

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

For



Prepared by: Steve Woods – Veritek Limited

Date audit commenced: 2 May 2018

Date audit report completed: 11 May 2018

Audit report due date: 28-May-18

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EXECUTIVE SUMMARY

SmartCo is a Metering Equipment Provider (MEP) and is required to undergo an audit by 28/05/18, in accordance with clause 1(1)(b) of schedule 10.5.

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 will be the owners of the meters in their networks. AMS has been appointed by SmartCo to provide metering, data collection and asset management services on SmartCo member networks. SmartCo will be the MEP on the registry (SMCO).

The audit identified nine non-compliances and one recommendation is made.

Registry update timeliness continues to have a high level of compliance, with most of the late updates caused by late nomination by retailers. Whilst most registry fields are correct, there are a large number of ICPs with “IN24” recorded, which can lead to incorrect billing by retailers.

The previous audit report recorded that uncertainty calculations were not being conducted in accordance with the Code by ATHs. This matter was resolved in late 2017, but this audit is required to consider compliance over the entire audit period and SmartCo is therefore non-compliant in relation to those ICPs certified without uncertainty calculations being conducted.

Five metering installations do not have current certification. One was cancelled due to the meter being bridged. Four Category 2 ICPs failed the recertification tests and have not yet been recertified.

There are currently 737 installations not read during the 90 day maximum interrogation cycle.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and although it recommends an audit frequency of six months, my recommendation is that the Authority considers a frequency of 12 months. My reasoning for this is that SmartCo has sound registry validation processes and most registry fields are accurate, improvements have been made in the data collection area and ATH processes are now compliant. The issue of uncertified metering installations is with the relevant retailers to make arrangements with the customers so remedial actions can occur.

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Provision of accurate information	2.5	11.2 and Clause 10.6	Registry not always updated as soon as practicable by SmartCo.	Moderate	Low	2	Identified
Registry notification timeframe	3.2	2 of schedule 11.4	Some registry updates later than 15 business days.	Strong	Low	1	Identified
Uncertainty calculations	4.3	4(1)(a) of schedule 10.7	Error and uncertainty calculations not conducted correctly for up to 642 Category 2 metering installations.	Strong	Low	1	Cleared
Changes to registry records	4.10	3 of schedule 11.4	Some records updated on the registry later than 10 business days. Five incorrect certification dates	Strong	Low	1	Identified
Provision of registry information	6.2	7 (1), (2) and (3) of Schedule 11.4	Some registry records incomplete or incorrect.	Moderate	Low	2	Identified
Correction of registry errors	6.3	6 of schedule 11.4	Corrections not made within five business days.	Moderate	Low	2	Identified
Cancellation of certification	6.4	20 of Schedule 10.7	Certification cancelled, and registry not updated within 10 business days for ICP 0000021432NT37F where only one phase is metered and four Category 2 installations where certification tests failed	Weak	Low	3	Identified
Expired certification	7.1	10.38 (a)	Certification expired for five ICPs.	Moderate	Medium	4	Identified
Investigation of faulty metering installations	9.1	10.43(4) and (5)	Faulty meters not reported to traders within 20 business days	Moderate	Low	2	Identified

Testing of faulty metering installations	9.2	10.44	Statements of situation not arranged	Moderate	Low	2	Identified
Interrogation cycle	10.5	8(2)(a)&(b) of Schedule 10.6	737 installations not interrogated within the interrogation cycle.	Moderate	Low	2	Identified
Future Risk Rating						22	
Indicative Audit Frequency						6 months	

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

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Certification report clarity	5.1	Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Require Wells to provide better clarity with regard to summary information in certification reports.

ISSUES

Subject	Section	Recommendation	Description
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code (Section 11)

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

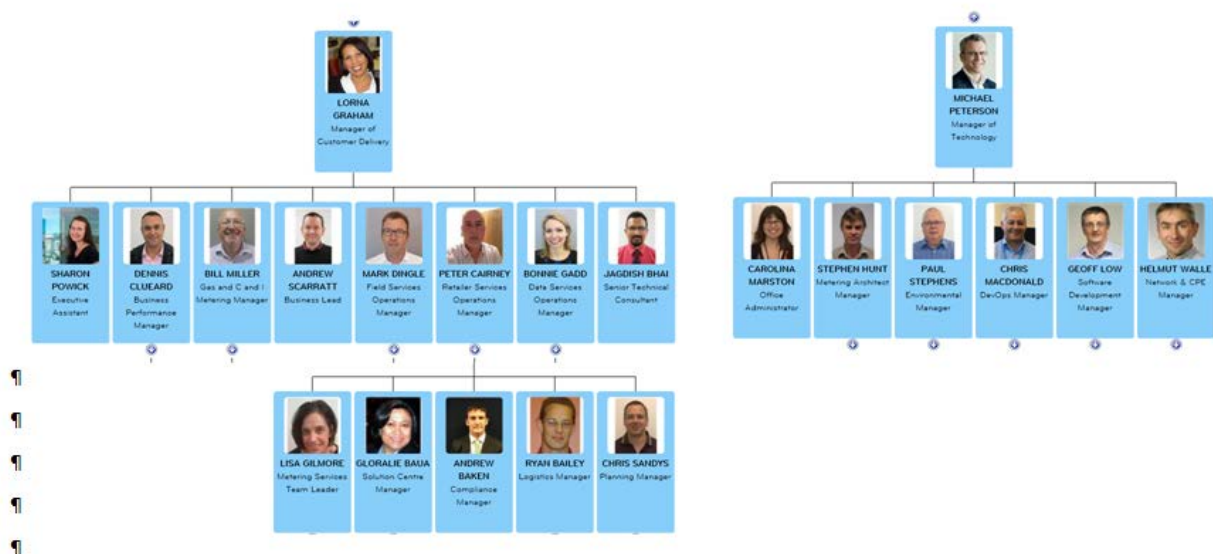
I checked the Electricity Authority website and I confirm there are no exemptions in place.

Audit commentary

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

1.2. Structure of Organisation

All SmartCo functions are performed by AMS; therefore I have included the AMS 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
Thomas Steere	Senior Data Analyst
Tyler Moyes	Senior Data Analyst
Bonnie Gadd	Data Services Operations Manager
Aimee Wright	Data Analyst
Steven Xie	Data Analyst

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. These parties are not considered agents for this ATH activities. ATHs are also engaged to store records in accordance with clauses 4(1)(v) & (viii) of schedule 10.6. I checked that records were available from the relevant ATHs.

The ATHs engaged are as follows:

- Wells
- Delta
- Vircom-EMS.

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.

1.5. Hardware and Software

SmartCo MEP data is held in JDE and Salesforce. Both systems are subject to backup arrangements in accordance with standard industry protocols.

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	111,916
2	1,295
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 V2.1, 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 will be the owners of the meters in their networks. AMS has been appointed by SmartCo to provide metering, data collection and asset management services on SmartCo member networks. SmartCo will be 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

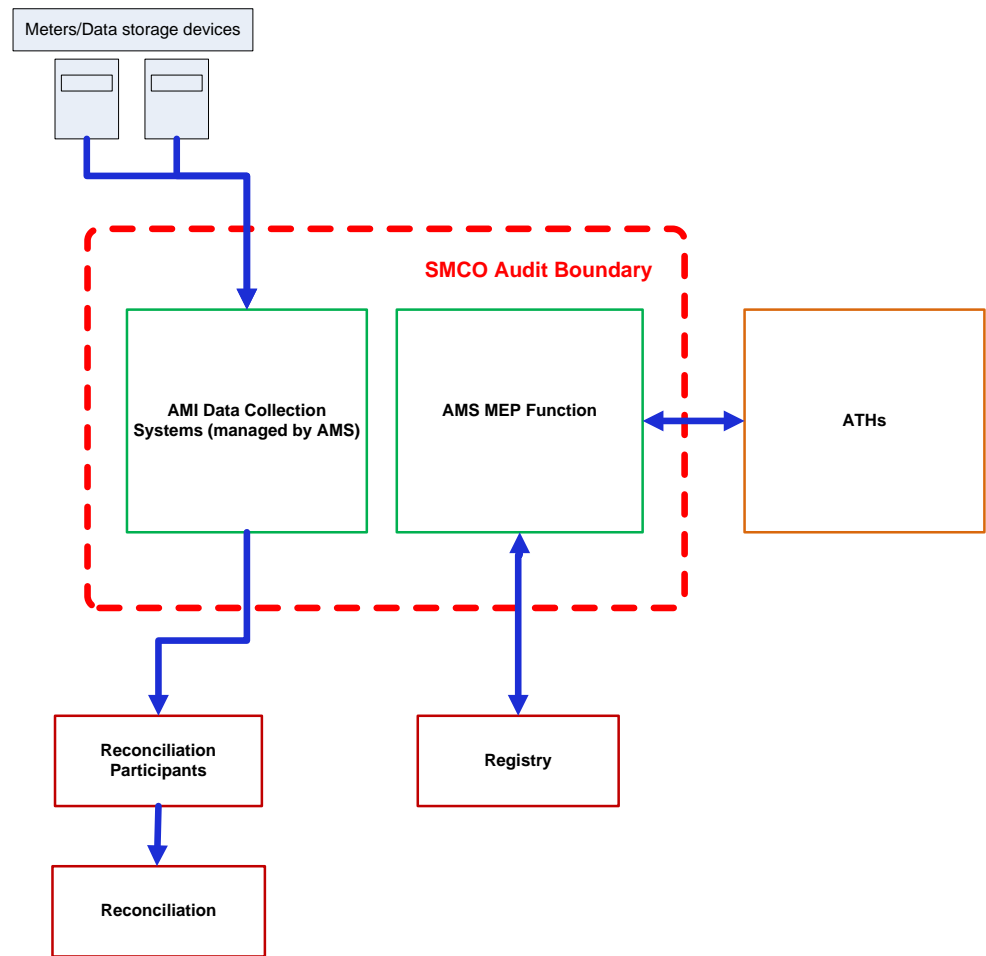
Network	MEO code (AMI Meters)	MEO Code (relays, legacy meters)	Meter Type
Alpine Network	ALPS	ALPE	L+G
Electricity Invercargill Network	ELIS	ELIN	EDMI
The Power Company Network	TPCS	TPCO	EDMI
MainPower	MPOS	MPOW	EDMI
Tasman Network	TASS	*	L+G
Top Energy	TOPS	WASN (LCD)	L+G

*Tasman Network will not have external LCD's left on site.

The table below shows a breakdown of ICPs per network as at April 2018.

Network	Quantity 2018	Quantity 2017	Quantity 2016	Quantity 2014
Top Energy	16,863	14,183	8,412	334
Alpine	18,994	12,375	3,685	195
Electricity Invercargill	8,650	5,877	2,316	0
Mainpower	24,690	16,136	6,210	0
Network Tasman	25,836	22,373	10,610	263
The Power Company	18,184	10,635	2,671	0
Mountain Power	77	38	0	0
Total	113,294	81,617	33,904	792

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 2017 by Steve Woods of Veritek Limited. The table below shows that some of the issues have been cleared.

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
Switch response	6.1	1(1) of schedule 11.4	Late acceptance for 9 ICPs.	Cleared
Registry notification timeframe	3.2	2 of schedule 11.4	Registry not updated within 15 days for 5% of updates where SMCO has become the MEP.	Still existing
Uncertainty calculations	4.3	4(1)(a) of schedule 10.7	Error calculations do not always consider site-specific conditions. Therefore, SmartCo is not ensuring the sum of the measured error and uncertainty does not exceed the maximum permitted error.	Cleared
Accuracy of registry records	6.2	7(1) of schedule 11.4	Some registry records incomplete incorrect.	Still existing
Changes to registry records	4.10	3 of schedule 11.4	Some records updated on the registry later than 10 business days. Four incorrect certification dates.	Still existing
Correction of registry errors	6.3	6 of schedule 11.4	Corrections not made within five business days.	Still existing
Interrogation cycle	10.5	8(2)(a)&(b) of Schedule 10.6	610 installations not interrogated within the interrogation cycle.	Still existing
Clock synchronisation	10.7	8(5)(d)(iii) of schedule 10.6	Time difference information not being routinely sent to reconciliation participants.	Cleared

Table of Recommendations

Subject	Section	Clause	Recommendation for improvement	Status
Services access interface	2.1	10.9(2) of part 10	Request that VEMS corrects the services access interface location for five metering installations.	Cleared
Category 2 installations with low burden	4.13	31(7) of schedule 10.7	Require VEMS to recertify two metering installations with appropriate burden.	Still existing
Certification tests	7.2	10.38(b) of Part 10 and Clause 9 of Schedule 10.6	Obtain and review ATH audit reports.	Cleared
Interrogation cycle	10.5	8(2)(a)&(b) of Schedule 10.6	Request ATHs to correct their records regarding maximum interrogation cycle.	Cleared
Clock synchronisation	10.7	8(5)(d)(iii) of schedule 10.6	Ensure files sent to retailers have accurate recording of NZST or NZDT.	Cleared
Event logs	10.8	Clause 8(5)(e)&(f) & 8(7)(b) of Schedule 10.6	Send blank event file if there are no events. Re-send the event explanatory information to retailers.	Cleared
Sum-check validation	10.9	8(8)&(9) of Schedule 10.6.	Develop reporting for sum-check failures to enable analysis to occur.	Cleared

2. OPERATIONAL INFRASTRUCTURE

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

Code reference

Clause 10.9(2)

Code related audit information

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

Audit observation

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

Audit commentary

SmartCo has an AMI system and the services access interface is expected to be “remote”. I checked 30 certification records and found the services access interface was correctly recorded by all ATHs.

Audit outcome

Compliant

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

Code reference

Clause 10.50(1) to (3)

Code related audit information

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

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

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

Audit observation

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

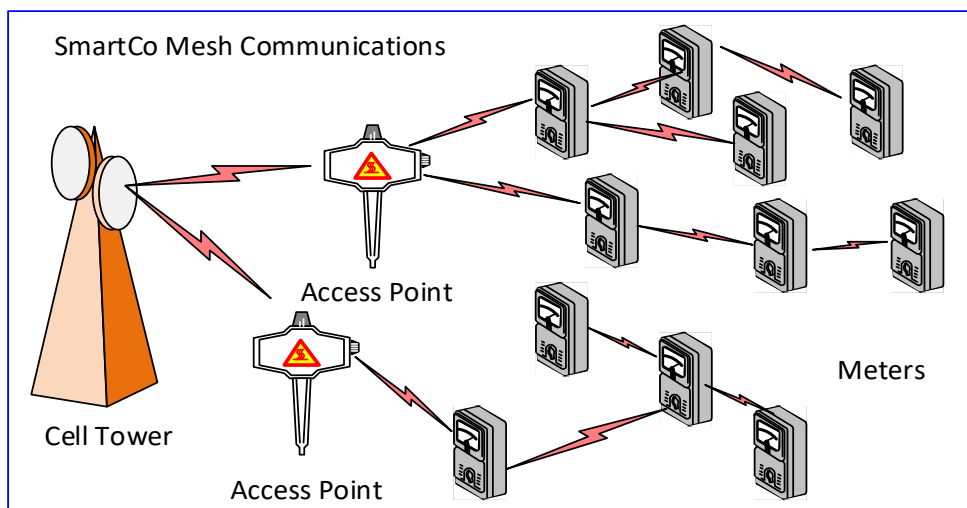
The MEP must ensure that the use of its communication equipment complies with the compatibility and connection requirements of any communication network operator the MEP has equipment connected to.

Audit observation

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

Audit commentary

SmartCo uses radio mesh technology for the transmission of data from meters to “Access Points” (as shown in the diagram below) and data from access points is transmitted using the cellular network. I checked all relevant documentation, which confirms compliance with all relevant requirements and standards.



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

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.5 With: Clause 11.2 and Clause 10.6 From: 01-May-17 To: 31-Mar-18	Registry not always updated as soon as practicable by SmartCo Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating
Low	Controls are recorded as moderate because they mitigate risk most of the time but some issues still occur. 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>SmartCo has a robust process to ensure registry data is updated as soon as practicable, this is described in detail in section 6.3 of this report. One area of non-compliance is the correction of IN24 to either the IN with the correct period of availability or where it can be shown there is no LCD, to UN24.</p> <p>A fix was put in place in December 2016 to prevent new IN24 RCCs going onto the registry, the table in section 6.2 shows the number has not increased since the last audit, in fact it has dropped by over a thousand. AMS are working on a separate project to clean up this backlog and have provided the Authority documentation on this in the past, and would be happy to discuss this with the Authority going forward.</p> <p>SmartCo have improved their process to cancel the certification of a metering installation where they have found an event as stated in the clause 20 of schedule 10.7. This audit has highlighted a handful of ICPs that were not done as soon as practicable, SmartCo will review the reasons for the lateness and adjust its processes to ensure this is not repeated.</p>	<p>IN24 - December 2018</p> <p>Late updates to registry – September 2018</p>	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Correct all ICPs that have been incorrectly assigned the register content code of IN24</p> <p>Review ICPs that were updated late, identify causes and adjust processes to ensure this is not repeated.</p>	<p>IN24 - December 2018</p> <p>Late updates – September 2018</p>	

3. PROCESS FOR A CHANGE OF MEP

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

Code reference

Clause 10.22

Code related audit information

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

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

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

Audit observation

I checked if SmartCo had sent or received any invoices.

Audit commentary

SmartCo has not sent or received any invoices yet.

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 11.4

Code related audit information

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

Audit observation

I checked the event detail for the audit period for all records where SmartCo became the MEP to evaluate the timeliness of updates.

Audit commentary

I examined an event detail report for the period 01/05/17 to 31/03/18 in relation to this clause and the findings are shown in the table below. The registry was updated within 15 business days for 90% of the sample. 1,729 of the 1,742 late updates were caused by late nomination by the retailer. If I exclude the late nominations, the average days is only 2.5.

Year	ICPs Switched	Notified to registry within 15 days	Percentage compliant	Average days
2014	792	774	98%	5.0
2016	13,960	12,787	92%	8.6
2017	30,460	28,837	95%	4.4
2018	15,763	14,021	90%	7.7

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2</p> <p>With: Clause 2 of Schedule 11.4</p> <p>From: 01-May-17</p> <p>To: 31-Mar-18</p>	<p>Some registry updates later than 15 business days.</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>Controls are in place to ensure the timeliness of updates, but SmartCo is often prevented from updating the registry due to late field notification.</p> <p>The impact on other participants is minor; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Where SmartCo was nominated within the required timeframe it was 99.9992% compliant with this clause. There were 13 late updates out of 15,763 where we found issues we could control. These were predominantly data entry errors or late/incorrect paperwork. SmartCo hold regular meetings with the ATHs and these will be discussed at those meetings, with the aim to improve the return and flow of data through our systems, and how we deal with exceptions.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
The Authority are looking at making nominating mandatory, SmartCo are very supportive of this, not only would it significantly improving our compliance to this clause, it would remove the need for us to continually chase retailers for nominations. SmartCo will continue with its B-to-B systems for ATHs and retailers, automating the majority of switches, allowing us to focus on the exceptions, as per 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

Not applicable

3.4. Termination of MEP Responsibility (Clause 10.23)

Code reference

Clause 10.23

Code related audit information

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

The MEP is responsible if it:

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

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

An MEPs obligations terminate only when;

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

Audit observation

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

Audit commentary

SmartCo has ceased to be responsible for some metering installations and they still continue with their responsibilities, mainly in relation to the storage or records, which are kept indefinitely. As mentioned in **Section 2.3**, some of these responsibilities will be met by ATHs on behalf of SmartCo.

Audit outcome

Compliant

4. INSTALLATION AND MODIFICATION OF METERING INSTALLATIONS

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

Code reference

Clause 2 of Schedule 10.7

Code related audit information

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

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

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

Audit observation

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

Audit commentary

AMS has prepared design reports for SmartCo and has provided these to all ATHs. The reports include all of the requirements noted above and they were prepared by a person with the appropriate level of skills, expertise, experience and qualifications.

Audit outcome

Compliant

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

Code reference

Clause 9 of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

AMS, 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 10 metering installations.

Audit commentary

SmartCo does not fully comply with the requirements in relation to error determination.

During the audit period, Wells ATH was not calculating uncertainty for Category 2 metering installations certified using the comparative method. This did not achieve compliance with clause 4(1)(a) of schedule 10.7. The uncertainty calculation for Hioki working standards is particularly important because the 3196 model has a temperature coefficient of 0.03% per degree Celsius and the 3169 has a temperature coefficient of 0.02% per degree Celsius. If these working standards are used in cold temperatures, the combination of uncertainties could easily approach or exceed the maximum allowable threshold of 0.6%. Wells resolved this matter in late 2017, but this audit needs to consider compliance for the complete audit period and the five records I checked were for installations certified prior to this matter being resolved.

The VEMS process is now compliant. VEMS and Wells ATHs were the only ones to conduct Category 2 comparative certification during the audit period.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.3 With: Clause 4(1) of Schedule 10.7 From: 29-Aug-13 To: 01-Dec-17	Error and uncertainty calculations not conducted correctly for up to 642 Category 2 metering installations. Potential impact: Medium Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 2

Audit risk rating	Rationale for audit risk rating		
Low	<p>I have recorded the controls as strong because ATHs have now improved their processes.</p> <p>There could be a minor impact on metering installation accuracy; therefore, the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>As stated in the Executive summary, the auditor noted that;</p> <p>“The previous audit report recorded that uncertainty calculations were not being conducted in accordance with the Code by ATHs. This matter was resolved in late 2017, but this audit is required to consider compliance over the entire audit period and SmartCo is therefore non-compliant in relation to those ICPs certified without uncertainty calculations being conducted”.</p> <p>Recheck a sample of the 642 ICPs to ensure their error and uncertainty calculations were conducted correctly.</p>		<p>Completed</p> <p>June 2018</p>	Cleared
Preventative actions taken to ensure no further issues will occur		Completion date	
Continue the monthly meetings with ATHs where issues such as this are discussed.		Ongoing	

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

Code reference

Clause 4(2)(a) of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Not applicable

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

Code reference

Clause 4(2)(b) of Schedule 10.7

Code related audit information

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

Audit observation

I checked 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

Compliant

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

Code reference

Clause 10.26(10)

Code related audit information

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

Audit observation

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

AMS's instructions to ATH's include several clauses in relation to physical and electrical characteristics. Compliance is confirmed.

Audit commentary

AMS's instructions to ATH's include several clauses in relation to physical and electrical characteristics. Compliance is confirmed.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

4.10. Changes to Registry Records (Clause 3 of Schedule 11.4)

Code reference

Clause 3 of Schedule 11.4

Code related audit information

The MEP must advise the registry of the registry metering records or any change to the registry metering records for a metering installation for which it is responsible, no later than 10 business days following:

- a) the electrical connection of an ICP that is not also an NSP*
- b) any subsequent change in any matter covered by the metering records.*

Audit observation

I checked the event detail report for the period 01/05/17 to 31/03/18 to evaluate the timeliness of registry updates.

Audit commentary

I examined the event detail report for the period 01/05/17 to 31/03/18 and the table below shows the results:

Event type	Year	Total	Total within 10 days	% Compliant	Average days
Update	2014	2	0	0%	
	2016	7,366	6,627	85%	13.8
	2017	10,465	9,624	92%	Unknown
	2018	25,679	23,077	90%	17
New connection	2014	0	N/A	N/A	N/A
	2016	924	800	87%	8
	2017	2,055	1,826	89%	7.1
	2018	1,471	1,292	88%	7

12% of new connection updates were later than 10 business days. Late nomination by the trader (over five business days) was the cause for 177 of the 179 late updates. The average update days is 7, but if I only consider those where the nomination was within 5 business days, this comes down to 4.4 days.

I checked the records in detail for 11 ICPs where new connections had occurred and where the certification date was different to the initial energisation date or the retailer's active date. I found the following:

- Initial energisation dates appear incorrect for six ICPs
- Active date is incorrect for five ICPs
- Certification date was incorrect for five ICPs

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 4.10</p> <p>With: Clause 3 of Schedule 11.4</p> <p>From: 01-May-16</p> <p>To: 31-Mar-18</p>	<p>Some records updated to the registry later than 10 business days.</p> <p>Five incorrect certification dates</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>Late updates for new connections can have a minor impact on participants and settlement, therefore the audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status

<p>For new connections updates to the registry later than 10 business days, where SmartCo was nominated within the required timeframe it was 99.999% compliant with this clause. There were 2 late updates out of 1,471 that SmartCo have found issues that they could control. These were data entry errors where the returned data was missing certain information such as channel missing and number of dials incorrect, these have been corrected.</p> <p>The 11 ICPs where new connections had occurred (where the certification date was different to the initial energisation date or the retailer's active date) were analysed. All are certified metering installations, and most had the certification date out by 1-3 days.</p> <p>Initial energisation dates appear incorrect for six ICPs. This relates to a process by a distributor where sometimes they will install a dummy meter for livening and inspection. The IECD date is the date the distributor's inspector installs the dummy, which is removed when the SmartCo meter is installed and certified.</p> <p>The Interim distributor process is summarised below.</p> <ul style="list-style-type: none"> • Wells are assigning the jobs for the areas Netcon no longer cover to Wells technicians to complete the metering. • When Wells back-office receive a job, and a living-agent has not been specified, or they have specified Netcon, Wells are then contacting the distributor about these jobs. • The distributor are then releasing their NCA's to their appointed livening agent, who in turn contacts the electrician and organizes the Inspection and Livening. • The distributor has been advising Wells when the inspection and livening is going to happen. • The distributor's appointed inspector either meets us on-site, or carries out the Inspection and installs a dummy meter. <p>The process is not ideal. However, we have been closely watching the area and ensuring the jobs are being delivered within expectation.</p> <p>SmartCo hold regular meetings with the ATHs and these will be discussed at those meetings, with the aim to improve the return and flow of data through our systems, and how we deal with exceptions.</p>	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
SmartCo to continue to hold regular meetings with the ATHs and discussed these and other issues at those meetings.	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

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 11.18B(3)

Code related audit information

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

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

Audit observation

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

Audit commentary

91 ICPs were decommissioned during the audit period and in all cases, where the installation was recorded as AMI = "Y" a final interrogation occurred. There were 16 ICPs where the AMI flag was "N" and SmartCo was not responsible for the final interrogation, and the traders had already been notified that SmartCo would not be providing data. Compliance is confirmed.

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 Energization (Clause 10.28(6))

Code reference

Clause 10.28(6)

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Not applicable

5. METERING RECORDS

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

Code reference

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

Code related audit information

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

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

Audit observation

I checked certification records for 30 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 30 metering installations and complete records were supplied for all 30.

The Wells ATH records are difficult to read and some of the critical fields are difficult to identify. I recommend SmartCo requires Wells to include the following information clearly on the first page of certification records:

1. ICP
2. Metering installation certification date
3. Metering installation certification expiry date
4. Electrical connection date (if known and if the ATH is also the electrical connection agent)
5. Metering Category
6. Certification type (selected component, comparative, fully calibrated, alternative, low load, lower category).

Audit outcome

Compliant

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 4(1)(a) and (b) of Schedule 10.6	Require Wells to provide better clarity with regard to summary information in certification reports.	VAMS have already recommended Wells change their certification reports to put the key summary information up front for easier reading and interpretation. We will speak to them again.	Identified

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 Category 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

Not applicable

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 event detail report for the period 01/05/17 to 31/03/18 to confirm whether all responses were within 10 business days.

Audit commentary

AMS has automated the MEP switch acceptance process for SmartCo based on certain NSPs where they approve the installation of their metering. This means the switch acceptance timeframes are mostly immediate. All acceptances were provided within 10 business days.

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

Audit observation

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

Audit commentary

Analysis of the list file and PR255 file for all ICPs found some discrepancies. The table below shows these and includes a comparison with the previous audit results.

Issue	2018 Quantity	2017 Quantity	2016 Quantity	2014 Quantity	Comments
SMCO is recorded on the registry as the MEP but the metering records have not been populated on the registry	0	0	3	0	N/A
Night with no day	0	1	3	0	N/A
CN only on residential ICP	1	4	0	0	Resolved
Day and night not = 24	0	2	0	0	N/A
ICPs have "IN24". This is not a valid combination	16,205	17,695	10,828	295	
UN only with a control device	266	Not checked	Not checked	Not checked	
Incorrect certification duration	1	0	2	0	Resolved
Category 2 without CTs recorded in the registry	0	2	0	0	N/A
Incorrect metering category	9	0	0	0	Resolved
CTs on Category 1 installation	1	0	0	0	Resolved

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: Clause 7 (1), (2) and (3) of Schedule 11.4 From: 01-May-17 To: 31-Mar-18	Some registry records incomplete or incorrect. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 4		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate in this area. There are still a small number of areas where improvement can be made. Some of the discrepancies have a minor impact on participants, customers or settlement. The relevant ones in this regard are tariff related. The audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status

As mentioned in section 2.5, a fix was put in place in December 2016 to prevent any new IN24 register content codes going onto the registry, the table above shows the number has not increased since the last audit, in fact it has dropped slightly. AMS are working on a separate project to clean up this backlog and have provided the Authority documentation on this in the past, and would be happy to discuss this with the Authority going forward.	IN24 – December 2018	Identified
The auditor identified 266 sites where the tariff is UN only and the site has a control device. Investigation underway to identify cause and correct these.	UN with LCD – July 2018	
Preventative actions taken to ensure no further issues will occur	Completion date	
Continue to focus on IN24 project and correct the ICPs already in the field. Investigate the cause for the 266 sites where there is an LCD on a UN only site. Correct ICPs and add this check to our reconciliation process.	IN24 – December 2018 UN with LCD – July 2018	

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)
- no MEP switch response file within the time period.

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

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.3 With: Clause 6 of Schedule 11.4 From: 01-May-17 To: 31-Mar-18	Discrepancies not resolved within 5 business days. Potential impact: Medium Actual impact: Medium Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as moderate because they mitigate risk most of the time but some late updates still occur. 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
SmartCo reconcile against the registry regularly once or twice per week, this way the number of discrepancies remains manageable. This strategy does not align with the code, therefore, we will adjust our process to ensure one of the reconciliations is done on business day 13 each month.		July 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Change process to ensure a reconciliation is done on the 13 th business day of the month, and ensure corrections are completed within 5 business days.		July 2018	

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

Code reference

Clause 20 of Schedule 10.7

Code related audit information

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

- a) the metering installation is modified otherwise than under sub clause 19(3) or 19(6)*
- b) the metering installation is classed as outside the applicable accuracy tolerances set out in Table 1 of Schedule 10.1, defective or not fit for purpose under this Part or any audit*
- c) an ATH advises the metering equipment provider responsible for the metering installation of a reference standard or working standard used to certify the metering installation not being compliant with this Part at the time it was used to certify the metering installation, or the failure of a group of meters in the statistical sampling recertification process for the metering installation, or the failure of a certification test for the metering installation*
- d) the manufacturer of a metering component in the metering installation determines that the metering component does not comply with the standards to which the metering component was tested*
- e) an inspection of the metering installation, that is required under this Part, is not carried out in accordance with the relevant clauses of this Part*
- f) if the metering installation has been determined to be a lower category under clause 6 and the maximum current conveyed through the metering installation at any time exceeds the current rating of its metering installation category as set out in Table 1 of Schedule 10.1*
- g) the metering installation is certified under clause 14 and sufficient load is available for full certification testing and has not been retested under clause 14(4)*
- h) a control device in the metering installation certification is, and remains for a period of at least 10 business days, bridged out under clause 35(1)*
- i) the metering equipment provider responsible for the metering installation is advised by an ATH under clause 48(6)(b) that a seal has been removed or broken and the accuracy and continued integrity of the metering installation has been affected.*

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

Audit observation

I checked for examples of all 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

I checked for Category 2 installations due for inspection. Two ICPs were identified but the inspections were due prior to SmartCo taking on responsibility as the MEP.

ICP 0000021432NT37F was certified on 10/08/16 by Delta, but it is a three phase installation with only one phase metered, therefore the metering installation is not fit for purpose. The registry was not updated with the certification expiry date until 30/04/18.

The matter of "bypassed" metering was evaluated during the audit. There are seven ICPs where the meter was bridged during the audit period. Recertification occurred in all seven cases.

Four Category 2 metering installations failed their recertification tests. The registry was not updated within 10 business days. The average update timeframe was 137 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: 10-Oct-16</p> <p>To: 30-Apr-18</p>	<p>Certification cancelled, and registry not updated within 10 business days for ICP 0000021432NT37F where only one phase is metered and four Category 2 installations where certification tests failed.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Once</p> <p>Controls: Weak</p> <p>Breach risk rating: 3</p>	
Audit risk rating	Rationale for audit risk rating	
Low	<p>I have recorded the controls as weak in this area. Although only five examples were found, there were long delays and it appears there is room for improvement of controls.</p> <p>Whilst the inaccurate installations have an impact on settlement, the late updating of the registry only has a low impact because notification was provided to traders.</p>	
Actions taken to resolve the issue		Completion date
<p>ICP 0000021432NT37F: was incorrectly installed as a like-for-like replacement and should have been identified when the job was closed, however once we were made aware of it through this audit we cancelled the installation immediately (23/04/2018). This meter was previously an old x3 – this is recorded in our system, the registry and in the data returned to the retailer. Delta have confirmed this job should have been UTI'd by their tech 'no room on switchboard'. This job will require the customer to provide a larger switchboard, SmartCo are waiting for the retailer to advise them of when this will be available for recertification with a three-phase meter.</p> <p>Four Category 2 metering installations failed their recertification tests: All four have been correctly cancelled in the registry as per the install date (+1 day). All require CT replacement meaning plant shutdowns. SmartCo were late updating the registry, focus is to continue to get the relevant retailers to liaise with the customers to make the sites available to revisit.</p>		Ongoing
Preventative actions taken to ensure no further issues will occur		Completion date
<p>All Cat 2 jobs are managed by a dedicated person, SmartCo will review this process and see what further support they can provide to ensure all recertification's are completed in a timely manner and where the site fails, retailers are notified immediately.</p>		July 2018
		Identified

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

Audit commentary

At the time of my analysis, seven ICPs were showing as having expired certification. Two were due to incorrect certification expiry dates in the registry, leaving five with expired certification.

The table below shows the details.

ICP	Certification Type	Category	Expiry Date	Comments
0000012086NTFOA	F	1	01-05-17	Certification cancelled due to bridging
0000041468NTBBE	F	2	12-10-17	Failed re-certification tests
0000373470MP3FD	F	2	29-11-16	Failed re-certification tests
0000373607MP16D	F	2	26-11-16	Failed re-certification tests
0007392702AL835	F	2	19-11-16	Failed re-certification tests

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.1</p> <p>With: Clause 10.38 (a)</p> <p>From: 12-Aug-14</p> <p>To: 31-Aug-17</p>	<p>Certification expired for five ICPs.</p> <p>Potential impact: High</p> <p>Actual impact: Medium</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 4</p>		
Audit risk rating	Rationale for audit risk rating		
Medium	<p>I have recorded the controls as moderate in this area because certification has been expired for a number of months for some ICPs and for four of the five there are errors outside the allowable thresholds.</p> <p>The impact on settlement is recorded as moderate because four installations have inaccurate metering installations; therefore the audit risk rating is medium.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>SmartCo produce a metering installation expiry report every quarter looking 12 months ahead.</p> <p>As described in 6.4, four Category 2 metering installations failed their recertification tests: All four have been correctly cancelled in the registry as per the install date (+1 day). All require CT replacement which means plant shutdowns. SmartCo were late updating the registry, initial focus will be to get the relevant retailers to liaise with the customers to make the sites available to revisit.</p> <p>ICP 0000021432NT37F will require the customer to provide a larger switchboard, SmartCo are waiting for the retailer to advise them of when this will be available for recertification with a three-phase meter.</p>		Ongoing – waiting on retailers to make available	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>Currently all Cat 2 jobs are managed and followed through by dedicated person, SmartCo will review this process and see what further support they can provide to ensure all recertification's are completed in a timely manner and where the site fails, retailers are notified immediately.</p>		July 2018	

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 30 metering installations to confirm compliance. ATHs have shown that their processes include all tests and reports confirm tests are completed.

Audit commentary

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

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 10 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

Not applicable

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

Code reference

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

Code related audit information

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

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

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

If a meter is certified in this manner:

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

Audit observation

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

Audit commentary

The audit identified seven metering installations certified as a lower category. All installations have protection rated at 500A or less.

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
0003651119AL322	WELL	15/12/16	600/5	250A fuses

0005721110ALC3F	WELL	13/01/17	600/5	400A fuses
0005742234AL3DB	WELL	30/10/16	600/5	400A fuses

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

There were no examples of certification occurring under this clause. SmartCo has a clear instruction to ATHs that load must be added to perform certification testing.

Audit outcome

Compliant

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

Code reference

Clause 14(6) of Schedule 10.7

Code related audit information

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

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

Audit observation

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 5 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

SmartCo does not have any metering installations that are not remotely monitored.

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 reporting out of Salesforce showing all five bridged control device jobs during the audit period. Salesforce has an automated process to notify Traders once bridging has occurred.

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

Statistical sampling has not occurred during the audit period.

Audit outcome

Not applicable

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

Code reference

Clause 24(3) of Schedule 10.7

Code related audit information

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

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

Audit observation

I checked the certification records against the registry for 10 Category 2 metering installations and they were correct in all cases.

Audit commentary

I checked the certification records against the registry for 10 Category 2 metering installations and they were correct in all cases.

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 30 metering installations to confirm compliance.

Audit commentary

Meters were certified for all 30 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 10 metering installations to confirm compliance.

Audit commentary

I checked the records for 10 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 30 metering installations to confirm compliance.

Audit commentary

Data storage devices were certified for all 30 metering installations.

Audit outcome

Compliant

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

Code reference

Clause 7 (3) Schedule 10.3

Code related audit information

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

Audit observation

I checked the ATH register to confirm compliance.

Audit commentary

All relevant ATHs have appropriate approval.

Audit outcome

Compliant

7.19. Interim Certification (Clause 18 of Schedule 10.7)

Code reference

Clause 18 of Schedule 10.7

Code related audit information

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

Audit observation

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

Audit commentary

There are no metering installations with interim certification.

Audit outcome

Compliant

8. INSPECTION OF METERING INSTALLATIONS

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

Code reference

Clause 45 of Schedule 10.7

Code related audit information

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

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

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

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

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

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

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

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 46(1) of Schedule 10.7

Code related audit information

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Not applicable

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

Code reference

Clause 44(5) of Schedule 10.7

Code related audit information

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

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

Audit observation

SmartCo has not conducted any inspections.

Audit commentary

SmartCo has not conducted any inspections.

Audit outcome

Not applicable

8.4. Broken or removed seals (Clause 48(4) and (5) of Schedule 10.7)

Code reference

Clause 48(4) and (5) of Schedule 10.7

Code related audit information

If the MEP is advised of a broken or removed seal it must use reasonable endeavours to determine

- a) who removed or broke the seal*
- b) the reason for the removal or breakage*

and arrange for an ATH to carry out an inspection of the removal or breakage and determine any work required to remedy the removal or breakage.

The MEP must make the above arrangements within

- a) three business days, if the metering installation is category 3 or higher*
- b) 10 business days if the metering installation is category 2*
- c) 20 business days if the metering installation is category 1.*

Audit observation

AMS 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 but I examined the records for several installations that were considered faulty. These are discussed in **Section 9**.

Audit commentary

AMS 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 but I examined the records for several installations that were considered faulty. These are discussed in **Section 9**.

Audit outcome

Compliant

9. PROCESS FOR HANDLING FAULTY METERING INSTALLATIONS

9.1. Investigation of Faulty Metering Installations (Clause 10.43(4) and (5))

Code reference

Clause 10.43(4) and (5)

Code related audit information

If the MEP is advised or becomes aware that a metering installation may be inaccurate, defective, or not fit for purpose, it must investigate and report on the situation to all affected participants as soon as reasonably practicable after becoming aware of the information, but no later than;

- a) 20 business days for Category 1,
- b) 10 business days for Category 2 and
- c) 5 business days for Category 3 or higher.

Audit observation

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

I checked a further four Category 2 ICPs where certification tests had failed.

Audit commentary

All seven Category 1 metering installations were correctly recertified once the bridge was removed, however it appears traders were not notified for six of the seven. Salesforce has an automated notification function, but it appears this has not always been successful.

Four Category 2 metering installations failed their recertification tests. Traders were notified within 10 business days for three of the four. These installations have had their certification cancelled as required but recertification has not yet occurred and three of the four failed testing in November 2016.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 9.1 With: Clause 10.43(4) and (5) From: 01-May-17 To: 31-Mar-18	Faulty meters not reported to traders within 20 business days. Potential impact: Medium Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating
Low	I have recorded the controls as moderate in this area because it appears the automated notification system is not working as expected from Salesforce and one Category 2 installation was notified late. The impact of the incorrect recording of the failed metering installations is moderate to high, but the impact of the late notification is rated as minor.
Actions taken to resolve the issue	
Completion date	Remedial action status

<p>'Salesforce has an automated notification function, but it appears this has not always been successful'.</p> <p>Investigation underway to identify why this checkbox is not always 'ticked', and where it isn't ticked, does this mean no notification was sent to the retailer in all cases. This only effects some of the larger retailers who have a B-to-B service with AMS.</p> <p>For all fault jobs that do not use this automated process, the retailers are manually notified within the required timeframes.</p>	June 2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
<p>Investigate Salesforce issue and fix to prevent further non-communications.</p> <p>As described in 6.4, four Category 2 metering installations failed their recertification tests: All four have been correctly cancelled in the registry as per the install date (+1 day). All require CT replacement which means plant shutdowns. SmartCo are chasing the relevant retailers to liaise with the customers to make the sites available to revisit.</p>	<p>June 2018</p> <p>July 2018</p>	

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.

I checked a further four Category 2 ICPs where certification tests had failed.

Audit commentary

SmartCo does not have statements of situation for the 11 metering installations mentioned above.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 9.2 With: Clause 10.44 From: 01-Dec-16 To: 31-Aug-17	Statements of situation not arranged Potential impact: Medium 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 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
SmartCo do provide work order completion documentation to the retailers following fault jobs, the work orders contain what the fault was and what was done to remedy (usually replacement of faulty component and/or recertify). In the instances above SmartCo did not provide a statement of situation and therefore failed to meet its obligations under the code. We will adjust our processes to ensure a statement of situation is provided in these instances.		July 2018	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Review the process around reporting to retailers and providing a statement of situation when a metering installation is faulty and potentially inaccurate.		July 2018	

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

Code reference

Clause10.46(2)

Code related audit information

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

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

Audit observation

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

I checked a further four Category 2 ICPs where certification tests had failed.

Audit commentary

As mentioned above, statements of situation were not sought, or prepared as required by the Code, therefore they could not be provided to other parties. This clause states the statements of situations must be sent within three days of receiving them but because they were not received SmartCo cannot be non-compliant with this clause.

Audit outcome

Compliant

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

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

Code reference

Clause 1 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 2 of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

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

Code related audit information

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

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

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

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 3(5) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

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

Audit outcome

Compliant

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

Code reference

Clause 8 of Schedule 10.6

Code related audit information

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

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

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

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

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

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

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

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

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

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

in a form that is accessible to authorised personnel.

Audit observation

AMS 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 synchronization reports
- Sum-check failures.

Audit commentary

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

SmartCo provided reporting of ICPs where interrogation did not occur within the maximum interrogation cycle of 90 days. There are 737 Active ICPs in the report.

The Authority published a memo in July 2017 indicating their expectation that MEPs will manually read metering installations where the AMI flag is set to Y and where the automated interrogation fails. The expectation for investigation and updating the registry is as follows:

- Where meters are interrogated daily, MEPs will trigger an investigation of repeated failures to communicate after no more than one week with no communication.
- Where meters are not interrogated daily, MEPs will trigger an investigation of repeated failures to communicate after no more than three consecutive failed attempts, but within 31 days of the first communication failure.
- Investigations should begin immediately and conclude within three business days even if a site visit is required. If site access is not available and the meter is still not communicating, the meter should be designated as AMI="N" until a site visit can be arranged.
- If communications cannot be restored and the services access interface will not be the MEP's back office system, the registry should be updated as soon as practicable after the investigation is completed, but within three business days.

The Authority intends to propose a Code change to clarify the timeframes for completing an investigation and updating the registry and will be using the above expectations as the basis for consultation on the proposed Code change.

SmartCo has not met the requirements of the memo or the Code requirement to interrogate once within the maximum interrogation cycle for 737 ICPs.

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) of schedule 10.6 From: 01-May-17 To: 31-Mar-18	737 metering installations not read within the maximum interrogation cycle. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	Rationale for audit risk rating
Low	I have recorded the controls as moderate in this area because there is room to tighten the timeframes for resolution of these matters. The impact on settlement is recorded minor because of the low number involved; therefore the audit risk rating for most retailers is low. For AMI only retailers, the impact would be major and the audit risk rating high.

Actions taken to resolve the issue	Completion date	Remedial action status
SmartCo are improving their comms fault process to ensure metering installations that are consistently not communicating are set to non-AMI (with agreement from the retailers) and will be manually read within the maximum interrogation cycle. The 737 metering installations noted above will be reviewed in conjunction with the retailer and either assigned non-AMI, or a further attempt to repair the comms may be requested.	August 2018	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Review SmartCos comms fault process to ensure any metering installations that have not communicated for a set length of time are automatically logged in the process and addressed as required.	August 2018	

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 provided to reconciliation participants via SFTP. 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

AMS'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.

For L+G meters, HHR data and midnight reads are supplied in NZST and adjustment is conducted by traders. Ad-hoc register reads can be provided in NZDT.

For EDM1 meters, HHR data is supplied in NZST and midnight reads are supplied in NZDT.

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

The MEP must record in the interrogation and processing system logs the time, the date, and the extent of any change in the internal clock setting in the metering installation. The interrogation log contains this information.

The MEP must ensure that a data storage device in a metering installation does not exceed the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6. The MEP must compare the time on the internal clock of the data storage device with the time on the interrogation and processing system clock, calculate and correct (if required by this provision) any time error, and advise the affected reconciliation participant. The relevant part of this table is shown below.

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

Clock synchronisation is conducted every four hours as a distinct process, separate to interrogation. Any errors greater than ± 10 seconds but less than 20 minutes are automatically corrected and recorded. Errors greater than 20 minutes are recorded but not automatically corrected. The manual corrections are conducted by the software host, Silver Spring Networks, who then advise AMS that the changes have been made. These settings achieve compliance with the Code.

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

Audit outcome

Compliant

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

AMS downloads the event log as required by this clause. AMS provided a list of all 62 events, which are downloaded during interrogation. Relevant events, including tampering, are now being placed on the SFTP server for each retailer to uplift and action. I checked that files were present for all of SmartCo's customers and I confirm compliance. Summary reporting is also provided.

Audit outcome

Compliant

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

Code reference

Clause 8(9) of Schedule 10.6

Code related audit information

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

Audit observation

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

Audit commentary

AMS 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). Reporting is now available with regard to failures and reasons.

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

The other issue is with Landis + Gyr U3400 meters where a power outage can cause the clock to move to a random future time. This results in zeros in the interval data and a sum-check failure. The issue is remedied once real time catches up to the future time stamp. During the period of failure, the data is

not provided to Retailers and they need to estimate. It's believed this may be a firmware issue and it is being investigated. This issue has affected approx. 250 meters.

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

Not applicable

CONCLUSION

The audit identified nine non-compliances and one recommendation is made.

Registry update timeliness continues to have a high level of compliance, with most of the late updates caused by late nomination by retailers. Whilst most registry fields are correct, there are a large number of ICPs with “IN24” recorded, which can lead to incorrect billing by retailers.

The previous audit report recorded that uncertainty calculations were not being conducted in accordance with the Code by ATHs. This matter was resolved in late 2017, but this audit is required to consider compliance over the entire audit period and SmartCo is therefore non-compliant in relation to those ICPs certified without uncertainty calculations being conducted.

Five metering installations do not have current certification. One was cancelled due to the meter being bridged. Four Category 2 ICPs failed the recertification tests and have not yet been recertified.

There are currently 737 installations not read during the 90 day maximum interrogation cycle.

PARTICIPANT RESPONSE

This audit has identified nine non-compliances, which SmartCo will address immediately, and only a handful of the 113,294 ICPs are currently not certified. We think our overall compliance to the code is very good and we continue to make improvements to our systems and processes, whilst increasing our metering installations (40% during this audit period).

SmartCo will continue to automate as many processes (where possible) to eliminate the data entry errors still creeping in.

SmartCo welcomes feedback and suggestions from the Authority and the auditor on how we can improve our compliance while offering a competitive service to our customers.