

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

For

**ARC INNOVATIONS**

Prepared by: Ewa Glowacka

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Audit report due date: 19-Mar-19

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## EXECUTIVE SUMMARY

This participant audit was performed at the request of Arc Innovations Ltd, a subsidiary of Vector AMS Ltd, to encompass the Authority's request for an audit, as required by clause 10.20, of Part 10, of the Electricity Industry Participation Code. The relevant clauses were audited as required by the Guidelines for Metering Equipment Provider v.2.0 issued by the Electricity Authority.

The number of ICPs for which ARC Innovations provide MEP services is decreasing steadily. Since the last audit it has decreased by 6,468 as of 18<sup>th</sup> February 2019.

Vector AMS Ltd does not accept nominations for it is ARCS/ARCM metering equipment, for new connections, they are passed to NGCM to install EDM1 meters. Any installations where faulty equipment is identified are evaluated to decide if it is passed to NGCM or is replaced by Arc Innovations equipment to retain the integrity of the RF Mesh.

This audit found 9 non-compliances, makes no recommendations and raises no issues.

The main issues identified during this audit are:

- Not comparing the registry records and the company recorded and correcting identified errors on 13<sup>th</sup> day of each month
- Not replacing faulty equipment at installation where the data storage device exceeds the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6. Metering installation not fit for purpose.
- Improved timelines of upload meter data to the registry for ARCS. Only 0.43% were outside of 10BD

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

- Decreased number of interim certified installations
- Decreased number of metering installations category 2 with expired certification

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. Table 1 of the Guidelines for Reconciliation Participant audit provides some guidance on this matter. The Future Risk Rating score is 21 which results in an indicative audit frequency of 6 months. We recommend 12 months because on "severity" of non-compliances. Many of them will be addressed as soon as Arc Innovations equipment is replaced by AMS meters.

We thank Arc Innovation's staff for their full and complete cooperation in this audit.

## AUDIT SUMMARY

### NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Participants to Provide Accurate Information	2.5	11.2	Information updated in the registry later than 10BD and certification of metering installation not cancelled in the registry for metering installations not fit for purpose	Moderate	Low	2	Identified
Change to registry records	4.10	3 of Schedule 11.4	Information updated in the registry later than 10BD	Moderate	Low	2	Identified
Provision of information to the registry	6.2	7(1) of Schedule 11.4	Information for 8 ICPs is missing; some information for metering installations on Scanpower's network is incorrect (control devices for 1,238 ICPs)	Moderate	Low	2	Identified
Correction errors in registry	6.3	6 of Schedule 11.4	There is no process to comply with this clause	None	Low	5	Identified
Cancellation of Certification	6.4	20(1)(b) of Schedule 10.7	Certification has not been cancelled for a small number of metering installations	Weak	Low	3	Identified
Certification and maintenance	7.1	10.38(a)	Certification expired for 2,198 metering installations	Moderate	Low	2	Identified
Interim certification	7.19	18 of Schedule 10.7	2,022 ICPs with expired interim certification	Strong	Medium	2	Identified
Category 2 to 5 inspections	8.2	46(1) of Schedule 10.7	8 metering installations, category 2, were not inspected	Strong	Low	1	Identified
Time Errors for Metering Installations	10.7	8(4) of Schedule 10.6	A small number of data storage devices exceeds the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6	Moderate	Low	2	Identified

Future Risk Rating	21
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	12months	6 months	3 months

## RECOMMENDATIONS

Subject	Section	Description	Recommendation
			Nil

## ISSUES

Subject	Section	Description	Issue
			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

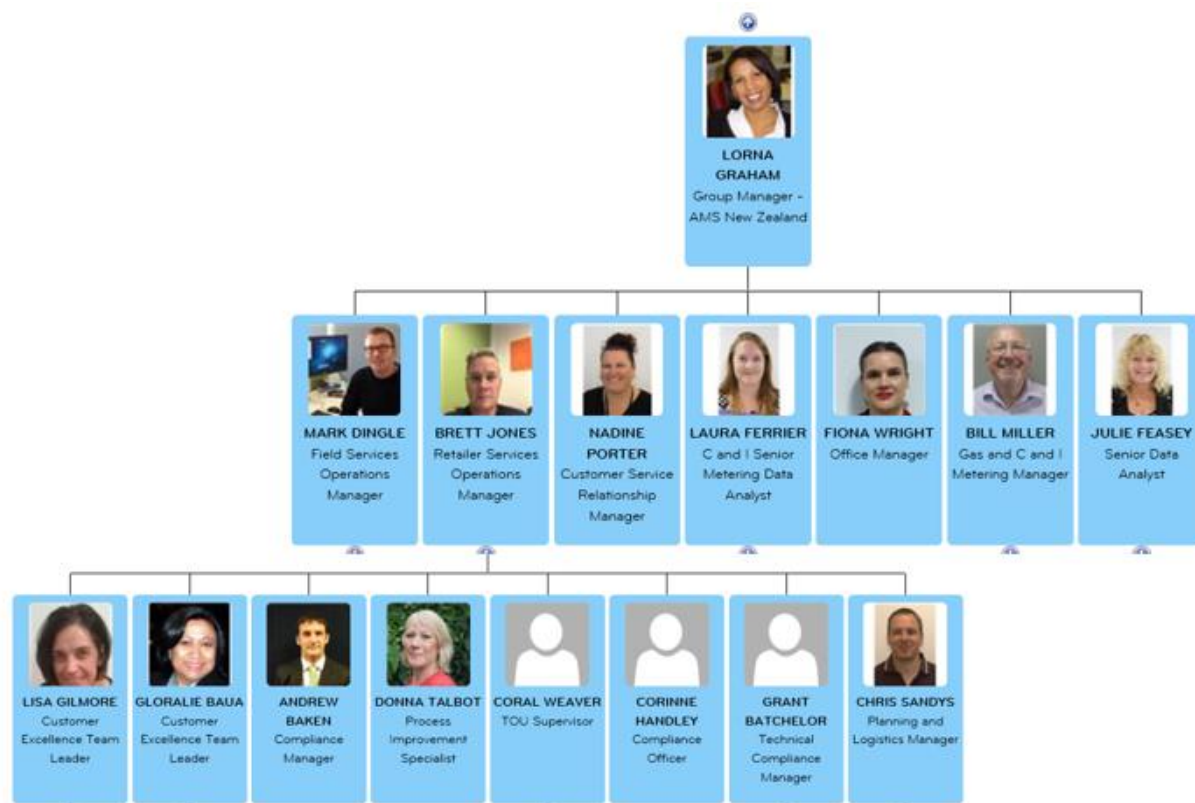
We have checked the Authority website to check if any exemptions were granted to Arc Innovations.

#### Audit commentary

Arc Innovations was granted the exemption #168 on 20th August 2013. The company is exempt from compliance with item 16, of Table 1 of Schedule 11.4, in respect to providing metering component serial numbers for its first generation advanced metering infrastructure (AMI) metering installations. The exemption has been extended up to 31 December 2025.

Arc Innovations was also granted exemption #278. The company was exempt from complying with the obligation in clause 45(2)(c) and 45(2)(d) of Schedule 10.7 of the Electricity Industry Participation Code 2010 ("Code") to identify and select the minimum number of installations set out in Table 8 of Schedule 10.1 of the Code. It expired on 1 January 2019.

### 1.2. Structure of organisation



### 1.3. Persons involved in this audit



Name	Title	Company
Andrew Baken	Compliance Manager	Vector AMS
Nicholas Brown	Senior Data Analyst	Vector AMS
Meredith Hart	Customer Excellence Representative	Vector AMS
Gloralie Baua	Team leader for Customer Excellence	Vector AMS
Kevin Burgess	Senior Customer Excellence Representative	Vector AMS
Viky Nitke	Senior Customer Excellence Representative	Vector AMS
Ewa Glowacka	Electricity Authority Approved Auditor	TEG & Associates

#### 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 fulfilment of the participant's 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

Arc Innovations does not use agents for the functions covered by this audit. All functions are conducted by Arc Innovation's employees.

##### Audit commentary

Arc Innovations does not use agents for any functions covered by this audit

#### 1.5. Hardware and software

##### Software

- Jade Proprietary Arc Innovations back office software AMI 2.0
- Job Management server (to which the PDA's communicate) is Quicknet. Microsoft Windows Mobile v4.21 and .NET Compact Framework v1.0.3316.0 (PDA platform which runs Arc Innovations Field Management System and eSmart installer software, both written using Microsoft Visual Studio). MobiControl - device agents and server platform for remote management of HHP Dolphin PDA's.
- Vanilla job manager is the tool used to record jobs completed on vanilla sites and also stores vanilla asset details.

##### Hardware

- IBM server
- Meters are METEC, GE and Enermet, and Iskra brands.
- E-Smart controllers are from Dynamic Controls.

- HandHeld readers are Dolphin 9500 series PDA Breaches or Breach Allegations

#### 1.6. ICP data

Arc Innovations provided a list of all ICP's for **ARCS** as of the 18/02/19. The total number of ICPs in the registry was 111,854 (active and inactive excluding marked for decommissioning)

Metering Category	Number of ICPs (18/02/19)	Number of ICPs (07/05/18)	Number of ICPs (24/7/17)	Number of ICPs (2016)
1	110,528	113,087	115,490	116,669
2	1,321	1,965	2,198	2,463
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
9	5	15	19	19

Arc Innovations provided a list of all ICP's for **ARCM** as of the 18/02/19.. The total number of ICPs in registry was 3,222 (active and inactive excluding marked for decommissioning)

Metering Category	Number of ICPs (18/02/19)	Number of ICPs (07/05/18)	Number of ICPs (24/07/17)	Number of ICPs (2016)
1	3,211	3,579	4,125	5,162
2	8	15	34	77
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
9	3	1	2	1

#### 1.7. Authorisation received

A letter of authorisation was received from Arc Innovations for the purposes of gathering information for this audit.

#### 1.8. Scope of audit

This participant audit was performed at the request of Arc Innovations to encompass the Authority's request for an audit as required by clause 10.20, of Part 10, of the Electricity Industry Participation Code.

The audit was carried out on the Arc Innovations premises at 15 Print Place, in Christchurch, on the 28 February & 1 March 2019.

The audit covered the following functions:

- Process for changing a MEP
- Installation and modification of metering installations
- Metering records
- Maintenance of registry information

- Certification of metering installations
- Inspection of metering installations
- Process of handling faulty metering installations
- Access to and provision of raw meter data and metering installations

### 1.9. Summary of previous audit

The last audit was conducted in June'18 by Ewa Glowacka of TEG & Associates and identified the following non-compliances:

Subject	Section	Clause	Non-Compliance	Comment
Change to registry records	4.10	3 of Schedule 11.4	Information updated in the registry later than 10BD	Still exists
MEP notification to registry notification	6.1	1(1) of Schedule 11.4	MEP nomination acceptance for one ICP was backdated to 17/08/13 as a part of clean-up process	Cleared
Provision of information to the registry	6.2	7(1) of Schedule 11.4	Information for 8 ICPs is missing; some information for metering installations on Scanpower's network is incorrect (controls devices for 1,224 ICPs)	Still exists
Correction errors in registry	6.3	6 of Schedule 11.4	There is not a process to comply fully with this clause	Still exists
Certification and maintenance	7.1	10.38(a)	Certification expired for 197 metering installation (168 cat 2 and 29 cat 1)	Still exists
Interim certification	7.19	18 of Schedule 10.7	2,202 ICPs with expired interim certification	Still exists
Category 2 to 5 inspections	8.2	46(1) of Schedule 10.7	171 metering installations category 2 were not inspected.	Still exists

## 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

Arc Innovations provides the MEP services for installations where two types of meters are installed, smart meters or legacy meters.

#### Audit commentary

Smart meters are read remotely from Arc Innovation's back-office using RF Mesh, satellite network or mobile. Arc Innovations is responsible for maintaining the service of the RF Mesh access interface. Satellite and mobile networks are maintained by other parties. Legacy meters (3,211 ICPs) are read by metering companies contracted out by traders.

#### 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

Arc Innovation has a procedure in place for resolving any possible disputes.

#### Audit commentary

According to the process, In the first instance the matter is dealt with by the Customer Excellence Team. Once an issue is identified it is passed to a team which will address the issue.

Utilities Disputes Limited is an independent avenue, which can be used to resolve customers' complaints. Arc Innovations confirmed that all disputes were resolved using phones and emails.

#### 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

The LIS file dated 18/2/19 was provided by Arc Innovations to assist in the assessment of compliance.

#### Audit commentary

According to the LIS files Arc Innovations uses two MEP identifiers, ARCS for smart meters and ARCM for legacy meters.

#### 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

Arc Innovations uses RF Mesh, GSM, and satellite to communicate with their equipment.

#### Audit commentary

Arc Innovations uses three different networks to communicate (two ways) with their meters. Arc Innovations takes full responsibility to assure that their communication equipment complies with the compatibility and connection requirements of the network.

As already mentioned in the last report, Arc Innovations meters are slowly being replaced by EDM1 meters. The replacement program is managed very carefully, to retain the integrity of the RF Mesh at all times to ensure continued successful reads. Any time an installation is identified as faulty, or needs to be recertified, the company evaluates the ICP to check to see if it is located in a so called "critical area".

#### 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**

During the audit we reviewed activities conducted by Arc Innovations to determine whether all practicable steps had been taken to provide accurate information.

#### **Audit commentary**

Arc Innovations takes many steps to ensure the accuracy and completeness of information provided to participants and the registry, but the company does not comply with clause 6 of Schedule 11.4 (**section 6.3**) to compare information in their system with the registry. Instead performing a full comparison of two data sets, Arc Innovation uses the Registry Data Analysis database provided by the Authority. It is a useful tool, but it looks more for anomalies of data in the registry when LIS and PR-255 are compared. In **section 4.10** it is shown that some entries are backdated.

Registry records not updated (cancellation of certification) for metering installations not fit for purpose as per **section 6.4**.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 2.5</p> <p>With: 11.2</p> <p>From: 01-May-18</p> <p>To: 15-Feb-19</p>	<p>Information updated in the registry later than 10BD and certification of metering installation not cancelled in the registry for metering installations not fit for purpose</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are rated as moderate because there are some improvements that can be made to them to achieve compliance. The impact on settlement is potentially minor, therefore audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p><b>section 4.10</b> The code requires an MEP to update the registry within 10 business days of any changes to metering records. What the auditor has identified is that Arc's corrections to data in the registry are often backdated. Backdating gives the perception that Arc has been late in updating the registry; what it doesn't take into account is the time from when Arc became aware of the error until it is corrected.</p> <p>If the Authority could provide Arc some guidance on how to comply with this clause while still being able to backdate corrections where needed or requested by the retailer, this would be appreciated.</p> <p><b>section 6.3)</b> Arc's system is automatically synchronized with the registry so we are confident that both systems are in alignment. However, a post audit manual reconciliation found a handful of discrepancies (0.001%) where our systems had incomplete data, but the registry was correct. We have corrected these and will continue to run this report monthly as required by the code.</p> <p><b>section 6.4.</b> Arc accepts there are a few ICPs identified in the audit that do not meet the maximum error threshold. Our process did not ensure the meters at these ICPs were manually interrogated and sent for replacement as necessary. In such cases, certification will be cancelled, and the meters will be replaced.</p>		<p>Sections 6.3 &amp; 6.4, June 2019</p> <p>Section 4.10, Ongoing</p>	Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
<p>We must continue to correct data on the registry once an error is identified (clauses 10.6 &amp; 11.2). This will sometimes involve backdating data, causing us to become non-compliant with the code.</p> <p>The majority of our corrections are required for ARCM meters. We expect the need for corrections to diminish as the number of these meters decline significantly.</p> <p>A reconciliation report will be created to compare systems and will be run monthly.</p> <p>Time sync automated process will be extended to include the tech team, to ensure non-communicating sites are replaced.</p>	Ongoing	



### 3. PROCESS FOR A CHANGE OF MEP

#### 3.1. Change of metering equipment provider (Clause 10.22)

##### Code reference

*Clause 10.22*

##### Code related audit information

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

*The 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

Arc Innovations stated they did not receive any requests from a losing MEP for a proportion of costs attributable to the certification and calibration test of the metering installation or its components.

##### Audit commentary

Arc Innovations has a full understanding of their obligation that, until another MEP accepts responsibility for an installation, they must meet their obligations.

##### 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 manager of the registry metering records for the metering installation within 15 days of becoming the MEP for the metering installation.*

##### Audit observation

The Event Listing File (EDA) for the period 01/05/18 to 15/02/19 was analysed to assess compliance.

##### Audit commentary

ARCM accepted four MEP nominations for existing installations. Seven nominations were rejected due to installations being located in areas where ARC Innovations does not provide MEP services. Metering data was uploaded within 15 business days

We identified 22 accepted MEP nominations for ARCS. 264 nominations were rejected. Out of 22 accepted nominations, four nominations were accepted even though NGCM meters were already installed. This was due to incorrect nominations by traders. Arc Innovations is still considering disabling automated acceptance of MEP nominations for ARCS.

242 nominations were rejected due to installations being located in areas where ARC Innovations does not provide MEP service or NGCM meters were already installed.

Metering data was uploaded for 17 ICPs within 15 business days of becoming the MEP for the metering installation.

#### Audit outcome

Compliant

### 3.3. Provision of metering records to gaining MEP (Clause 5 of Schedule 10.6ing located outside of Arc )

#### 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

Compliance with this clause was discussed during this audit.

#### Audit commentary

Arc Innovations stated that, since the last audit, Nova asked for a configuration of ripple receivers as they are planning to replace Arc Innovations meters with their own for all their customers.

#### Audit outcome

Compliant

### 3.4. Termination of MEP responsibility (Clause 10.23)

#### Code reference

*Clause 10.23*

#### Code related audit information

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

*The MEP is responsible if it:*

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

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

*An MEPs obligations terminate only when;*

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

#### **Audit observation**

A number of Arc Innovations meters were replaced by AMS. It is part of an agreed business process.

#### **Audit commentary**

Arc Innovations keeps all records of all installations on which they performed any work since the company was established, indefinitely, no records have been destroyed.

#### **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

Arc Innovations uses the Installations and Maintenance Design Drawings Manual containing metering installation diagrams. The manual was approved by Delta Utilities Test House.

The process implemented by Arc Innovations is that if an installation requires any modification to the standard design, a new drawing will be created and approved by an ATH.

#### Audit commentary

20 EIPC Certificates/Electrical Safety Certificates were sighted and we confirm that the reference drawing number was noted on each of them. All work on installations is contracted out to Wells, VircomEMS, Indeserve, and Delta.

Any meter replacement for Arc Innovations installations were like for like.

#### 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

Arc Innovations uses Wells and VircomEMS as the ATHs.

#### Audit commentary

Both Test Houses certification is appropriate for the work which is required to be undertaken as per the Electricity Authority's website information.

## 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

Arc Innovations works in conjunction with the Wells ATH. All installations for which ARCM/ARCS provide the MEP functionality are category 1 and 2. All installations are wired in accordance with the wiring diagrams recorded in "Installations and Maintenance Design Drawings Manual".

#### Audit commentary

Arc Innovations uses the selective component metering method to certify metering installations of category 1 and 2. The accuracy tolerance of category 1 installations is determined by a meter, the only metering component installed. It means that if the installed meter is class 2, an installation will meet the accuracy tolerance as specified in Table 1 of Schedule 10.1. Metering installation category 2 requires a meter class 2 and CTS class 1. Arc Innovations installs only meters class 1 and CTs class 0.5. The requirements of Table 1 of Schedule 10.1 are met.

Since the last audit Arc Innovations re-certified category 1 metering installations only.

## Audit outcome

Compliant

### 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

During the audit we asked Arc Innovations whether subtraction was used for any metering installations for which they provide MEP services.

#### Audit commentary

Arc Innovations has stated that no subtraction was used for any metering installations for which they provide MEP services.

#### **Audit outcome**

Compliant

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

##### **Code reference**

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

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

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

##### **Audit observation**

We reviewed the LIS file dated 18/02/19. Arc Innovations does not have any installations of category 3 or higher, as per the LIS file.

##### **Audit commentary**

Arc Innovations does not have any installations of category 3 or higher.

##### **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**

Arc Innovations does not provide the MEP services for such installations.

##### **Audit commentary**

This clause is not applicable. Compliance was not assessed.

##### **Audit outcome**

Not applicable

#### **4.7. Responsibility for metering Installations (Clause 10.26(10))**

##### **Code reference**

*Clause 10.26(10)*

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

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

**Audit observation**

Arc Innovations does not provide the MEP services for such installations.

**Audit commentary**

This clause is not applicable. Compliance was not assessed.

**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**

The standard designs for installation metering category 1 and 2 are used, as per the Installations and Maintenance Design Drawings Manual. The process is that any installations which could have unusual physical and/or electrical characteristics will be discussed with Wells ATH.

**Audit commentary**

Most of the work done by Arc Innovations is mainly the re-certification of existing installations or replacing faulty equipment for installations in the so-called “critical areas” (RF mesh integrity). It is always a replacement of like for like. The company stated that no installations with unusual characteristics were recorded since the last audit.

**Audit outcome**

Compliant

#### 4.9. Installation & modification of metering installations (Clauses 10.34(2), (2A) and (3))

**Code reference**

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

**Code related audit information**

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

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

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

#### **Audit observation**

Arc Innovations works closely with network companies where their meters are installed, to ensure their requirements are met. Copies of design reports were provided to all distributor traders in order to achieve compliance with this requirement.

#### **Audit commentary**

The Design Reporting Tools are the main tools used by the company to program controllers. If any meters must be replaced, it is like for like. The number of installations where ARCS meters are installed is decreasing steadily.

#### **Audit outcome**

Compliant

### **4.10. Changes to registry records (Clause 3 of Schedule 11.4)**

#### **Code reference**

*Clause 3 of Schedule 11.4*

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

*The MEP must advise the registry manager of the registry metering records or any change to the registry metering records for 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**

We analysed the Event Listing File (EDA) for the period 01/05/18 to 15/02/19, for both ARCM and ARCS, to assess compliance.

#### **Audit commentary**

##### **ARCS**

The number of metering files sent to the registry for the time covered by this audit was 3,140. Analysis of the EDA file lead to the identification of around 20 uploads (0.63%) to the registry, which were outside of 10 BD. It is much better result than last year.

Arc Innovations commented again that in correcting the records, they are technically in breach either way – under 11.4 (3) or 11.2 of part 11. They would prefer to have a way to achieve the accurate outcome without incurring breaches.

##### **ARCM**

198 metering files were sent to the registry in the period covered by this audit, 81 of them were relating to removal of Arc Innovations equipment. Majority of them are backdated to 2009.

168 updates (84.8%) were uploaded to the registry later than 10 BDs, which constitutes non-compliance. 28 these updates following finding from the previous audit.

Some of these updates go back to 2005. Arc Innovations analysed these entries and identified that there is a bug in the VJM database. The database uploads the incorrect date of meter removal. At the time of the previous audit, the company was working on fixing it, but it looks that it is still the problem.



## Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 4.10 With: 3 of Schedule 11.4  From: 01-May-18 To: 15-Feb-19	Information updated in the registry later than 10BD  Potential impact: Low  Actual impact: Low  Audit history: Multiple times  Controls: Moderate  Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate because there are some improvements that can be made to them to achieve compliance. The impact on settlement is potentially minor, therefore audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
As stated above in section 2.5, the code requires an MEP to update the registry within 10 business days of any changes to metering records. Arc corrections to data in the registry that are backdated longer than 10 business days are non-compliant with the code. We expect the need for corrections to reduce dramatically as ARCM metering is actively displaced.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We must continue to correct data on the registry once an error is identified (clauses 10.6 & 11.2) This will involve backdating data, causing us to become non-compliant with the code.  Going forward, Arc will cease doing removals as this is not required in the code. Most of our corrections relate to ARCM meters. We expect the need for corrections to diminish as the number of ARCM meters decline significantly.		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

Arc Innovations has G1 meters and a controller and G2 meters, in which a meter and a controller are integrated.

#### Audit commentary

Each installation is tested by a technician and the results are recorded on the EIPC Certificate/Electrical Safety Certificate. If the installation does not pass the tests, any faulty components are replaced.

The company has vast experience of each component of an installation and how to integrate them. There are less and less installations where Arc Innovations equipment is installed. EDM1 meters are commonly installed for new and faulty installations in non-critical areas.

#### Audit outcome

Compliant

### 4.12. Decommissioning of an 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 3 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

The process for decommissioning an ICP was examined.

#### Audit commentary

Arc Innovations takes responsibility for the final reads for ICPs that are to be decommissioned. The process of decommissioning consists of the following steps:

- (a) Request from a trader to remove metering equipment from an installation being decommissioned, for example; a building being removed.
- (b) Job is created
- (c) Contractor goes on site, final read recorded, equipment removed
- (d) A trader is notified

Arc Innovations provided 20 examples of decommissioned metering installations to help assess compliance. Metering information is not removed from the registry as it is not mandatory.

#### 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

A measuring transformer (CTs) is used only for metering purposes. For category 2 metering installations Arc Innovations uses CTs class 0.5. In a case where there is a need to replace CTs, they are replaced, and the installation is re-certified.

##### Audit commentary

Arc Innovations stated that it is not the company's policy to add or change a burden or compensation factor of a measuring transformer. If such a situation was to arise a new set of certified CTS will be installed. Since the last audit no category 2 metering installations were re-certified. If any installation is due for re-certification a trader is asked to nominate NGCM as the MEP.

##### 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

We checked if there were any examples of instances described in this clause.

#### Audit commentary

The company policy is that no changes or upgrades are made to the software, ROM or firmware of a data storage software device (controller) when they are part of a metering installation. The only change to a controller's software applies to communication protocol, which does not have any influence on accuracy of measurement.

#### Audit outcome

Compliant

### 4.15. Temporary electrical connection (Clauses 10.29A)

#### Code reference

Clause 10.29A

#### Code related audit information

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

#### Audit observation

Arc Innovations does not provide the MEP services to such connections.

#### Audit commentary

This clause is not applicable. Compliance was not assessed.

#### Audit outcome

Not applicable

### 4.16. Temporary electrical connection (Clause 10.30A)

#### Code reference

Clause 10.30A

#### Code related audit information

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

#### Audit observation

Arc Innovations does not provide the MEP services to such connections.

#### Audit commentary

This clause is not applicable. Compliance was not assessed.

#### Audit outcome

Not applicable

#### 4.17. Temporary electrical connection (Clause 10.31A)

##### Code reference

*Clause 10.31A*

##### Code related audit information

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

##### Audit observation

We reviewed the LIS file.

##### Audit commentary

Arc Innovations does not accept MEP nominations for new connections.

##### Audit outcome

Compliant

## 5. METERING RECORDS

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

#### Code reference

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

#### Code related audit information

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

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

#### Audit observation

**In bold letters we specify where the records are kept.**

- The certification expiry date of each metering component in the metering installation – **PSP dbase**
- All equipment used in relation to the metering installation, including serial numbers and details of the equipment's manufacturer - **PSP dbase and AReg (asset database) and relevant database of its owners, both dbases are kept in sync**
- The manufacturer's or (if different) most recent test certificate for each metering component in the metering installation – **Quality Management System**
- The metering installation category and any metering installations certified at a lower category – **Quality Management System**
- All certification reports and calibration reports showing dates tested, tests carried out, and test results for all metering components in the metering installation – **Quality Management System, Share Point (document management system) and relevant database of its owners (it is a very small number, have copies from ATH), PSP database**
- The contractor who installed each metering component in the metering installation - **PSP dbase**
- The certification sticker, or equivalent details, for each metering component that is certified under Schedule 10.8 in the metering installation - **PSP dbase**
- Any variations or use of the 'alternate certification' process - **no such process used**
- Seal identification information – **Quality Management System, each technician uses unique number**
- Any applicable compensation factors - **PSP dbase**

- The owner of each metering component within the metering installation - **PSP dbase**
- Any applications installed within each metering component – **no special applications**
- The signed inspection report confirming that the metering installation complies with the requirements of Part 10 – **Field Services AMS**

#### Audit commentary

The records which are held in both PSP and AReg are synchronised immediately upon any changes made to keep it in sync. During the audit we sampled 20 EIPC Certificates/Electrical Safety Certificates for metering installations of category 1. Arc Innovations provided a copy of Revenue Meters Certification of Calibration. Revenue Meter Certificates of Calibration were issued by Delta Utility Services (refurbished meters).

Analysis of the PR-255 showed that for a small number ICPs Arc Innovations does not own the CTs. For 2 ICPs CTs are owned by WATA, 1 ICP by DELT, and 1 ICP MERI. These CTs will be replaced by AMS CTs as sites are re-certified and NGCM is nominated as the new MEP.

#### Audit outcome

Compliant

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

#### Code reference

*Clause 4(2) of Schedule 10.6*

#### Code related audit information

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

#### Audit observation

Arc Innovations does carry out regular annual inspections for category 1 metering installations. The statistical sampling method is used. It is described in **section 8.1**.

No inspections are conducted for installations of category 2, these installations are re-certified.

#### Audit commentary

If any trader requests an inspection report it would be provided to them but since the last audit no trader has requested a signed inspection report. They are readily available.

#### 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

Arc Innovations keeps all metering installations records since the company was established. No records are deleted.

#### **Audit commentary**

Data is “live” indefinitely and always easy to access. During audit we had easy access to historic records.

#### **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**

Arc Innovation uses Wells and VircomEMS as its Test House.

#### **Audit commentary**

All metering records related to metering installations which need to be recertified under the Wells ATH “umbrella” are available if needed.

#### **Audit outcome**

Compliant



## 6. MAINTENANCE OF REGISTRY INFORMATION

### 6.1. MEP Response to switch notification (Clause 1(1) of Schedule 11.4)

#### Code reference

*Clause 1(1) of Schedule 11.4*

#### Code related audit information

*Within 10 business days of being advised by the registry manager 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 manager it accepts responsibility for the ICP and of the proposed date on which it will assume responsibility.*

#### Audit observation

We analysed the Event Listing File (EDA) for the period 01/05/18 to 15/02/19 to assess compliance.

#### Audit commentary

ARCM had only three MEP nomination for existing installations. Four nominations were rejected. All nominations were accepted within 10 business days of being advised by the registry.

We identified 22 accepted MEP nominations for ARCS. All nominations were accepted within 10 business days of being advised by the registry.

#### 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 manager, 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 manager must derive from the metering equipment provider's records or the metering records contained within the current trader's system.*

#### Audit observation

To assess compliance with this clause we used the Registry Data Analysis database provided by the Authority. Arc Innovations provided the LIS file and PR-255 dated 18/02/19. We identified a few irregularities as to how the registry is populated.

More and more Arc Innovations equipment is replaced by AMS.

#### Audit commentary

The results from the Registry Data Analysis database are shown below:

Query	2018	2019
Cat 2 with multiplier over 100	1 ICP (0001104500CAB8F) compensation factor of 200; it is correct; certified as cat 2	The same
Cat 3 and above without HHR profile or HHR meter or HHR installation	No ICPs	No ICPs
Cat 1 over 15 years  Cat 2 over 10 years or over 15 if cert before 29/8/2013 Cat 3 over 10 years Cat 4 over 5 years Cat 5 over 3 years	No ICPs	No ICPs
Invalid certification date	No ICPs	No ICPs
Cert Expiry date > Today	13 ICPs cat 1; 168 ICPs cat 2, (ARCS)  16 ICPs cat 1; 3 ICPs cat 2 (ARCM)	4 ICPs cat 1; 166 ICPs cat 2, (ARCS)  2 ICPs cat 1; 4 ICPs cat 2 (ARCM)
Compensation factor on Cat 1 Installation	no ICPs	no ICPs
CT on Cat 1 Check component type of "C" on Cat 1	9 ICPs; The ICPs have been flagged for replacement previously. There has been some site related and access issues. They are being actively followed up	7 ICPs
HHR profile and submission type and meter or installation type is not HHR	No ICPs	No ICPs
Any Interim Certified Installation	2,202 ICPs (ARCM)	2,022 ICPs (ARCM)
Meter data missing	36 ICPs; As these ICPs were interim certified ARC used 31 Mar 2016 as the updated date. As of 11/6/18 assets are not known at 8 installations. For one of them NGCM installed their	1 ICP (ARCM)

	meters by the time this report was finalized.	
Any compensation factor that is not: 20,30,40,50,60,80,100,120,160,200,240,400	226 ICPs have multiplier 3. 1PH meter on 3 PH installation. Correct entry. *	204 ICPs have multiplier 3. 1PH meter on 3 PH installation.*
Over Cat 1 with No CTs	No ICPs	No ICPs
Control device not populated All CN, NC, D, N should have control device unless they are AMI	1,327 ICPs on Scanpower network and 91 on other networks; no data received from Meridian	1,178 ICPs on Scanpower network and 60 on other networks; no data received from Meridian

\* It was discussed during this audit as it was already identified in the previous audits. The Authority's point of view was that these installations could be inaccurate, not fit for purpose.

Non-compliance was identified because data is missing for 1 ICP and there is a lack of information about control devices on the Scanpower network. As was described in the previous audits, some information for ARCM installations in the Scanpower area was incorrect due to the fact that this information was taken from the Meridian billing system, who treated them rather freely.

#### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: 7(1) of Schedule 11.4  From: 16-Jul-17 To: 30-Apr-17	Information for 1 ICP is missing; some information for metering installations on Scanpower’s network is incorrect (controls devices for 1,238 ICPs)  Potential impact: Low  Actual impact: Low  Audit history: Multiply times  Controls: Moderate  Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	Controls are recorded as moderate. The impact on settlement is potentially minor, therefore audit risk rating is low. Meters on Scanpower’s network will be replaced as part of an upgrade to smart meters		
Actions taken to resolve the issue		Completion date	Remedial action status
As described in the last audit, there was a large number of interim certified sites gifted to Arc with insufficient information, and efforts to gather missing information have been unsuccessful. The meters at these sites are being upgraded as we attempt to clean up the interim certified meters.		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Arc Innovations is using the Registry Data Analysis database provided by the Authority. It is a good tool for identifying inconsistency of information in two files provided by the registry. We have staff regularly reviewing this to ensure incorrect information such as that in the table above is identified and corrected.		Ongoing	

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

#### Code reference

*Clause 6 of Schedule 11.4*

#### Code related audit information

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

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

*No later than 5 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 5 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 manager of any necessary changes to the registry metering records.*

#### **Audit observation**

This was discussed with Arc Innovations during the audit. It was recorded as non-compliance in the last audit.

#### **Audit commentary**

In the comments to the last audit Arc Innovation commented that a new report will be written to check and reconcile the asset level information against the registry on a monthly basis. This project did not go ahead. Instead of writing the new report, Arc Innovation decided to use the Registry Data Analysis database provided by the Authority. It is a good tool, but the focus of this database is to identify inconsistency of information in two files provided by the registry, therefore only information already stored in the registry is examined. This database does not compare a MEP's asset information in their system and information stored in the registry. We always use this database during audits, but it does not address compliance with 6 of Schedule 11.4.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 6.3</p> <p>With: 6 of Schedule 11.4</p> <p>From: 01-May-18</p> <p>To: 15-Feb-19</p>	<p>There is no a process to comply with this clause.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Once previously</p> <p>Controls: None</p> <p>Breach risk rating: 5</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>Arc Innovations does not have a process in place to meet compliance with this clause. Information in the registry is corrected when identified but it is more of an ad hoc process. The impact on settlement is potentially small, therefore audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>In section 5.1 of this report, Arc Innovations is compliant in relation to 'Accurate and complete records' (clause 4(1)(a) and (b) of schedule 10.6, and table 1, schedule 11.4).</p> <p>With reference to 'Correction of errors in Registry (Clause 6 of Schedule 11.4), Arc was assessed to be non-compliant due to the fact that we were not comparing the registry and our systems on a monthly basis.</p> <p>Arc Innovations has an automated process where the systems referred to in section 5.1 (PSP and AReg) synchronize with the registry whenever there is a change to a field that is required under table 1, schedule 11.4. For instance, if we were to cancel a certification date on an ICP in PSP, an automatic update will go to the registry that night. At that time, the registry and our systems will be in alignment.</p> <p>If the new information being uploaded does not meet the registry's validation, it will be rejected, and Arc will receive a notification through the alerts screen in PSP. Arc will correct the data and the systems will automatically be in sync again.</p> <p>Post audit, we ran a manual reconciliation and found a handful of discrepancies (0.001%) where our systems had incomplete data, but the registry was correct. We have corrected these and will continue to run this report monthly.</p>		Completed	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

Reconciliation report generated manually found very few discrepancies. These have been corrected and we will run this report monthly for monitoring purposes. Arc's systems automatically synchronize with the registry, so we are confident that our systems are in alignment with the registry at all times.	Completed	
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#### 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

The reasons for the certification cancellation described in this clause can be put into two groups.

The first group of reasons consists of situations where Arc Innovations has no influence at all. They are listed in subsection c) and d). In such circumstances, the company can only rely on advice given by responsible parties and act accordingly and update the registry accordingly.

The second group are events covered in a), b), e), f), g), h).and i), which if take a place, will cause the cancellation of installation certification. Each of these events were discussed in relevant parts of this report.

- (a) Installation modification – this was discussed and covered in **section 4.1**
- (b) Accuracy tolerance – this is covered in **section 4.3**
- (e) Lack of inspection – this is covered in detail in **section 8.2**
- (f) Certification to lower category – this is covered in detail in **section 7.6**
- (g) Insufficient load for full certification – this was discussed in **section 7.7**
- (h) Bridged out load control device – the process was described in **section 7.11**.
- (i) Seal broken – the process was discussed in **section 8.4**

#### **Audit commentary**

The events listed in subsection a), b), e), f), g), h), and i) were reviewed during this audit. We found the processes compliant.

In **section 10.7** we identified non-compliance with clause 8(4) of Schedule 10.6 because a small number of data storage devices exceeds the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6. The equipment has not been replaced. These metering installations are considered not fit for purpose therefore their certification is automatically cancelled. The registry should be updated within 10 business days, but it is not.

#### **Audit outcome**

Non-compliant



Non-compliance	Description		
Audit Ref: 6.4 With: 20(1)(b) of Schedule 10.7  From: 01-May-18 To: 15-Feb-19	Certification has not been cancelled for a small number of metering installations  Potential impact: Low  Actual impact: Low  Audit history: None  Controls: Weak  Breach risk rating:3		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are rated as weak because there are some improvements that can be made. The registry should be updated in timely manner as soon as metering installation is not fit for purpose. The impact on settlement is potentially minor because of small number of metering installations, therefore audit risk rating is low.		
Actions taken to resolve the issue		Completion date	Remedial action status
The events listed in subsection a), b), e), f), g), h), and i) above were reviewed during this audit, which found them to be mostly compliant. Our time sync process is automated and time corrections occur (if needed) each time a meter is interrogated. A snap shot of a typical day (10 Feb) shows circa 123,000 reads were received, and 56 time errors automatically corrected. A very small number of ICPs were identified in the audit to be non-compliant with the maximum error threshold. Arc accepts our process did not ensure these were manually interrogated and sent for replacement as necessary. In such cases, certification will be cancelled, and the meters will be replaced.		30 May 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
We have identified and are putting in place an enhancement to our PSP system that would roll out the automated system to our technical team. This system will notify them of time error issues that were not auto-corrected. The technical team will then manually interrogate the meter, and if unsuccessful, the system will notify the BAU team to raise a replacement job. The system will log the job through to completion.  It should be noted that any time errors are sent to the relevant retailers as part of the event logs.		30 June 2019	

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

### Code reference

Clause 11.8A

### Code related audit information

*The MEP must provide the registry manager 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

Arc Innovations provided the required metering information to the registry to their best knowledge. The information was provided in the prescribed form and the registry records were uploaded as per Schedule 11.4

### Audit commentary

We checked the LIS file and checked the process of updating information in the registry. It is done by the system or done manually via website. Manual updates are used when it is simpler to use the registry web interface automatically.

### 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

After each certification of an installation is finalised, metering records are updated on the installers' PDA and transferred to the PSP database, which updates the registry overnight. Any work on installations is conducted by contractors.

Arc Innovations does not have a battery replacement program because they can't be replaced. Battery life is 15 years.

Every 6 months a report is run to check which metering installations are due for re-certification. Each ICP is evaluated, and a decision is made to replace an existing meter or to ask a trader to nominate NGCM as the MEP and install EDM meter.

#### Audit commentary

During the audit we identified 170 metering installations of category 2 and 6 of category 1 (previously fully certified) , for which certification had expired. The number of metering installations of category 2 increased and the number of metering installations of category 1 has decreased. Arc Innovations has been pushing Wells hard to get category 2 metering installation re-certifications up to date. Wells confirmed their commitment.

The number of interim certified installations is 2,022.

The number of meters due for recertification will increase exponentially in the next few years and the company will need to make a strategic decision on how to address this.

#### Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 7.1 With: 10.38(a)  From: 01-May-18 To: 15-Feb-19	Certification expired for 2,198 metering installations Potential impact: Low Actual impact: Low Audit history: Multiplier times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	The controls are rated as moderate because there are some improvements that can be made to them to achieve compliance. The number of non-certified installations are mainly category 1 metering installations, residential customers. It could have a minor impact on settlement outcomes if it is discovered that installations record incorrect volumes.		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>2,022 uncertified ICPs have expired interim certified meters and Arc has been working hard to clear this backlog, where possible. Arc (as part of VAMS) reports separately to the Authority on this specific non-compliance and has shown its commitment to certifying these sites, but there have been numerous reasons why this has not been fully addressed.</p> <p>The audit identified 172 Cat 2 ICPs where certification has expired. The bulk of Arc's Cat 2 metering was installed in 2008 so large numbers started expiring last year. A project was launched to undertake re-certification of these sites but due to field staff shortages, our field service provider has not kept up with the numbers of those expiring. The number of expiring meters has declined, so we expect to clear the backlog and be fully up to date by May 2019.</p> <p>There were 6 Cat 1 uncertified ICPs. We will investigate why they were not recertified on time and will raise jobs for their re-certification.</p>		May 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

<p>We have had confirmation from the ATH recertifying the Cat 2 ICPs that they will continue to assign resources to the Cat 2 ICPs, including the backlog, to clear it as soon as possible.</p> <p>We will continue to work with the relevant parties to recertify the old interim certified meters, where possible. This will include continued reporting to the Authority on our progress.</p>	May 2019	
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## 7.2. Certification Tests (Clause 10.38(b) and clause 9 of Schedule 10.6)

### Code reference

*Clause 10.38(b) and clause 9 of Schedule 10.6*

### Code related audit information

*For each metering component and metering installation an MEP is responsible for, the MEP must ensure that:*

- *an ATH performs the appropriate certification and recertification tests*
- *the ATH has the appropriate scope of approval to certify and recertify the metering installation.*

### Audit observation

Arc Innovations uses two ATHs - VirCom EMS and Wells.

### Audit commentary

According to the Electricity Authority's website, Wells and VircomEMS hold the certification of Test House, class B as per clause 4(2) of Schedule 10.3. The details are listed on the Electricity Authority website.

### 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**

The LIS file was reviewed.

#### **Audit commentary**

Arc Innovations does not provide the MEP services for metering installation category 3 and above. This clause is not applicable. Compliance was not assessed.

#### **Audit outcome**

Not applicable

### **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**

Arc Innovations does not provide the MEP functionality for metering installations for a point of connection to the grid.

#### **Audit commentary**

This clause is not applicable. Compliance was not assessed.

#### **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**

The measuring transformers (CTs) are part of category 2 metering installations. For all of these installations, CTs are used solely for metering purposes. Arc Innovations installations contain CTs class 0.5.

#### **Audit commentary**

Since the last audit, no re-certifications of category 2 metering installations were done. The company policy is to switch metering installations category 2 to AMS when is they are due for recertification or faulty equipment is identified.

The company assured us that no changes were made to a CTs burden for any existing installation.

#### **Audit outcome**

Compliant

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

#### **Code reference**

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

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

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

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

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

*If a meter is certified in this manner:*

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

#### **Audit observation**

Arc Innovations has a metering installation certified to a lower category. It is ICP 0001104500CAB8F, which is the supply to the stress oven.

#### **Audit commentary**

The supply is limited by a 500A main switch, so it is certified as category 2. The main switch current is limited to 500 A. The transformer supplying the installation is directly connected without LV fusing. This installation is coming up due for recertification and Arc Innovations is just waiting for a quote to be accepted. At the time of this audit this installation was not certified.

#### 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

According to the process for re-certification of installations, Arc Innovations contractors always have a portable load for testing purposes.

#### Audit commentary

Compliance was assessed based on the process used by contractors. Arc Innovations does not install meters for new installations. All installations which need to be re-certified are “switched” to AMS as long as they are not located in critical areas.

#### Audit outcome

Compliant

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

#### Code reference

*Clause 14(6) of Schedule 10.7*

#### Code related audit information

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

- *the metering installation certification is automatically revoked:*
- *the certifying ATH must advise the MEP of the cancellation within 1 business day:*
- *the MEP must follow the procedure for handling faulty metering installations (clause 10.43 - 10.48).*

#### Audit observation

According to the process for re-certification of installations, Arc Innovations contractors always have a portable load for testing purposes. If the test conducted demonstrates that the metering installation is



not within the relevant maximum permitted error, the cause of the problem will be investigated. Equipment must be replaced, and tests repeated.

#### Audit commentary

Arc Innovations re-certified installations in critical areas only.

The re-certification process is structured in such a way that a job can't be closed in PDA if the test parameters show that the installation is not within the relevant maximum permitted error. Arc Innovations stated that such a situation has not occurred since the last audit.

#### Audit outcome

Compliant

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

#### Code reference

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

#### Code related audit information

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

- *advise the Authority, 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 Authority 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 Authority 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

It was discussed with Arc Innovations during the audit as to whether there are any metering installations of category 2 where the company has an issue with access to the transformer.

#### Audit commentary

Arc Innovations stated that there are no such installations for which they provide the MEP services.

#### Audit outcome

Compliant

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

#### Code reference

*Clause 23 of Schedule 10.7*

#### Code related audit information

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

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

#### **Audit observation**

Legacy meters for which ARCM provides the MEP services do not have time keeping devices.

#### **Audit commentary**

This clause is not applicable. Compliance was not assessed because Arc Innovations do not have these type of meters installed as part of metering installations for which they provide the MEP services.

#### **Audit outcome**

Not applicable

### **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, advise 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**

According to the registry file, all ripple receivers, for which Arc Innovations is the MEP, are certified.

#### **Audit commentary**

The company confirmed that they do not have, to their best knowledge, installations where a control device could affect the accuracy or completeness of the information for the purpose of Part 15.

#### **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 3 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**

All ripple receivers for which Arc Innovations is the MEP are certified. They are built into a controller. The only place where ripple receivers are installed separately is in the Mainpower area.

#### **Audit commentary**

If Arc Innovations is notified or identified by a technician that a control device could be unfit for its purpose, it is replaced. Arc Innovations does not carry out work after hours.

#### **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**

In 2015 the smart meters certification was extended to 15 years therefore there was no need to use a statistical sampling process for Arc Innovations to re-certify a group of category 1 metering installations.

#### **Audit commentary**

The process of statistical sampling will be used in 2019 for installations, which were not inspected in 2017 due to a misunderstanding between the Authority and Arc Innovations.

#### **Audit outcome**

Compliant

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

#### **Code reference**

*Clause 24(3) of Schedule 10.7*

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

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

*In all other cases the MEP must update the compensation factor recorded in the registry in accordance with Part 11.*

#### **Audit observation**

Arc Innovations does not provide the MEP's functionality for any installation that is an NSP.

#### **Audit commentary**

This clause is not applicable. Compliance was not assessed.

#### **Audit outcome**

Not applicable

#### 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

All installations are metered using generation G1 and G2 meter/controllers. If an installation is identified as faulty and the installation is in a critical location, Arc Innovations will use their equipment, otherwise NGCM will be nominated as the MEP and install an EDM I meter.

##### Audit commentary

The company also provided 20 randomly chosen EIPC Certificate/Electrical Safety Certifications with corresponding Revenue Meter Certification of Calibrations to assist in the assessment for compliance with this clause.

##### 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

Since the last audit Arc Innovations has not certified any category 2 metering installations.

##### Audit commentary

If Arc Innovations decides to install CTs for category 2 metering installations because it is located in a critical area, it will be certified by TWS.

##### 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**

Arc Innovations installs G1 meters, which consist of a meter and a controller. The process adopted by Arc Innovations does not allow the installation of uncertified controllers.

#### **Audit commentary**

We reviewed the EIPC Certificate/Electrical Safety Certification for a number of installations to confirm compliance.

#### **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 given notice 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 clauses 10.43 to 10.48.*

#### **Audit observation**

Arc Innovations understands clause 7 and, if it occurs, will take appropriate action.

#### **Audit commentary**

The process is not documented; it is prudent to assume that it does not happen. We would expect that it would be a major undertaking for all participants if an ATH's approval were to expire.

#### **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**

We reviewed the LIS file to assess compliance.

#### **Audit commentary**

We identified 2,022 previously interim certified installations with expired certification.

#### **Audit outcome**

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 7.19</p> <p>With: 18 of Schedule 10.7</p> <p>From: 01-May-18</p> <p>To: 15-Feb-19</p>	<p>2,022 ICPs with expired interim certification</p> <p>Potential impact: Medium</p> <p>Actual impact: Medium</p> <p>Audit history: None</p> <p>Controls: Strong</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Medium</b>	<p>Controls are recorded as strong. Certification has been expired for 2,022 installations. Arc Innovations implemented a plan to rapidly reduce the number of such installations. The impact on settlement outcomes is recorded as moderate because of the increased likelihood of inaccuracy of metering installations.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>As discussed in section 7.1, 2,022 uncertified ICPs have expired interim certified meters and Arc has been working hard to clear this backlog, where possible. Arc (as part of VAMS) reports separately to the Authority on this specific non-compliance and has shown commitment to certifying these sites, but there are numerous reasons why this has not been fully addressed.</p>		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>We will continue to work with the relevant parties to recertify the old interim certified meters, where possible. This will include continued reporting to the Authority on our progress.</p>		Ongoing	

## 8. INSPECTION OF METERING INSTALLATIONS

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

#### Code reference

*Clause 45 of Schedule 10.7*

#### Code related audit information

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

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

*Before a sample inspection process can be carried out, the MEP must submit a documented process for selecting the sample to the Electricity Authority, at least 2 months prior to first date on which the inspections are to be carried out, for approval (and promptly provide any other information the Authority may request).*

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

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

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

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

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

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

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

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

#### Audit observation

Arc Innovations has a statistical sampling inspection regime in place for category 1 metering installations as per the Code requirements.

#### Audit commentary

In 2018 Arc Innovations conducted inspection for metering installations category 1 but it was not accepted by the Authority because the selected sample represented both Arc Innovations and AMS MEPs. It

appears that it was misunderstanding between the two parties. Arc Innovations was granted the exemption #278 as per **section 1.1**.

#### **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**

Arc Innovations provides the MEP services only for metering installations of category 1 and 2 where their equipment is installed. The company policy is not to inspect installations of category 2, instead they will be re-certified.

#### **Audit commentary**

During this audit it was identified that 170 metering installations of category 2 were neither inspected nor re-certified. The number of non-certified installations has decreased significantly since the last audit. The company works closely with Wells to address this.

#### **Audit outcome**

Non-compliant



Non-compliance	Description		
<p>Audit Ref: 8.2</p> <p>With: 46(1) of Schedule 10.7</p> <p>From: 01-May-18</p> <p>To: 15-Feb-19</p>	<p>52 category 2 metering installations were not inspected.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Twice previously</p> <p>Controls: Strong</p> <p>Breach risk rating: 1</p>		
Audit risk rating	Rationale for audit risk rating		
<b>Low</b>	<p>The controls are rated as strong. The number of non-certified installations decreased significantly since the last audit. Arc Innovations works closely with Wells to address this. This could have a minor impact on settlement outcomes if it is discovered that installations record incorrect volumes.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>The code requires metering installations to be inspected no later than 10 years and 6 months from installation date. In the above non-compliance (section 7.1), where 170 Cat 2 ICPs remain uncertified after their expiry, 52 of these have exceeded this timeframe. Arc does not have a process for inspecting Cat 2 metering and relies on recertification of metering after 10 years. In this instance, where we acknowledge we are behind on a project to mass recertify significant numbers of meters, Arc accepts we are non-compliant with this clause. The 52 ICPs certifications have already expired so there is no requirement to cancel the certification, and the site will be recertified with new metering shortly.</p>		May 2019	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
<p>All Arc Cat 2 metering are certified for a term of 10 years. Our process is to recertify at the expiry of that term. We have had written confirmation from the ATH undertaking our recertification project to ensure resources continue to be deployed to complete the project as soon as possible.</p>		May 2019	

### 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

Inspections were conducted by a Wells technician on behalf of Arc Innovations. Once inspections are complete, the results are compared with records held by the company, which are stored in PSP.

### Audit commentary

Compliance is confirmed based on the process.

### Audit outcome

Compliant

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

### Code reference

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

### Code related audit information

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

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

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

*The MEP must make the above arrangements within*

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

### Audit observation

Arc Innovations installations are remotely read, therefore the chances that a broken or removed seal are noted are quite slim. The only time sites are visited is during a fault investigation or inspections.

### Audit commentary

The process is that, where a Wells technician finds a broken seal at a category 1 or 2 metering installation, they will check the installation for tampering and then replace the missing seals. Arc Innovations will be notified. The company has not recorded any jobs of replacing broken or removed seals since the last audit.

### 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

The process for investigating faulty metering installations was examined.

#### Audit commentary

The process adopted by Arc Innovations is as follows. When the company is notified or becomes aware that a metering installation maybe inaccurate as a result of data validation, the Customer Excellence Team evaluates if the ICP is in a so called “critical area” or not. If the ICP is in a critical area a job is created, a technician goes on site, equipment is replaced, and an installation recertified.

If the ICP is in a non-critical area, the trader is asked to nominate NGCM as the MEP.

The company provided a number of examples where the faulty equipment was replaced. All of them were located in critical areas.

In **section 10.7** we described a problem with some installations (0.73%) for which time drift is outside of parameters specified by the Code. The situation is reported to participants in monthly report.

#### Audit outcome

Compliant

### 9.2. Testing of Faulty Metering Installations (Clause 10.44)

#### Code reference

*Clause 10.44*

#### Code related audit information

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

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

- a) test the metering installation*
- b) provide the MEP with a statement of situation within 5 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**

The testing of faulty installations of category 1 and 2 will be carried out by contractors working under Wells or Delta ATH accreditation. Part of the process is to request a SR from a trader.

#### **Audit commentary**

The test conducted by a technician on site is described in a manual which was approved by Wells ATH. The company provided a number of examples where the faulty equipment was replaced. All of them were located in critical areas.

In **section 10.7** we described a problem with some installations (0.73%) for which time drift is outside of parameters specified by the Code. The company investigates a problem and try to fix it using manual time synchronisation. This method works for some installations but not for all of them.

#### **Audit outcome**

Compliant

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

#### **Code reference**

*Clause10.46(2)*

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

*Within 3 business days of receiving the statement from the ATH, the MEP must provide copies of the statement to:*

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

#### **Audit observation**

A Closed Job Report constitutes a statement of situation which is created on a PDA by a technician after a job is complete.

#### **Audit commentary**

A statement of situation does not have to be provided to the Market Administrator as Arc Innovations provides services to category 1 and 2 metering installations only. There were no examples of a statement of situation being requested by the Authority or a trader.

#### **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

Arc Innovations provides HHR or NHH data to traders, who they have contracts with. Traders are provided a copy of the raw meter data.

#### Audit commentary

Arc Innovations stated that they have not been asked by the Authority, an ATH or an auditor, to have access to raw meter data since the last audit. If such a request is made the requirements will be met.

#### 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

During the audit it was checked if any parties had requested access to raw meter data.

#### Audit commentary

No request has been received by Arc Innovations, but the company 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

During the audit it was checked if any parties had requested access to metering installations.

#### Audit commentary

No requests have been received. Arc Innovations 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

During the audit it was checked if any parties had requested access to metering installations.

#### Audit commentary

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

#### Audit outcome

Compliant

## 10.5. Electronic Interrogation of Metering Installations (Clause 8(2), 8(3), 8(5) and 8(6) of Schedule 10.6)

### Code reference

*Clause 8(2), 8(3), 8(5) and 8(6) of Schedule 10.6*

### Code related audit information

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

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

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

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

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

*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

The Arc Innovations' data collection system is kept on New Zealand standard time. The base station, which communicates with loggers is synchronized multiple times per day, and error does not exceed +/- 5 sec at any time.

To assess compliance, we analyzed the PR255 dated 18/02/19 from the length of the interrogation cycle point of view.

### Audit commentary

For ARCM's metering installations, an interrogation cycle is 365 days. They are legacy meters, they are not read by Arc Innovations.

For ARCS installations an interrogation cycle is 30 days (meter model G1) and 1 day (meter G2). The reason the Gen 2 is only 1 day is due to the limitation of the G2 meter, where it could lose time if there was an extended power outage lasting 6 or more days.

The interval and event data storage capacity is the same as for G1, so data is not lost if an interrogation cycle is missed because G2 meters store data for 40 days. Reading meters is fully automated.

During each interrogation of a metering installation, the event log is downloaded. The data coming back is thoroughly analysed. It is the daily task of the Customer Excellence Team to evaluate and address any issues before data is sent to traders

#### **Audit outcome**

Compliant

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

#### **Code reference**

*Clause 10.15(2)*

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

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

#### **Audit observation**

Raw meter data is stored in the PSP database and the data cannot be altered. Arc Innovations does not modify or estimate data.

#### **Audit commentary**

Access to raw meter data is limited to authorised personnel, the security of data is one of the priorities for the company. Files containing meter data are created and sent to traders, and their copies are retained in an archive directory.

#### **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**

There are three ways in which loggers are interrogated and how time synchronisation is carried out.

1. GPRS - read once per day, time synchronisation is carried out at every read.
2. Satellite - read 3 times per month, time synchronisation is carried out at every read
3. RF mesh read twice per day – the way in which RF mesh operates is that a special relative time adjustment message is sent to synchronise the loggers' time clock, if required, once per week. The majority of loggers are read via RF Mesh. The process is fully automated.

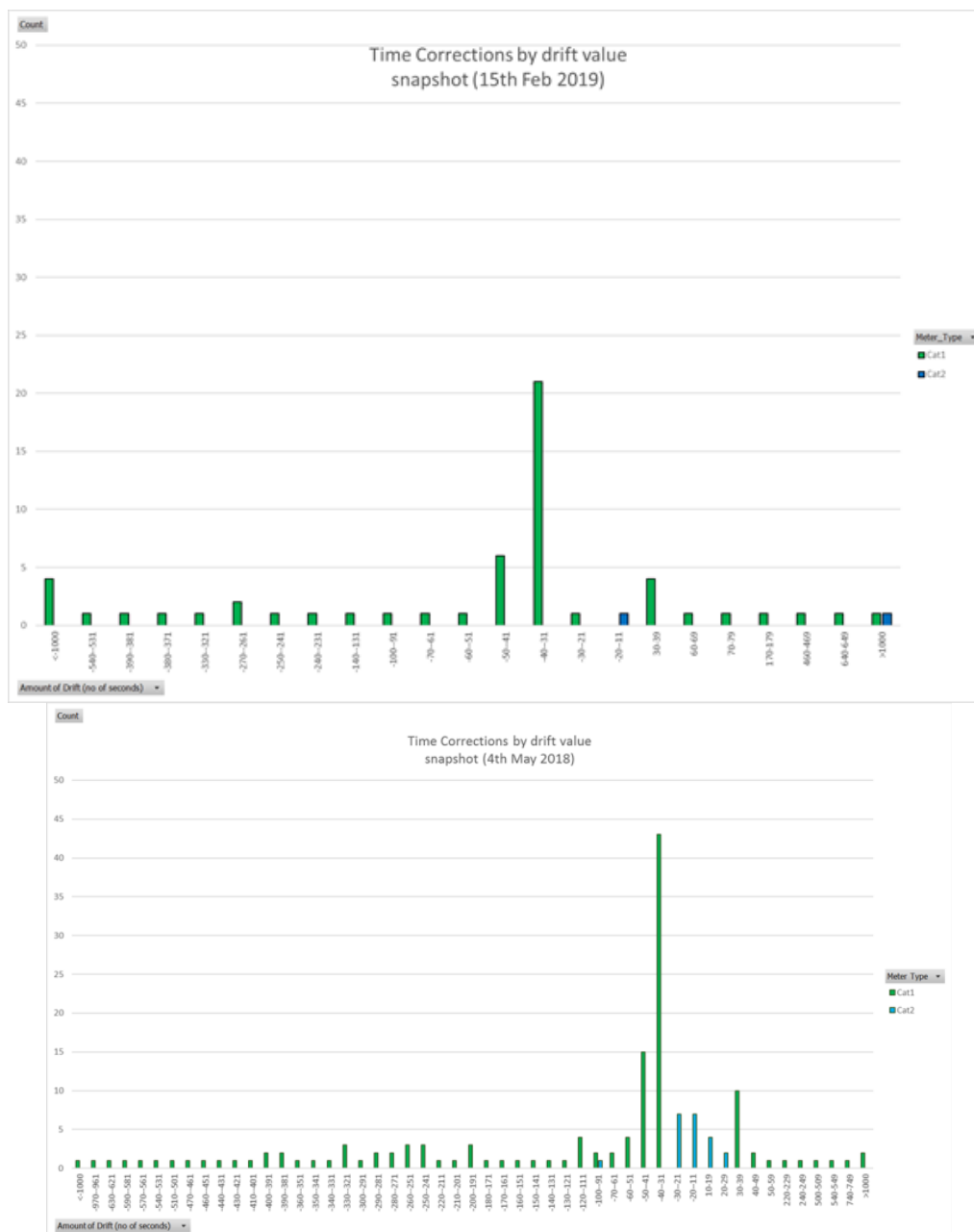
#### **Audit commentary**

Table 1, of clause 8(5), of Schedule 10.6, the maximum permitted time errors for half-hour installations "± 30 sec" and "± 10 sec".



We walked through a weekly report of meters' time adjustments and the process for how they are evaluated. The graph below shows a snapshot of time correction on 4 May 2018 and 15/2/2019

There is visible improvement in the level of compliance since the last audit.



The graph shows the time (seconds) which the site had drifted by, which made the adjustment necessary. As we said before the process is fully automated but for sites which are more difficult to synchronise, a manual process is used.

Since December'18, Arc Innovations sends to participants a monthly report called "Time Synchronisation Events". It shows the time updated for "time drift" of each ICP traded by a trader. We analysed the report for the month of Dec'18 and Jan'19 for one trader (a small number of ICPs) and the month of Dec'18 for a trader with a significant number of ICPs. After analysis of the reports we came up with the following conclusions:

- For 86 ICPs (0.29%) of the bigger trader time drift (the maximum time error) was more than 30sec and for 219 ICPs (0.73%) time drift was more than 30sec. Overall the results are very good.
- We followed through randomly chosen ICPs which had a significant time drift to see how quickly they were replaced according to the process described in the previous audit. It appears that that the process has not been followed through as expected. It was discussed during the audit. It is a manual process, which needs refining. Arc Innovations stopped using VSM last year, now all alerts go through PSP. It was identified that the CPE team were deleting the resolved jobs rather than hitting the 'Resolved' button, so they don't have a record of corrections before this month.
- We observed ICPs (e.g. 1912003500CH464) for which time was updated three times on 5/1/19 and time drift was from 11 to 18605 sec or ICP 1920014000CH70F for which time is updated twice per day, time drift "swings" from 6 to 678 sec.

Installations with significant time drift are seen as not fit for purpose. It is identified as non-compliance with clause 10.13 and 20(1)(b) of schedule 10.6 (**section 6.4**).

#### Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 10.7</p> <p>With: 8(4) of Schedule 10.6</p> <p>From: 01-May-18</p> <p>To: 15-Feb-19</p>	<p>A small number of data storage devices exceeds the maximum time error set out in Table 1 of clause 8(5) of Schedule 10.6</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: None</p> <p>Controls: Moderate</p> <p>Breach risk rating:2</p>		
Audit risk rating	Rationale for audit risk rating		
<p><b>Low</b></p>	<p>The controls are rated as moderate because there are some improvements that can be made, especially to the follow through for installations for which time can't be corrected successfully. The impact on settlement is potentially minor, therefore audit risk rating is low.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
<p>The main part of our time sync process is fully automated. The threshold for correcting meters is +/- 15 seconds for Cat 1 HHR and +/- 5 seconds for Cat 2 HHR. Over 99% of meters are corrected within the requirements of table 1, Schedule 10.6. The audit did identify an issue with some ICPs that had exceeded the maximum time error limit and were unable to be corrected either through the automated process or manually by our technical team. With the relinquishing of our VSM license last year and the shift to manage this through our PSP system, the process to notify the technical team to manually correct the time clock is not working as well as it should. The ability for the team to notify the BAU team to raise a physical repair job is not automated and is reliant on emails.</p> <p>We have identified an improvement to PSP that will identify ICPs outside the maximum time error limit and notify the tech team directly. If repair by the tech team is unsuccessful, the system will then notify the BAU team via their usual daily notifications screen to raise a field job and cancel the certification of the installation. The whole process will be logged and tracked, and an automated report will be generated to ensure no ICPs are missed.</p> <p>In the meantime, ICPs currently not fit for purpose will have their certification cancelled, and a field job will be raised to replace them.</p> <p>The retailers will have been notified through event reporting of these errors.</p>		<p>30 June 2019</p>	<p>Identified</p>

Preventative actions taken to ensure no further issues will occur	Completion date	
As above, our PSP system will be modified to clearly identify any ICPs that exceed the maximum time error limit. If the tech team are unable to manually adjust the clock, the system will notify the BAU team to cancel the site certification, raise a field job to replace meter, and track progress.	30 June 2019	

## 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

During each interrogation of a metering installation, the event log is downloaded. The data coming back is thoroughly analysed. It is the daily task of the Customer Excellence Team to evaluate and address any issues before data is sent to traders. It has a very well defined set of instructions as to how to address any error messages.

### Audit commentary

It was discussed in detail during the audit. There is a limited usefulness of event data downloaded from Arc equipment in comparison with EDM1 meters. The time sync report is provided as standard and most of the major retailers receive a 'No reads' report, some daily, some weekly and some monthly.

The 'No reads' report is derived from diagnostic events downloaded from the controllers and other events that might lead to no reads being returned, such as a loss of power. These diagnostics feed into the 'Verification errors (VE) process and include errors such as;

105 = Reading is less than the previous read.

115 = Sum of TOU registers does not = Total kWh

126 = Sum of meters does not = Total kWh

Another report sent to retailers is a 'No consumption' report. This report is for ICPs that are reading but there is no consumption. Arc Innovations does not know if a customer is on extended holiday or the property is temporarily vacant. They pass this information to the trader who can check against their systems to determine possible stealing of power (tamper), if consumption is expected, or if it is a potential fault.

It is important to note that Arc Innovations does not provide data unless it passes full validation, plus they always notify retailers by the request of a service request whenever a metering installation needs repair/replacing.

#### Audit outcome

Compliant

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

#### Code reference

*Clause 8(9) of Schedule 10.6*

#### Code related audit information

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

#### Audit observation

The process of data validation was reviewed. The process is well documented, easy to follow.

During each interrogation the event log is downloaded. There is thorough analysis of the data coming back by the Customer Excellence Team. If any of the validation conditions are not met it results in a recording error code.

#### Audit commentary

To validate raw data after interrogation Arc Innovations system has about 33 parameters which need to be met.

Below we are showing error messages which relate to compliance with clause 8 (9) of Schedule 10.6

ID	Check / Rule	Description
107	Interval readings do not match previously recorded intervals	<p>Interval read data received from a meter which covers a complete interval period for which data has previously been received, must be equal to the consumption already recorded for those interval periods.</p> <p>Exception: Initialized meters will default all interval registers up to the time of initialization to ZERO. A zero value should be overwritten with newly received values if these values are non-zero. A</p>

		zero value must not overwrite a non-zero value.
108	Negative Interval readings encountered	Interval consumption data received from a meter must contain positive values only.
114	Invalid TOU Register	The Smart Meter has provided a read against a General Accumulation (GA) register that should not be in use (the smart meter is known but the GA register was not in use according to the tariff assigned to the smart meter as at the date/time of the read)
115	<b>Sum of TOU registers does not = Total KWH</b>	<b>The sum of the GA registers must match the Master Accumulator (MA) register (+/- a configurable threshold [default = 1KWh])</b>  <b>Note: this check applies to smart meters operating in Post-pay mode only.</b>

The validation of data is very thorough. Every day the Customer Excellence Team goes through all error messages, evaluates them and decides on the necessary action. Data which does not pass validation is not dispatched to traders. Compliance confirmed based on a review of documentation and “shadowing” of the members of the team during their daily validation activities.

#### 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

Arc Innovations has not received any requests in relation to this clause

#### Audit commentary

Arc Innovations never corrects raw meter data, the system does not have such functionality.

#### Audit outcome

Compliant

## CONCLUSION

### PARTICIPANT RESPONSE

Arc Innovations' compliance with the 'code' is extremely good.

We accept there are areas where we do not meet the full requirements of the code and will assign the resources to correct these, however, we believe this audit overlooks Arc's high level of compliance and focusses too harshly on the few non-compliances. We think the 'breach risk rating' scoring system used in these audits is not a true reflection of an MEPs compliance with the code, often receiving multiple non-compliances and scores for a single issue.

The goal of an audit is to gather information about the effectiveness of the MEPs compliance, it is a tool that will lead to improvement. Arc Innovations is committed to being a compliant MEP and accepts the auditor's findings.