2021	

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

Vector Metering, 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 61 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 61 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%. ICP 0000931760NV71C has been recertified, but ICP 0003860754TP8CD with the 32% error has not been recertified, although certification has been re-instated in the registry.

The other point I checked was whether installations complied with the requirements of Part 10. Seven of the Category 2 installations certified by Delta ATH had error and uncertainty results greater than 1.5%. In all cases, the CTs were class 0.5, and the meters were class 1.0, so if the total error is greater than 1.5% it means at least one of the components is operating outside its class and is therefore not compliant with Part 10. Some ATHs have disputed whether components are required to operate within their class. The table below lists the requirements of Part 10 I consider relevant for MEPs and ATHs.

Clause	Requirement	Comment
11(4)(d) and 12(5)(b) of schedule 10.7	ATH must ensure each component is fit for purpose	Components operating outside their class are not considered fit for purpose
4(1)(a) of schedule 10.7	MEP must ensure the sum of measured error and uncertainty does not exceed the permitted error.	The uncertainty may be greater than 0.6% if the overall error is greater than 1.5%
22 of schedule 10.7	ATH must not certify the installation if the uncertainty is greater than 0.6%	The uncertainty may be greater than 0.6% if the overall error is greater than 1.5%
10.41 of part 10	ATH must exercise a degree of skill, diligence, foresight and economic management taking into account the technological complexity of the metering components and metering installations being tested, determined by reference to good industry practice and that would reasonably be expected from a skilled and experienced ATH.	Ignoring an error greater than 1.5% would not demonstrate compliance with this requirement by the ATH.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 06-Aug-18 To: 18-Jun-21	One metering installation certified by Wells ATH with a 32% error. Seven installations with errors greater than 1.5%. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	I have recorded the controls as moderate because these issues could be identified sooner, and recertification has not yet occurred for ICP 0003860754TP8CD. 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

0003860754TP8CD has now been recertified as of 14/7/21. Provide feedback to Delta on the seven installations with errors greater than 1.5%, work with them and other ATH's to ensure they understand the code requirements.	20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	Post audit comment:
We first need to pass this back to Delta so they can investigate the circumstances around this and what they can do to manage it better going forward. Once they understand it we can work with them to ensure other test houses are aware.	20 September 2021	In Delta's most recent ATH audit report, they dispute the requirement to ensure components are operating within their class. The proposed liaison with Delta will hopefully assist in educating them and changing their practices.

4.4. Net metering and Subtractive Metering (Clause 10.13A and 4(2)(a) of Schedule 10.7)

Code reference

Clause 10.13A and Clause 4(2)(a) of Schedule 10.7

Code related audit information

MEPs must ensure that the metering installation records imported electricity separately from exported electricity. For category 1 and 2 installations the MEP must ensure the metering installation records imported and exported electricity separately for each phase.

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.

ICP 0000233229MPC5B had a builder's temporary supply and the permanent metering both connected, and both metering all of the load at the installation for the period 3 December 2020 to 8 December 2020. Subtraction needs to occur for this period to determine submission information.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.4 With: Clause 10.13A and 4(2)(a) of Schedule 10.7 From: 03-Dec-20 To: 08-Dec-20	Submission information determined by subtraction for ICP 0000233229MPC5B for the period 03/12/20 to 08/12/20. Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as strong because they mitigate risk to an acceptable level. The impact on settlement and participants is minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Review this ICP to see why both remained live for 5 days and whether there is potential for this to occur in the future. Inform the retailer of the situation so any correction can be made and/or compensation sought.		20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
As above, we believe this was a one off but will review process and look for possible improvements to prevent reoccurrence.		20 August 2021	

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 installation's:

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

This includes where the MEP is proposing to replace a metering component or metering installations with the same or similar design and functionality but excludes where the MEP has already consulted on the design with the distributor and trader.

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

Audit observation

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

Audit commentary

Vector Metering 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

If the MEP has an arrangement with the trader 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*

If the MEP is update the registry in accordance with 8(11)(b) of Schedule 10.6, 10 business days after the most recent unsuccessful interrogation.

If update the registry in accordance with clause 8(13) of Schedule 10.6, 3 business days following the expiry of the time period or date from which the MEP determines it cannot restore communications.

Audit observation

I checked the audit compliance report for the period 1 July 2020 to 29 April 2021 to evaluate the timeliness of registry updates.

Audit commentary

I checked the audit compliance report for the period 1 July 2020 to 29 April 2021 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%
	2021	2,500	2,302	92%

168 of the 198 late updates were due to late nomination by the trader.

I checked 22 late updates, where the nomination was within five business days and found:

- 12 updates were corrections,
- one was late field notification, and
- nine were processing issues.

I was unable to accurately determine the total number of updates after recertification due to duplicates in the audit compliance report AC020MEP04 (Metering update after recertification). None of the reports account for reversed and replaced events, which leads to inaccurate reporting. The compliance level is shown as 85.39%.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: Clause 3 of Schedule 11.4 From: 01-Jul-20 To: 29-Apr-21	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
Whilst we strive to minimize corrections by having correct information up front, when we find them we are obliged to correct them, this often means correcting back to the previous certification date which causes it to look like the jobs were done greater than 10 business days. Late nominations from traders is still an issue causing non-compliance to MEPS.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Always looking to improve on this clause.		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 61 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 61 metering installations and records were supplied for all 61. I found errors in most of the metering installation certification reports. I have recorded this as 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	-	7	3
Incorrect maximum interrogation cycle	10	10	-
Incorrect certification method	-	1	1
HHR/NHH missing	-	-	-
Incorrect services access interface or only one recorded	1	23	7

Test results not all recorded	-	10	10
Device calibration confirmation missing	10	10	10
Burden range not recorded in CT certification reports	-	2	7
Validity period missing	-	11	10

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 5.1 With: Clause 4(1)(a) and (b) of Schedule 10.6 From: 01-Jul-20 To: 29-Apr-21	Certification records not accurate and complete for most certification reports. Potential impact: Medium Actual impact: Low Audit history: Once 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
More scrutiny was placed on certification report information this audit and a number of missing or incorrect fields were found. Vector metering (VM) raised the accuracy of certification reports with test houses in our regular test house forums and provided clear requirements of what is required. All test houses are actively improving their reports to ensure the missing or incorrect fields are right going forward and SmartCo will review this going forward to ensure all comply.		24 September 2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Once corrected the non-compliance will be cleared until new regulations are introduced. Our regular test house forums are discussing new code requirements and ensuring we are all aware of our obligations.		24 September 2021	

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 confirmed that all responses were within 10 business days.

Audit outcome

Compliant

6.2. Provision of Registry Information (Clause 7 (1) (1A), (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 manager, in the prescribed form for each metering installation for which the MEP is responsible.

The MEP does not need to provide 'required' information if the information is only for the purpose of a distributor direct billing consumers on its network.

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 manager 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	2021 Quantity	2020 Quantity	2019 Quantity	2018 Quantity	2017 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	0	N/A
Night with no day	0	1	0	0	1	N/A
CN only on residential ICP	0	0	6	1	4	N/A
Day and night not = 24	0	0	0	0	2	N/A
ICPs have "IN24". This is not a valid combination	0	15,438	15,532	16,205	17,695	N/A
UN only with a control device.	0	305	353	266	Not checked	N/A
Incorrect certification duration	0	0	0	1	0	N/A
Category 2 without CTs recorded in the registry	3	2	1	0	2	Now resolved
Incorrect metering category	0	0	0	9	0	N/A
CTs on Category 1 installation	0	0	0	1	0	N/A
Incorrect certification dates	4	38	31	5	-	Now resolved
Invalid ATH identifier recorded. (VEMS identifier used after 28/09/2018)	34	17	-	-	N/A	Still existing
Incorrect ATH	0	1				

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 6.2</p> <p>With: Clause 7 (1), (2) and (3) of Schedule 11.4</p> <p>From: 01-Jul-20</p> <p>To: 29-Apr-21</p>	<p>Some registry records incomplete or incorrect.</p> <p>Potential impact: Medium</p> <p>Actual impact: Low</p> <p>Audit history: Multiple times</p> <p>Controls: Strong</p> <p>Breach risk rating: 1</p>

Audit risk rating	Rationale for audit risk rating		
Low	<p>I have recorded the controls as strong because they mitigate risk to an acceptable level.</p> <p>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.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
We are still seeing a handful of incorrect ATH identifiers coming through (VEMS), should be VCOM. We will identify the incorrect ones and remind VES (old Vircom) staff to use the correct identifier, and not accept jobs from the field with the old identifier on.		20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Review Invalid ATH identifier recorded. (VEMS identifier used after 28/09/2018), identify and correct these, ensure VEMS is no longer used.		20 August 2021	

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-Jul-20 To: 29-Apr-21	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:

- a) the metering installation is modified otherwise than under sub clause 19(3), 19(3A) or 19(3C)*
- b) the metering installation is classed as outside the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, defective or not fit for purpose under this Part or any audit,*
- c) an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation,*
- d) the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested,*
- e) an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part,*
- f) if the metering installation has been determined to be a lower category under clause 6 and:
 - a. the MEP has not received the report under 6(2A)(a) or 6(2A)(b); or*
 - b. the report demonstrates the maximum current is higher than permitted; or*
 - c. the report demonstrates the electricity conveyed exceeds the amount permitted,**
- 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.*
- j) the installation is an HHR AMI installation certified after 29 August 2013 and
 - a. the metering installation is not interrogated within the maximum interrogation cycle; or*
 - b. the HHR and NHH register comparison is not performed; or*
 - c. the HHR and NHH register comparison for the same period finds a difference of greater than 1 kWh and the issue is not remediated within three business days.**

A metering equipment provider must (unless the installation has been recertified within the 10 business days) 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.

If any of the events in Clause 20(1)(j) of Schedule 10.7 have occurred, update the AMI flag in the registry to 'N'.

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 three cases where meters had been bridged during the audit period. In all three cases the installations were recertified when the bridge was removed therefore cancelling the previous certification.

Low burden

Analysis of the certification records for 28 Category 2 metering installations found that all had appropriate burden applied.

Previous audits identified 37 ICPs with cancelled certification due to low burden. None of these have yet been updated in the registry. The ATH is VCOM for six and Wells for 31.

Certification for ICP 0003860754TP8CD was cancelled because Wells ATH certified the installation despite an error of 32%. The certification was cancelled but has now been re-instated in the registry without certification occurring.

As recorded in **section 10.5**, 1,097 ICPs with an AMI flag of “Y” have cancelled certification due to not being read within the maximum interrogation cycle.

As recorded in **section 10.9**, 161 ICPs have cancelled certification due to sum-check failures not being resolved within three business days.

Audit outcome

Non-compliant

Non-compliance	Description
<p>Audit Ref: 6.4</p> <p>With: Clause 20 of Schedule 10.7</p> <p>From: 01-May-18</p> <p>To: 18-Jun-21</p>	<p>Certification cancelled, and registry not updated within 10 business days for:</p> <ul style="list-style-type: none"> 37 ICPs with low burden, ICP 0003860754TP8CD with an error of 32%, ICP 0000010432TE735 with insufficient load certification where monitoring was not conducted, 1097 ICPs not read within the maximum interrogation cycle, and 161 ICPs where sum-check failures were not resolved within 3 business days. <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Three times</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>
Audit risk rating	Rationale for audit risk rating
Low	<p>I have recorded the controls as moderate in this area because most processes are managed with sufficient controls to avoid cancellation of certification.</p> <p>The installations with low burden are all recording within 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.</p>

Actions taken to resolve the issue	Completion date	Remedial action status
<p>All ICPs that haven't yet had their certification cancelled will have that done within the month.</p> <p>37 ICPs with low burden (to be cancelled)</p> <p>ICP 0003860754TP8CD with an error of 32%, (Cleared, Prevention - This was historic and new job checking will pick this up)</p> <p>ICP 0000010432TE735 with insufficient load certification where monitoring was not conducted, (we will revisit the need for a low load process as we are seeing instances where low load certification can't be avoided, i.e. unsafe to apply load banks etc)</p> <p>1097 ICPs not read within the maximum interrogation cycle. (This will be a one off due to the new code changes implemented earlier this year. We have automated our systems to change the AMI flag to N after 85 days of no communications.)</p> <p>161 ICPs where sum-check failures were not resolved within 3 business days. (We are looking at making some changes to ensure we remain compliant and we are putting reporting in place to monitor our compliance)</p>	20 August 2021	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
As above, new system changes, automation, and improved cert checking will detect most of the above issues and prevent reoccurrence.	20 August 2021	

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. The certification has been re-instated without CT replacement and will need to be cancelled again.
0000021432NT37F	F	1	23/04/2018	Single phase meter on 3 phase installation; certification cancelled.
1004686217ALEE4	F	1	16/01/2019	Retailer has been requested to raise a work order.
0000135761TP2F8	F	1	23/09/2018	Incorrect certification expiry date, now resolved.
0004922107AL517	F	1	17/04/2019	Retailer has been requested to raise a work order.

0000327095TPF9E	F	1	24/09/2019	Retailer has been requested to raise a work order.
0001642577AL43B	F	1	19/11/2019	Certification expiry date error, now resolved.
0008305374NV169	F	2	18/07/2020	ATH certified for 6 months because CTs are not SMCO owned, and a job is to be issued to replace the CTs.

As mentioned in **section 6.4**, certification is cancelled for:

- 37 ICPs with low burden,
- ICP 0003860754TP8CD with an error of 32% (mentioned in the table above),
- ICP 0000010432TE735 with insufficient load certification where monitoring was not conducted,
- 1,097 ICPs not read within the maximum interrogation cycle, and
- 161 ICPs where sum-check failures were not resolved within 3 days.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 7.1 With: Clause 10.38 (a) From: 01-Jul-20 To: 19-Jun-21	Certification expired or cancelled for 1,304 ICPs. Potential impact: High Actual impact: Medium Audit history: Twice Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement, particularly with the new data collection requirements of the Code since 1 February 2021.</p> <p>The impact on settlement is recorded as moderate because one installation has an error over 30%; therefore, the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status

<p>All ICPs that haven't yet had their certification cancelled will have that done within the month.</p> <p>37 ICPs with low burden (to be cancelled)</p> <p>ICP 0003860754TP8CD with an error of 32%, (Cleared, Prevention - This was historic and new job checking will pick this up)</p> <p>ICP 0000010432TE735 with insufficient load certification where monitoring was not conducted, (we will revisit the need for a low load process as we are seeing instances where low load certification can't be avoided, i.e. unsafe to apply load banks etc)</p> <p>1097 ICPs not read within the maximum interrogation cycle. (This will be a one off due to the new code changes implemented earlier this year. We have automated our systems to change the AMI flag to N after 85 days of no communications.)</p> <p>161 ICPs where sum-check failures were not resolved within 3 business days. (We are looking at making some changes to ensure we remain compliant and we are putting reporting in place to monitor our compliance)</p>	20 August 2021	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>1097 ICPs not read within the maximum interrogation cycle. (This will be a one off due to the new code changes implemented earlier this year. We have automated our systems to change the AMI flag to N after 85 days of no communications.)</p> <p>161 ICPs where sum-check failures were not resolved within 3 business days. (We are looking at making some changes to ensure we remain compliant and we are putting reporting in place to monitor our compliance)</p> <p>Low burden ICPs were historic, all ATH's are now complying with the code, especially given the recent changes clarifying the need for burdening during comparative certification.</p>	20 August 2021	

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 61 metering installations to confirm compliance.

Audit commentary

All certification activities have been conducted by Wells, VCOM and Delta. I checked the certification reports for 61 metering installations and found that there is potential for one of the new requirements of the Code since 1 February 2021 not met in future. Table 3 requires a prevailing load test be conducted if recertification occurs with existing meters and the same expiry date.

Event	Design check	Prevailing load test
Initial certification, or recertification with all meters replaced	M	
Recertification with no meters replaced	M	M
Recertification with one or more meters replaced with a certified meter(s), at least one existing meter remains, and metering installation expiry date is not changed	M	

I checked the decision paper published on 15 December 2020 to determine if this was an error in the Code, but the response below confirms this requirement is deliberate. This means that all recertification activity where meters are not replaced, require a prevailing load test using a working standard. It is unlikely this test was conducted by any ATH on any metering installation meeting this scenario, because the industry does not have a Category 1 prevailing load test capability.

Submitter's view

9.13 Intellihub had two drafting suggestions as it did not agree a prevailing load test is required when meters are not being replaced, i.e. when bridging. Intellihub suggested:

- (a) row 2 needs to be split to differentiate between recertification with a new installation expiry date and recertification with an existing installation expiry date

Our decision

9.14 We note the first drafting suggestion, however we believe that when recertifying, there needs to be some overarching check that the metering installation is still working correctly. A prevailing load test coupled with the raw meter data output check performs this function.

I checked five ICPs certified after 1 February 2021 for a period of less than 15 years, indicating the existing meter remains, but in all cases, they were not actually recertified, and the date supplied by the ATH to SMCO was incorrect. I recommend SMCO liaises with ATHs to ensure certification practices are compliant when this scenario arises.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 10.38(b) and clause 9 of Schedule 10.6	<p>Table 3 requires a prevailing load test be conducted using a working standard if recertification occurs with existing meters and the same expiry date.</p> <p>Liaise with ATHs to ensure certification practices are compliant in future if this scenario arises.</p>	Discussions are well underway through our regular test house forums. Ensuring all test houses are fully aware of the new code requirements is a top priority for us.	Identified

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

All other installations must measure and separately record:

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

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

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

Audit observation

I checked the certification records for 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 the previous audit, it was found that the metering installation at ICP 0000035862NT91A was certified with insufficient load and monitoring was not conducted. This installation was recertified on 4 June 2020. During this audit, the metering installation at ICP 0000010432TE735 was certified on 10 March 2021 with insufficient load and monitoring is not conducted. Certification is therefore cancelled as recorded in **section 6.4**.

SmartCo has previously instructed ATHs that load must be added to perform certification testing and that insufficient load certification should not be conducted.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 7.7 With: Clauses 14(3) and (4) of Schedule 10.7 From: 10-Mar-21 To: 19-Jun-21	Monitoring not conducted for one ICP certified with insufficient load. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating

Low	<p>Controls are recorded as moderate because they mitigate risk most of the time, but some issues still occur.</p> <p>The impact is minor as only one ICP is affected and accuracy is unlikely to be affected; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
We will revisit the need for a low load process as we are seeing instances where low load certification can't be avoided, i.e. unsafe to apply load banks etc.		24 September 2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	
Introduce a monitoring process for those few situations where low load certifications simply cannot be avoided.		24 September 2021	

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 one example of a bridged control device job. The job was issued by the trader; therefore they didn't need to be notified. The job results confirmed the metering was operating as expected and the control device had not been bridged. No other examples were identified.

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, however as recorded in **sections 6.4, 7.1 and 10.5** there are some installations with cancelled certification where recertification may be required.

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 an external 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 update the compensation factor recorded in the registry in accordance with Part 11.

Audit observation

I checked the records for 24 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 24 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 61 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 61 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 24 metering installations to confirm compliance.

Audit commentary

I checked the records for 24 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 61 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all 61 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 126 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, ensure an ATH has completed inspections of a sample of the category 1 metering installations selected under clause 45(2) of Schedule 10.7.*

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 2 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) 3 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.*

If the MEP is advised under 48(1B)(c) or (48(1F)(d) the MEP must update the relevant meter register content code for the relevant meter channel.

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, and 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 three cases where meters had been bridged during the audit period. In all three cases the installations were recertified when the bridge was removed therefore cancelling the previous certification. Appropriate notification was provided to other participants in all cases.

The certification report for Category 2 ICP 0000373816MP18E recorded that the existing metering was faulty; however, notification was not provided to the trader as required by this clause.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 9.1 With: Clause 10.43(4) and (5) From: 18-Mar-21 To: 05-Jul-21	Trader not notified of faulty metering installation for ICP 0000373816MP18E. Potential impact: Medium Actual impact: Unknown 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 traders are normally notified. This appears to be a one-off issue. The impact on settlement and participants is unknown so I've recorded it as minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

Review this ICP and see why notification wasn't provided.	20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur	Completion date	
From above, identify reason as to why notification was missed, was it a human error or missing/error in process.	20 August 2021	

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.

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

The information returned by the ATH met the requirement for the provision of a statement of situation in all examples.

The certification report for Category 2 ICP 0000373816MP18E recorded that the existing metering was faulty; however, notification was not provided to the trader as required by this clause. The certification report contained sufficient information to meet the requirements of the statement of situation.

Audit outcome

Compliant

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

Code reference

Clause10.46(2)

Code related audit information

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

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

Audit observation

I checked three 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 three examples. Smartco provided this information to the trader for all three examples.

As mentioned in **section 9.1**, there was a faulty metering installation at ICP 0000373816MP18E where the certification report contained sufficient information to meet the statement of situation requirements, but this information was not provided to the trader.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 9.3 With: Clause 10.46(2) From: 18-Mar-21 To: 05-Jul-21	Trader not notified of faulty metering installation for ICP 0000373816MP18E. Potential impact: Medium Actual impact: Unknown 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 traders are normally notified. This appears to be a one-off issue. The impact on settlement and participants is unknown so I've recorded it as minor; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
Review this ICP and see why notification wasn't provided.		20 August 2021	Investigating
Preventative actions taken to ensure no further issues will occur		Completion date	

From above, identify reason as to why notification was missed, was it a human error or missing/error in process.	20 August 2021	
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9.4. Timeframe for correct defects and inaccuracies (Clause10.46A)

Code reference

Clause10.46A

Code related audit information

When the metering equipment provider is advised under 10.43 or becomes aware a metering installation it is responsible for is inaccurate, defective or not fit for purpose the metering equipment provider must undertake remedial actions to address the issue.

The metering equipment provider must use its best endeavours to complete the remedial action within 10 business days of the date it is required to provide a report to participants under 10.43(4)(c).

Audit observation

I checked the records for three bridged meters and one faulty meter to confirm compliance.

Audit commentary

In all cases, the metering installations were re-certified within 10 business days of SmartCo becoming aware field work was required.

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.

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 an events that may affect the integrity or operation of the metering installation, such as malfunctioning or tampering.

The MEP must investigate and remediate any events and advise the reconciliation participant.

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

Vector Metering 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:

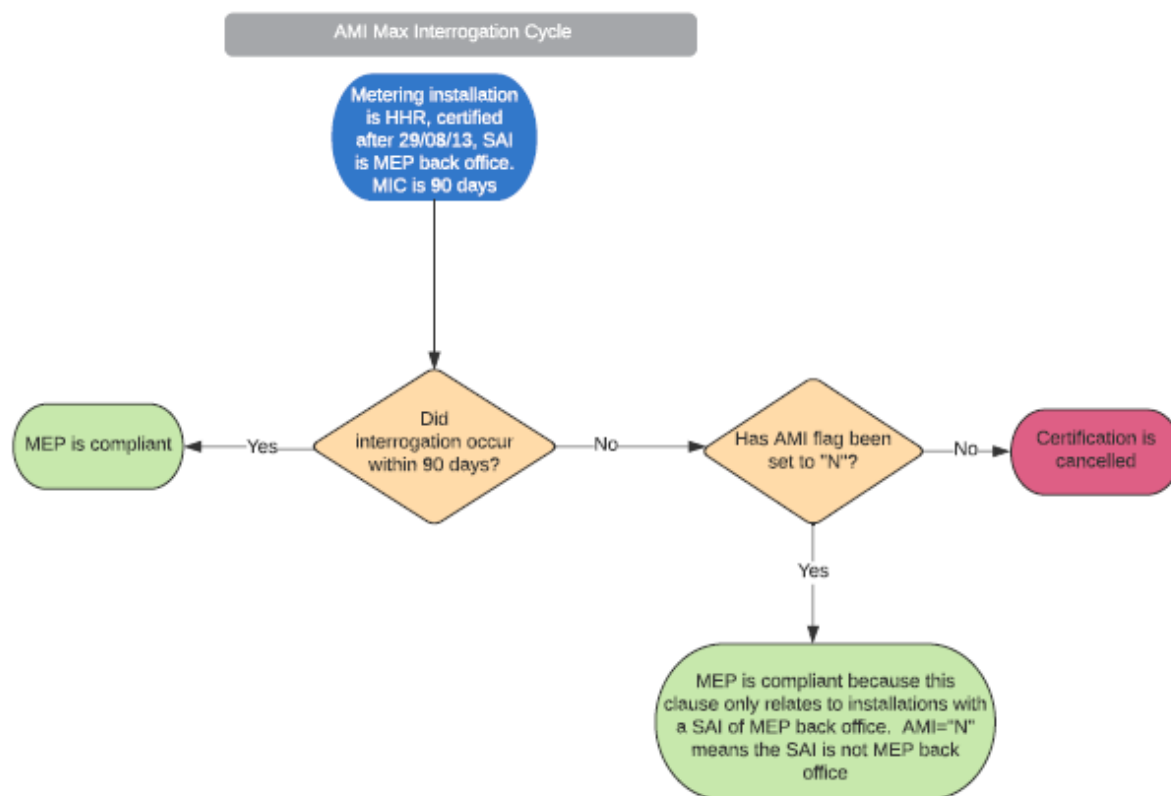
- *interrogation not conducted within the maximum interrogation cycle,*
- *event report sent to retailers,*
- *clock synchronisation reports,*
- *sum-check failures, and*
- *new requirements of Part 10 since 1 February 2021.*

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 1,097 ICPs in the report. 270 ICPs are inactive on the registry. All ICPs are AMI = "Y" on the registry, therefore certification is cancelled in accordance with clause 20(1)(j)(i) of schedule 10.7. I discussed the following process with SmartCo, indicating that certification cancellation could be averted if the AMI flag was changed to No.



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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 10.5 With: Clause 8(2)(b) of schedule 10.6 From: 01-Apr-21 To: 30-Apr-21	1,097 ICPs not read within the maximum interrogation cycle. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating

Low	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.</p> <p>The impact on settlement and participants is minor because there are only 87 ICPs with a HHR profile and only two with HHR only retailers; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>This will be a one off due to the new code changes implemented earlier this year. We have automated our systems to change the AMI flag to N after 85 days of no communications.</p> <p>There have always been a number of ICPs where we have not changed the flag, such as inactive ICPs or disconnected/mains off sites. After discussions with the Authority and auditor, we are now aware that these must follow the same AMI flag rules as all other ICPs.</p>		20 August 2021	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
System now automated to change the AMI flag to N after 85 days of no communications.		20 August 2021	

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

Vector Metering'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
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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 1,472 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-Jul-20 To: 19-Jun-21	1,472 examples of clock errors outside the allowable thresholds. Potential impact: Medium Actual impact: Low Audit history: Twice 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
Our system automatically corrects clock errors, but unfortunately, as soon as they are out of the time limit, we become non-compliant. Any meters with excessive time errors or are repeatedly exceeding the time limits are investigated by the technical team and action is taken to resolve the issue.		Completed	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We have an automated system of correcting time errors. Should the time drift exceed the limits in the Code excessively or repeatedly, we will attempt to manually interrogate and make the necessary correction, and if unsuccessful, will replace the meter.		Completed	

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 for the same period.

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 retailers 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). The Code now specifies the sum-check difference must be within 1.0 kWh, therefore SmartCo can change their threshold from 0.1 to 1.0. I requested a copy of reporting of sum-check failures over 1.0 kWh, where the issue was not resolved within three business days. There were 161 ICPs in the report. As recorded in **section 6.4**, certification is cancelled for these ICPs.

Compliance is achieved with this clause because sum-check is conducted.

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

10.11. Raw meter data and compensation factors (Clause 8(10) of Schedule 10.6)

Code reference

Clause 8(10) of Schedule 10.6

Code related audit information

The MEP must not apply the compensation factor recorded in the registry to raw meter data downloaded as part of the interrogation of the metering installation.

Audit observation

I checked whether SmartCo applied compensation factors to raw meter data.

Audit commentary

SmartCo does not apply compensation factors to raw meter data.

Audit outcome

Compliant

10.12. Investigation of AMI interrogation failures (Clause 8(11), 8(12) and 8(13) of Schedule 10.6)

Code reference

Clause 8(11), 8(12) and 8(13) of Schedule 10.6

Code related audit information

If an interrogation does not download all raw meter data, the MEP must investigate the registry why or update the registry to show the meter is no longer AMI.

If the MEP chooses to investigate the reasons for the failure the MEP has no more than 30 days or 25% of the maximum interrogation cycle, from the date of the last successful interrogation (whichever is shorter).

If the MEP does not restore communications within this time or determines they will be unable to meet this timeframe they must update the registry to show the meter is no longer AMI.

Audit observation

I checked whether SmartCo had reporting in place to confirm compliance with this clause.

Audit commentary

SmartCo does not have reporting in place to confirm compliance with this clause. The reporting is being developed but was not available at the time the report was completed, therefore I was unable to check if compliance was achieved.

Audit outcome

Unable to determine

CONCLUSION

SmartCo is a 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 audit identified 16 non-compliances.

As recorded in the previous audit report, there are still many areas of non-compliance related to issues arising due to certification practises of ATHs as follows:

- certification records not accurate and complete for most examples checked,
- category 2 installations certified with low burden (all from previous audit periods) and certification not cancelled,
- monitoring not conducted each month following insufficient load certification.

The Code changed on 1 February 2021 and SmartCo has not yet completed the system developments required to achieve compliance with some of the new requirements. This has led to cancellation of certification for 1,258 ICPs where sum-check failures were present and where interrogation did not occur with the maximum interrogation cycle.

I have made a recommendation regarding testing of Category 1 metering installations. Table 3 now requires a prevailing load test be conducted using a working standard if recertification occurs with existing meters and the same expiry date. I recommend liaison occurs with ATHs to ensure certification practices are compliant in future if this scenario arises.

Registry accuracy has improved further in this audit, and there are very few discrepancies.

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

PARTICIPANT RESPONSE

The Authority's view is that there shouldn't be a limit on replacement AMI data, so that any data collected, regardless of how old it is, should be supplied to the retailers. SmartCo provided data for 60 days, however we are not sure if the unlimited data is a code requirement or the Authorities view. System changes will be required to implement this.

SmartCo has concerns regarding costs that some of the new code changes are introducing to the industry. In particular the cancellation of certification for over 1,000 ICPs that were either inactive, or known properties where the power to the meter is off (holiday home, irrigation pump) for periods longer than the maximum interrogation cycle.

The requirement for ATHs to use a working standard to recertify certain Category 1 installations will introduce significant cost. Cat 1 techs do not have the required equipment (working standard) and this would cost thousands of dollars per tech to equip them. To remain compliant, ATH's must install a new meter potentially removing a meter that was recently installed and certified.

We believe the Authority needs to review this clause as the practicalities of remaining compliant far outweigh any gains.