

**ELECTRICITY INDUSTRY PARTICIPATION CODE
RECONCILIATION PARTICIPANT AUDIT REPORT**

For

Pulse Energy Alliance LP



Prepared by: Steve Woods

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EXECUTIVE SUMMARY

Pulse Energy Alliance LP (Pulse) intends to implement Gentrack 4.0 to replace Gentrack 3.8 and longer term it will also replace the reconciliation system (Cobra).

Clause 8(1) of Schedule 15.1 requires that if a reconciliation participant intends to make a “material” change to any certified facilities, processes or procedures then the changes must be subject to an audit prior to the change taking place. This audit was therefore performed at the request of Pulse so that it can be supplied to the Electricity Authority to satisfy the requirements of Clause 8(1).

This report includes findings for stage 1 (registry and switching management) and stage 2 (reconciliation). Pulse intends to go live with stage 1 on 25/09/17 but stage 2 will not be implemented until all issues are resolved. The stage 2 findings are recorded to ensure there is clarity regarding the areas that need resolution.

The audit involved a site visit, review of the test plan and a review of test results.

The testing process is comprehensive and the format of the results is clear and easy to understand. The test registry was not used as part of the process, but output files were provided, which I checked against the registry functional specification.

In summary, compliance is confirmed for stage 1 of the implementation. There are some issues with historic estimates. ICP days and electricity supplied files which will be resolved prior to stage 2 going live. A further review will be conducted to ensure compliance of these items.

The matters raised in relation to stage 2 are shown in the table below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
ICP days	11.2	15.6	ICP days calculation one day short for four scenarios	Strong	Low	1	Identified
Electricity supplied	11.3	15.7	Electricity supplied file errors due to data migration issues	Strong	Low	1	Identified
HE calculations	12.11	4 and 5 Schedule 15.3	One HE scenario calculating incorrectly	Strong	Low	1	Identified

RECOMMENDATIONS

Subject	Section	Recommendation	Description
Rounding of data	9.3	Regarding Clause 3(5) Schedule 15.2	Ensure data is not rounded until submission files are prepared.
Permanence of meter readings	12.8	Regarding clause 4 Schedule 15.2	Test the process for changing estimates to permanent estimates at 14 months during stage 2.

Rounding of submission data	13.2	Regarding clause 9 Schedule 15.3	The data in GT4 and the test AV080 file both appear to be rounded to zero decimal places. I recommend this matter is checked and resolved as part of stage 2
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ISSUES

Subject	Section	Recommendation	Description

1. ADMINISTRATIVE

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

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

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

Audit observation

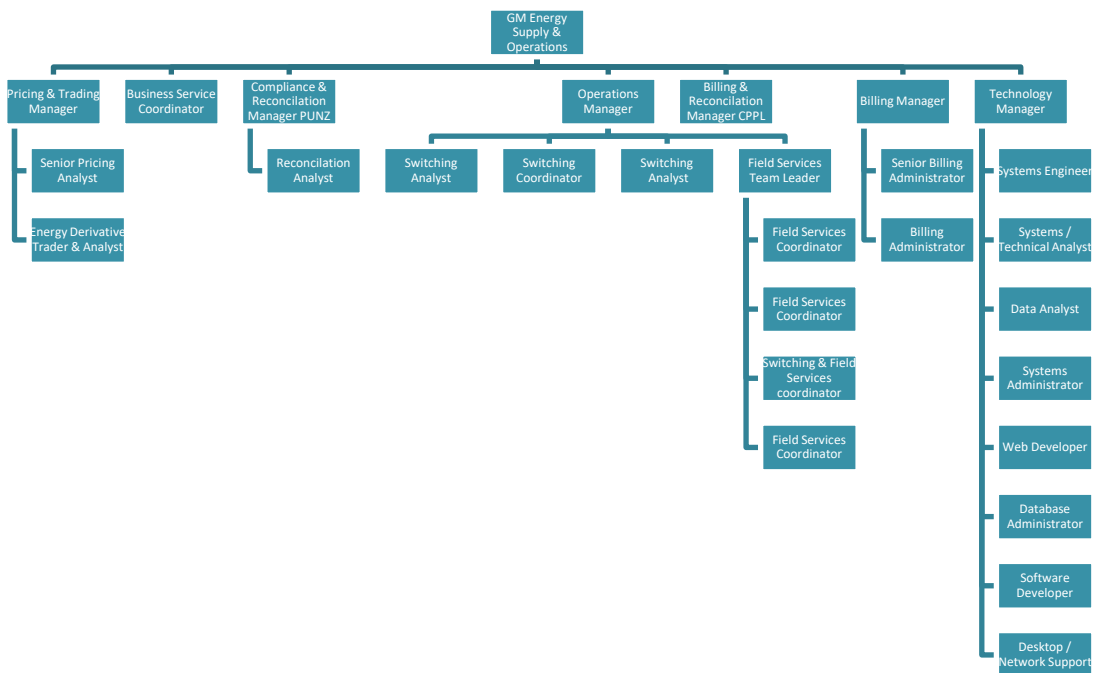
I checked the Authority's website to identify any relevant exemptions.

Audit commentary

Pulse does not have any exemptions in place.

1.2. Structure of Organisation

The relevant section of the organisation chart is shown below.



1.3. Persons involved in this audit

Personnel assisting in this audit were:

Name	Title
Malcolm Souness	Compliance and Reconciliation Manager
	Operations Manager
	Field Services Team Leader
	Switching Analyst

1.4. Use of Agents (Clause 15.34)

Code reference

Clause 15.34

Code related audit information

A reconciliation participant who uses an agent

- *remains responsible for the contractors fulfillment of the participants Code obligations*
- *cannot assert that it is not responsible or liable for the obligation due to something the agent has or has not done*

Audit observation

This area was examined by interview to confirm Pulse understands their obligations.

Audit commentary

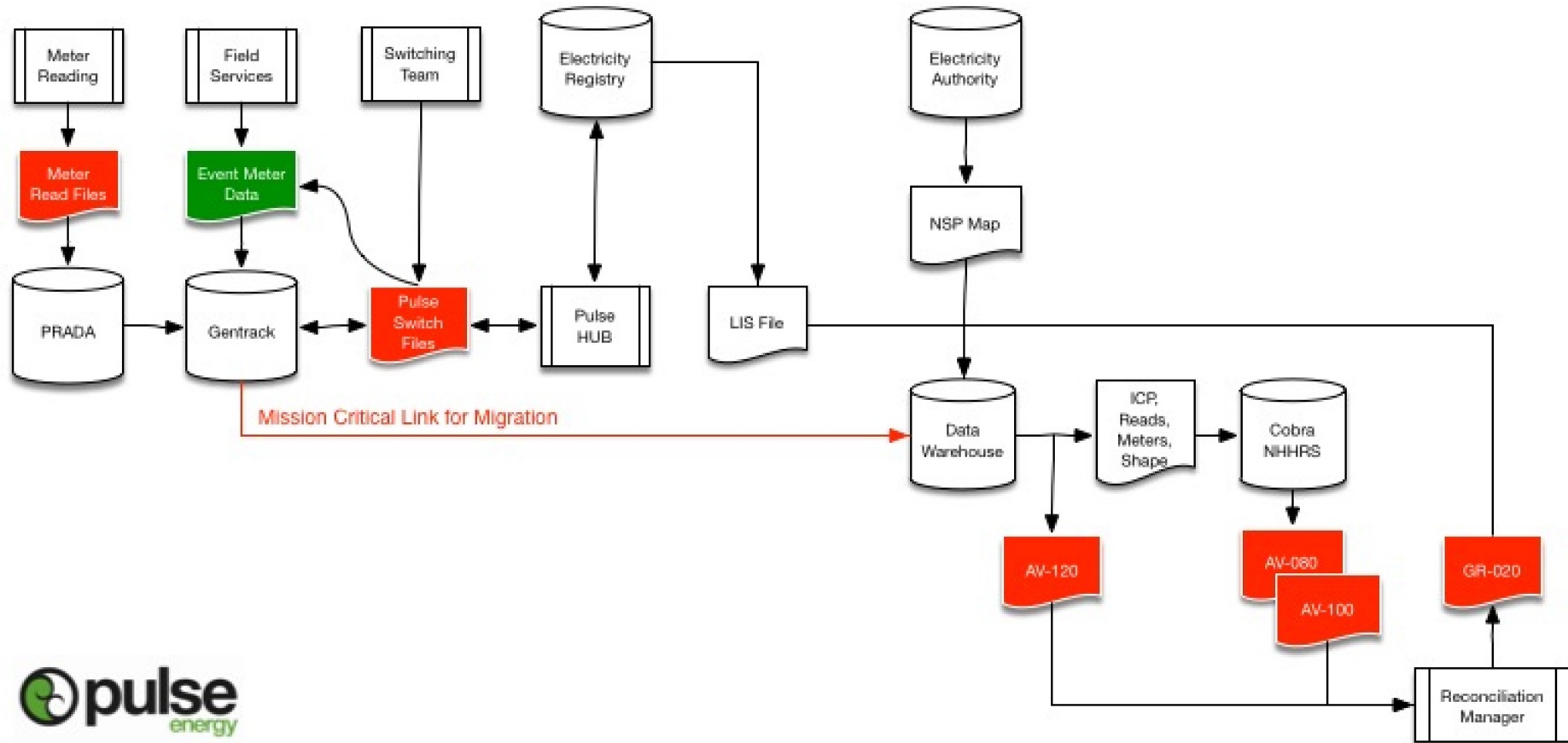
Pulse engages agents to conduct data collection activities but these functions are not relevant to the scope of this audit.

1.5. Hardware and Software

Pulse intends to replace Gentrack 3.8 with Gentrack 4.0 (GT4). Initially reconciliation functions will still be performed in Cobra but this audit encompasses the reconciliation module in GT4 because it will eventually replace Cobra. A diagram of the system configuration is shown below.

NHH Electricity Reconciliation Process Base Data Flows - GT4 - Go Live Configuration

Revised 17 Sep 2017



1.6. Breaches or Breach Allegations

Pulse has not had any breach allegations recorded by the Electricity Authority during the audit period:

1.7. ICP Data

Pulse provided a list file for each of their participant codes as at August 2017 by status:

Status	Number of ICPs (2017)	Number of ICPs (2016)	Number of ICPs (2015)	Number of ICPs (2014)
Active (2,0)	63,079	55,430	55,157	51,403
Inactive- new connection in progress (1,12)	0	1	0	3
Inactive – vacant (1,4)	379	437	378	527
Inactive – AMI remote disconnection (1,7)	70	4	0	0
Inactive – -de-energised due to meter disconnected (1,8)	16	0	0	0
Inactive – - at pole fuse(1,9)	0	0	0	0
Inactive – de-energised at meter box switch (1,10)	1	0	0	0
Inactive- at meter box switch (1,11)	4	0	10	11
Inactive – ready for decommissioning (1,6)	25	27	20	9
Decommissioned (3)	431	349	257	155

The active ICPs from the list file are summarised by meter category in the table below.

Metering Category	2017	2016	2015	2014
1	62,947	55,316	55,038	51,285
2	119	106	99	85
3	1	1	5	6
4	2	2	2	3
5	1	1	4	3
9	2	1	2	9
Blank	7	3	7	13
0	NA	NA	NA	NA

1.8. Authorisation Received

A letter of authorization was not required or sought.

1.9. Scope of Audit

Pulse intends to implement Gentrack 4.0 to replace Gentrack 3.8 and longer term it will also replace the reconciliation system (Cobra).

Clause 8(1) of Schedule 15.1 requires that if a reconciliation participant intends to make a “material” change to any certified facilities, processes or procedures then the changes must be subject to an audit prior to the change taking place. This audit was therefore performed at the request of Pulse so that it can be supplied to the Electricity Authority to satisfy the requirements of Clause 8(1).

The table below shows the specific functions affected by the GT4 implementation.

Tasks Requiring Certification Under Clause 15.38(1) of Part 15	Affected by GT4 stage 1	Affected by GT4 stage 2×
(a) - Maintaining registry information and performing customer and embedded generator switching	✓	✓
(b) – Gathering and storing raw meter data	✓	✓
(c)(iii) - Creation and management of HHR & NHH volume information	✗	✓
(d) – Calculation of ICP days	✗	✓
(da) - delivery of electricity supplied information under clause 15.7	✗	✓
(db) delivery of information from retailer and direct purchaser half hourly metered ICPs under clause 15.8	✗	✗
(e) – Provision of submission information for reconciliation	✗	✓

1.10. Summary of previous audit

Pulse is currently undergoing their Certified Reconciliation Participant audit to support recertification and the previous audit results will be discussed in that report.

2. OPERATIONAL INFRASTRUCTURE

2.1. Relevant information (Clause 10.6, 11.2, 15.2)

Code reference

Clause 10.6, 11.2, 15.2

Code related audit information

A participant must take all practicable steps to ensure that information that the participant is required to provide to any person under Part 15 is:

- a) complete and accurate*
- b) not misleading or deceptive*
- c) not likely to mislead or deceive.*

If the participant becomes aware that in providing information under this Part, the participant has not complied with that obligation, the participant must, as soon as practicable, provide such further information as is necessary to ensure that the participant does comply.

Audit observation

I considered whether any of the GT4 functionality was likely to result in incorrect or misleading information.

Audit commentary

Comprehensive testing was conducted and checked by me during this audit. I did not identify any issues with the GT4 functionality or associated processes for stage 1.

Audit outcome

Compliant

2.2. Provision of information (Clause 15.35)

Code reference

Clause 15.35

Code related audit information

If an obligation exists to provide information in accordance with Part 15, a participant must deliver that information to the required person within the timeframe specified in the Code, or, in the absence of any such timeframe, within any timeframe notified by the Authority. Such information must be delivered in the format determined from time to time by the Authority.

Audit observation

Processes to provide information were reviewed and observed throughout the audit.

Audit commentary

No late information was identified. Compliance is confirmed.

Audit outcome

Compliant

2.3. Data transmission (Clause 20 Schedule 15.2)

Code reference

Clause 20 Schedule 15.2

Code related audit information

Transmissions and transfers of data related to metering information between reconciliation participants or their agents, for the purposes of the Code, must be carried out electronically using systems that ensure the security and integrity of the data transmitted and received.

Audit observation

Data transmission processes will not change and will be examined as part of the main audit.

Audit commentary

Data transmission processes will not change and will be examined as part of the main audit.

Audit outcome

Not applicable

2.4. Audit trails (Clause 21 Schedule 15.2)

Code reference

Clause 21 Schedule 15.2

Code related audit information

Each reconciliation participant must ensure that a complete audit trail exists for all data gathering, validation, and processing functions of the reconciliation participant.

The audit trail must include details of information:

- *provided to and received from the registry*
- *provided to and received from the reconciliation manager*
- *provided and received from other reconciliation participants and their agents.*

The audit trail must cover all archived data in accordance with clause 18.

The logs of communications and processing activities must form part of the audit trail, including if automated processes are in operation.

Logs must be printed and filed as hard copy or maintained as data files in a secure form, along with other archived information.

The logs must include (at a minimum) the following:

- *an activity identifier (clause 21(4)(a))*
- *the date and time of the activity (clause 21(4)(b))*
- *the operator identifier (clause 21(4)(c)).*

Audit observation

Audit trails were tested and the results were supplied to me by Pulse.

Audit commentary

Appropriate audit trails are in place for all events and edits.

Audit outcome

Compliant

2.5. Retailer responsibility for electricity conveyed - participant obligations (Clause 10.4)

Code reference

Clause 10.4

Code related audit information

If a participant must obtain a consumer's consent, approval, or authorisation, the participant must ensure it:

- *extends to the full term of the arrangement*
- *covers any participants who may need to rely on that consent.*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.6. Retailer responsibility for electricity conveyed - access to metering installations (Clause 10.7(2),(4),(5) and (6))

Code reference

Clause 10.7(2),(4),(5) and (6)

Code related audit information

The responsible reconciliation participant must, if requested, arrange access for the metering installation to the following parties:

- *the Authority*
- *an ATH*
- *an auditor*
- *an MEP*
- *a gaining metering equipment provider.*

The trader must use its best endeavours to provide access:

- *in accordance with any agreements in place*
- *in a manner and timeframe which is appropriate in the circumstances.*

If the trader has a consumer, the trader must obtain authorisation from the customer for access to the metering installation, otherwise it must arrange access to the metering installation.

The reconciliation participant must provide any necessary facilities, codes, keys or other means to enable the party to obtain access to the metering installation by the most practicable means.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.7. Physical location of metering installations (Clause 10.35(1)&(2))

Code reference

Clause 10.35(1)&(2)

Code related audit information

A reconciliation participant responsible for ensuring there is a category 1 metering installation or category 2 metering installation must ensure that the metering installation is located as physically close to a point of connection as practical in the circumstances.

A reconciliation participant responsible for ensuring there is a category 3 or higher metering installation must:

- a) if practical in the circumstances, ensure that the metering installation is located at a point of connection; or*
- b) if it is not practical in the circumstances to locate the metering installation at the point of connection, calculate the quantity of electricity conveyed through the point of connection using a loss compensation process approved by the certifying ATH.*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.8. Trader contracts to permit assignment by the Authority (Clause 11.15B)

Code reference

Clause 11.15B

Code related audit information

A trader must at all times ensure that the terms of each contract between a customer and a trader permit:

- the Authority to assign the rights and obligations of the trader under the contract to another trader if the trader commits an event of default under paragraph (a) or (b) or (f) or (h) of clause 14.41 (clause 11.15B(1)(a)); and*
- the terms of the assigned contract to be amended on such an assignment to—*
- the standard terms that the recipient trader would normally have offered to the customer immediately before the event of default occurred (clause 11.15B(1)(b)(i)); or*
- such other terms that are more advantageous to the customer than the standard terms, as the recipient trader and the Authority agree (clause 11.15B(1)(b)(ii)); and*

- *the terms of the assigned contract to be amended on such an assignment to include a minimum term in respect of which the customer must pay an amount for cancelling the contract before the expiry of the minimum term (clause 11.15B(1)(c)); and*
- *the trader to provide information about the customer to the Authority and for the Authority to provide the information to another trader if required under Schedule 11.5 (clause 11.15B(1)(d)); and*
- *the trader to assign the rights and obligations of the trader to another trader (clause 11.15B(1)(e)).*

The terms specified in sub-clause (1) must be expressed to be for the benefit of the Authority for the purposes of the Contracts (Privacy) Act 1982, and not be able to be amended without the consent of the Authority (clause 11.15B(2)).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.9. Electrical connection of an ICP (Clause 10.32)

Code reference

Clause 10.32

Code related audit information

A reconciliation participant must only request electrical connection of a point of connection if they:

- *accept responsibility for the ICP and the obligations under Parts 10 and 11, and, under Part 15; and*
- *have an arrangement with an MEP to provide metering at the point of connection under Part 15.*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.10. Metering certification (Clause 10.33(2))

Code reference

Clause 10.33(2)

Code related audit information

A reconciliation participant may energise or authorise the energisation of a connection only if the reconciliation participant has accepted responsibility for the point of connection if one or more certified metering installations are in place.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.11. Arrangements for line function services (Clause 11.16)

Code reference

Clause 11.16

Code related audit information

Before notifying the registry of any information in accordance with clause 11.7(2) or clause 11.18(4), a trader must ensure that it, or its customer, has made any necessary arrangements for the provision of line function services in relation to the relevant ICP.

Before notifying the registry of any information in accordance with clause 11.7(2) or clause 11.18(4), a trader must have entered into an arrangement with an MEP for each metering installation at the ICP.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

2.12. Arrangements for metering equipment provision (Clause 10.36)

Code reference

Clause 10.36

Code related audit information

A reconciliation participant must ensure it has an arrangement with the relevant MEP prior to accepting responsibility for an installation.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

3. MAINTAINING REGISTRY INFORMATION

3.1. Obtaining ICP identifiers (Clause 11.3)

Code reference

Clause 11.3

Code related audit information

The following participants must, before assuming responsibility for certain points of connection on a local network or embedded network, obtain an ICP identifier for the point of connection:

- a) a trader who has agreed to purchase electricity from an embedded generator or sell electricity to a consumer*
- b) an embedded generator who sells electricity directly to the clearing manager*
- c) a direct purchaser connected to a local network or an embedded network*
- d) an embedded network owner in relation to a point of connection on an embedded network that is settled by differencing*
- e) a network owner in relation to a shared unmetered load point of connection to the network owner's network*
- f) a network owner in relation to a point of connection between the network owner's network and an embedded network.*

ICP identifiers must be obtained for points of connection at which any of the following occur:

- a consumer purchases electricity from a trader 11.3(3)(a)*
- a trader purchases electricity from an embedded generator 11.3(3)(b)*
- a direct purchaser purchases electricity from the clearing manager 11.3(3)(c)*
- an embedded generator sells electricity directly to the clearing manager 11.3(3)(d)*
- a network is settled by differencing 11.3(3)(e)*
- there is a distributor status ICP on the parent network point of connection of an embedded network or at the point of connection of shared unmetered load 11.3(3)(f).*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

3.2. Providing registry information (Clause 11.7(2))

Code reference

Clause 11.7(2)

Code related audit information

Each trader must provide information to the registry about each ICP at which it trades electricity in accordance with Schedule 11.1.

Audit observation

Pulse provided a User Acceptance Testing (UAT) spreadsheet containing 102 individual tests. Pulse also provided screenshots of the test results.

Audit commentary

The test results confirmed that all relevant fields are correctly populated in the registry files.

Audit outcome

Compliant

3.3. Changes to registry information (Clause 10 Schedule 11.1)

Code reference

Clause 10 Schedule 11.1

Code related audit information

If information provided by a trader to the registry about an ICP changes, the trader must notify the registry of the change no later than five business days after the change.

Audit observation

Timeliness of registry updates relies on processes, which have not changed as part of the GT4 upgrade.

Audit commentary

Timeliness of registry updates relies on processes, which have not changed as part of the GT4 upgrade.

Audit outcome

Not applicable

3.4. Trader responsibility for an ICP (Clause 11.18)

Code reference

Clause 11.18

Code related audit information

A trader becomes responsible for an ICP when the trader is recorded in the registry as being responsible for the ICP.

A trader ceases to be responsible for an ICP if:

- *another trader is recorded in the registry as accepting responsibility for the ICP (clause 11.18(2)(a)); or*
- *the ICP is decommissioned in accordance with clause 20 of Schedule 11.1 (clause 11.18(2)(b)).*

- *if an ICP is to be decommissioned, the trader who is responsible for the ICP must (clause 11.18(3)):*
 - o *arrange for a final interrogation to take place prior to or upon meter removal (clause 11.18(3)(a)); and*
 - o *advise the MEP responsible for the metering installation of the decommissioning (clause 11.18(3)(b)).*

A trader who is responsible for an ICP (excluding UML) must ensure that an MEP is recorded in the registry for that ICP (clause 11.18(4)).

A trader must not trade at an ICP (excluding UML) unless an MEP is recorded in the registry for that ICP (clause 11.18(5)).

Audit observation

The decommissioning process is included in the list of UAT scenarios and it was checked during the audit.

Audit commentary

The test results confirm the compliance of the system and associated processes.

Audit outcome

Compliant

3.5. Provision of information to the registry (Clause 9 Schedule 11.1)

Code reference

Clause 9 Schedule 11.1

Code related audit information

Each trader must provide the following information to the registry for each ICP for which it is recorded in the registry as having responsibility:

- a) the participant identifier of the trader, as approved by the Authority (clause 9(1)(a))*
- b) the profile code for each profile at that ICP, as approved by the market administrator (clause 9(1)(b))*
- c) the metering equipment provider for each category 1 metering or higher (clause 9(1)(c))*
- d) the type of submission information the trader will provide to the RM for the ICP (clause 9(1)(ea))*
- e) if a settlement type of UNM is assigned to that ICP, either:*
 - *the code ENG if the load is profiled through an engineering profile in accordance with profile class 2.1 (clause 9(1)(f)(i)); or*
 - *in all other cases, the daily average kWh of unmetered load at the ICP (clause 9(1)(f)(ii)).*
 - *the type and capacity of any unmetered load at each ICP (clause 9(1)(g))*
 - *the status of the ICP, as defined in clauses 12 to 20 (clause 9(1)(j))*
 - *except if the ICP exists for the purposes of reconciling an embedded network or the ICP has distributor status, the trader must provide the relevant business classification code applicable to the customer (clause 9(1)(k)).*

The trader must provide information specified in (a) to (j) above within five business days of trading (clause 9(2)).

The trader must provide information specified in 9(1)(k) no later than 20 business days of trading (clause 9(3))

Audit observation

Pulse provided a User Acceptance Testing (UAT) spreadsheet containing 102 individual tests. Pulse also provided screenshots of the test results.

Audit commentary

The test results confirmed that all relevant fields are correctly populated in the registry files.

Audit outcome

Compliant

3.6. ANZSIC codes (Clause 9 (1(k) of Schedule 11.1)

Code reference

Clause 9 (1(k) of Schedule 11.1

Code related audit information

Traders are responsible to populate the relevant ANZSIC code for all ICPs for which they are responsible.

Audit observation

Test results for registry updates were provided and checked.

Audit commentary

Registry population is compliant and the processes for ensuring all ICPs have a valid and correct ANZSIC code have not changed. All ICPs currently have a valid code.

Audit outcome

Compliant

3.7. Changes to unmetered load (Clause 9(1)(f) of Schedule 11.1)

Code reference

Clause 9(1)(f) of Schedule 11.1

Code related audit information

If a settlement type of UNM is assigned to that ICP, the trader must populate:

the code ENG - if the load is profiled through an engineering profile in accordance with profile class 2.1 (clause 9(1)(f)(i)); or

the daily average kWh of unmetered load at the ICP - in all other cases (clause 9(1)(f)(ii)).

Audit observation

Unmetered load will continue to be updated in the registry manually. This process will not change.

Audit commentary

Unmetered load will continue to be updated in the registry manually. This process will not change.

Audit outcome

Not applicable

3.8. Management of “active” status (Clause 17 Schedule 11.1)

Code reference

Clause 17 Schedule 11.1

Code related audit information

The ICP status of “active” is managed by the relevant trader and indicates that:

- the associated electrical installations are energised (clause 17(1)(a))
- the trader must provide information related to the ICP in accordance with Part 15, to the reconciliation manager for the purpose of compiling reconciliation information (clause 17(1)(b)).

Before an ICP is given the “active” status, the trader must ensure that:

- the ICP has only one customer, embedded generator, or direct purchaser (clause 17(2)(a))
- the electricity consumed is quantified by a metering installation or a method of calculation approved by the Authority (clause 17(2)(b)).

Audit observation

Pulse provided a User Acceptance Testing (UAT) spreadsheet containing 102 individual tests. Pulse also provided screenshots of the test results.

Audit commentary

The test results confirmed that all relevant fields are correctly populated in the registry files.

Audit outcome

Compliant

3.9. Management of “inactive” status (Clause 19 Schedule 11.1)

Code reference

Clause 19 Schedule 11.1

Code related audit information

The ICP status of “inactive” must be managed by the relevant trader and indicates that:

- electricity cannot flow at that ICP (clause 19(a)); or
- submission information related to the ICP is not required by the reconciliation manager for the purpose of compiling reconciliation information (clause 19(b)).

Audit observation

Pulse provided a User Acceptance Testing (UAT) spreadsheet containing 102 individual tests. Pulse also provided screenshots of the test results.

Audit commentary

The test results confirmed that all relevant fields are correctly populated in the registry files.

Audit outcome

Compliant

3.10. ICPs at new or ready status for 24 months (Clause 15 Schedule 11.1)

Code reference

Clause 15 Schedule 11.1

Code related audit information

If an ICP has had the status of "New" or "Ready" for 24 calendar months or more, the distributor must ask the trader whether it should continue to have that status, and must decommission the ICP if the trader advises the ICP should not continue to have that status.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

3.11. Change of MEP (Clause 10.22(1)(a)(i))

Code reference

Clause 10.22(1)(a)(i)

Code related audit information

If the MEP for an ICP which is not also an NSP changes, the trader must notify the registry of the gaining MEP in accordance with Part 11.

Audit observation

Pulse provided a User Acceptance Testing (UAT) spreadsheet containing 102 individual tests. Pulse also provided screenshots of the test results.

Audit commentary

The test results confirmed that all relevant fields are correctly populated in the registry files.

Audit outcome

Compliant

4. PERFORMING CUSTOMER AND EMBEDDED GENERATOR SWITCHING

4.1. Inform registry of switch request for ICPs - standard switch (Clause 2 Schedule 11.3)

Code reference

Clause 2 Schedule 11.3

Code related audit information

The standard switch process applies where a trader and a customer or embedded generator enters into an arrangement in which the trader commences trading electricity with the customer or embedded generator at a non-half hour or unmetered ICP at which another trader supplies electricity, or the trader assumes responsibility for such an ICP.

If the uninvited direct sale agreement applies to an arrangement described above, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

A gaining trader must advise the registry of a switch no later than two business days after the arrangement comes into effect and include in its advice to the registry that the switch type is TR and 1 or more profile codes associated with that ICP.

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.2. Losing trader response to switch request and event dates - standard switch (Clauses 3 and 4 Schedule 11.3)

Code reference

Clauses 3 and 4 Schedule 11.3

Code related audit information

Within three business days after receipt of notification of a switch from the registry, the losing trader must establish a proposed event date. The event date must be no more than 10 business days after the date of receipt of such notification, and in any 12 month period, at least 50% of the event dates must be no more than five business days after the date of notification. The losing trader must then:

- *provide acknowledgement of the switch request by (clause 3(a) of Schedule 11.3):*
- *providing the proposed event date to the registry and a valid switch response code (clause 3(a)(i) and (ii) of Schedule 11.3); or*
- *providing a request for withdrawal of the switch in accordance with clause 17 (clause 3(c) of Schedule 11.3).*

When establishing an event date for clause 4, the losing trader must disregard every event date established by the losing trader for a customer who has been with the losing trader for less than two calendar months (clause 4(2) of Schedule 11.3).

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.3. Losing trader must provide final information - standard switch (Clause 5 Schedule 11.3)

Code reference

Clause 5 Schedule 11.3

Code related audit information

If the losing trader provides information to the registry in accordance with clause 3(a) of Schedule 11.3 with the required information, no later than five business days after the event date, the losing trader must complete the switch by:

- *providing event date to the registry (clause 5(a)); and*
- *provide to the gaining trader a switch event meter reading as at the event date, for each meter or data storage device that is recorded on the registry with accumulator of C and a settlement indicator of Y (clause 5(b)); and*
- *if a switch event meter reading is not a validated reading, provide the date of the last meter reading (clause 5(c)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance. I specifically checked that the switch event meter readings, reading dates, date of last reading, identification of reading as A or E and average daily consumption fields were populated correctly.

Audit outcome

Compliant

4.4. Retailers must use same reading - standard switch (Clause 6(1) and 6A Schedule 11.3)

Code reference

Clause 6(1) and 6A Schedule 11.3

Code related audit information

The losing trader and the gaining trader must both use the same switch event meter reading as determined by the following procedure:

- *if the switch event meter reading provided by the losing trader differs by less than 200 kWh from a value established by the gaining trader, the gaining trader must use the losing trader's validated meter reading or permanent estimate (clause 6(a)); or*

- *the gaining trader may dispute the switch meter reading if the validated meter reading or permanent estimate provided by the losing trader differs by 200 kWh or more (clause 6(b)).*

If the gaining trader disputes a switch meter reading because the switch event meter reading provided by the losing trader differs by 200 kWh or more, the gaining trader must, within four calendar months of the actual event date, provide to the losing trader a changed switch event meter reading supported by two validated meter readings.

- *the losing trader can choose not to accept the reading, however must advise the gaining trader no later than five business days after receiving the switch event meter reading from the gaining trader (clause 6A(a)); or*
- *if the losing trader notifies its acceptance or does not provide any response, the losing trader must use the switch event meter reading supplied by the gaining trader (clause 6A(b)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.5. Non-half hour switch event meter reading - standard switch (Clause 6(2) and (3) Schedule 11.3)

Code reference

Clause 6(2) and (3) Schedule 11.3

Code related audit information

If the losing trader trades electricity from a non-half hour meter, with a switch event meter reading that is not from an AMI certified meter flagged Y on the registry: and

- *the gaining trader will trade electricity from a meter with a half hour submission type in the registry (clause 6(2)(b));*
- *the gaining trader within five business days after receiving final information from the registry, may provide the losing trader with a switch event meter reading from that meter. The losing trader must use that switch event meter reading.*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.6. Disputes - standard switch (Clause 7 Schedule 11.3)

Code reference

Clause 7 Schedule 11.3

Code related audit information

A losing trader or gaining trader may notify the other that it disputes a switch event meter reading, notified under clauses 1 to 6. Such a dispute must be resolved in accordance with clause 15.29 (with all necessary amendments).

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.7. Gaining trader informs registry of switch request - switch move (Clause 9 Schedule 11.3)

Code reference

Clause 9 Schedule 11.3

Code related audit information

The switch move process applies where a gaining trader has an arrangement with a customer or embedded generator to trade electricity at an ICP using non half-hour metering or an unmetered ICP, or to assume responsibility for such an ICP, and no other trader has an agreement to trade electricity at that ICP, this is referred to as a switch move and the following provisions apply:

If the "uninvited direct sale agreement" applies, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

In the event of a switch move, the gaining trader must advise the registry of a switch and the proposed event date no later than two business days after the arrangement comes into effect.

In its advice to the registry the gaining trader must include:

- *a proposed event date (clause 9(2)(a)); and*
- *that the switch type is "MI" (clause 9(2)(b)); and*
- *one or more profile codes of a profile at the ICP (clause 9(2)(c)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.8. Losing trader provides information - switch move (Clause 10(1) Schedule 11.3)

Code reference

Clause 10(1) Schedule 11.3

Code related audit information

10(1) Within five business days after receipt of notification of the switch move from the registry, if the losing trader accepts the event date proposed by the gaining trader, the losing trader must complete the switch by providing to the registry:

- *confirmation of the switch event date; and*
- *a valid switch response code; and*
- *final information as required under clause 1; or*
- *10(1)(b) If the losing trader does not accept the event date proposed by the gaining trader, the losing trader must acknowledge the switch request. Determine an event date that is not earlier than the gaining traders proposed date and that date can be no later than 10 business days after the date of the notification. Alternatively, the losing trader may provide a request for a withdrawal of the switch in accordance with clause 17.*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.9. Losing trader determines a different date - switch move (Clause 10(2) Schedule 11.3 (2))

Code reference

Clause 10(2) Schedule 11.3 (2)

Code related audit information

If the losing trader determines a different date, the losing trader must also complete the switch by providing to the registry as described in sub-clause (1)(a):

- *the event date proposed by the losing trader; and*
- *a valid switch response code; and*
- *final information as required under clause 1.*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.10. Losing trader must provide final information - switch move (Clause 11 Schedule 11.3)

Code reference

Clause 11 Schedule 11.3

Code related audit information

If the losing trader has provided information to the registry in accordance with clause 10(a), within three business days after the later of the actual event date or date of receipt of the switch request, the losing trader must:

- *provide the event date (clause 11(a)); and*
- *provide the switch event meter reading as at the event date for each meter or data storage device noted on the registry (clause 11(b)); and*
- *if switch event meter reading is not a validated meter reading, provide the date of the last reading of the meter or storage device (clause (11(c)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance. I specifically checked that the switch event meter readings, reading dates, date of last reading, identification of reading as A or E and average daily consumption fields were populated correctly.

Audit outcome

Compliant

4.11. Gaining trader changes to switch meter reading - switch move (Clause 12 Schedule 11.3)

Code reference

Clause 12 Schedule 11.3

Code related audit information

The gaining trader may use the switch event meter reading supplied by the losing trader or may, at its own cost, obtain its own switch event meter reading. If the gaining trader elects to use this new switch event meter reading, the gaining trader must notify the losing trader of the switch event meter reading and the actual event date to which it refers as follows:

- *if the switch meter reading established by the gaining trader differs by less than 200 kWh from that provided by the losing trader, both traders must use the switch event meter reading provided by the gaining trader (clause 12(2)(a)); or*
- *if the switch event meter reading provided by the losing trader differs by 200 kWh or more from a value established by the gaining trader, the gaining trader may dispute the switch meter reading. In this case, the gaining trader, within 4 calendar months of the actual event date, must provide to the losing trader a changed validated meter reading or a permanent estimate supported by 2 validated meter readings and the losing trader must either (clause 12(2)(b) and clause 12(3)):*
- *notify the gaining trader if it does not accept the switch event meter reading and the losing trader and the gaining trader must resolve the dispute in accordance with the disputes procedure in clause 15.29 (with all necessary amendments) (clause 12(3)(a)); or*

- *if the losing trader notifies its acceptance or does not provide any response, the losing trader must use the switch event meter reading supplied by the gaining trader (clause 12(3)(b)).*

12(2A) If the losing trader trades electricity from a non-half hour meter, with a switch event meter reading that is not from an AMI certified meter flagged Y on the registry,

- *the gaining trader will trade electricity from a meter with a half hour submission type in the registry (clause 12(2A)(b));*
- *the gaining trader no later than 5 business days after receiving final information from the registry, may provide the losing trader with a switch event meter reading from that meter. The losing trader must use that switch event meter reading (clause 12(2B)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.12. Gaining trader informs registry of switch request - gaining trader switch (Clause 14 Schedule 11.3)

Code reference

Clause 14 Schedule 11.3

Code related audit information

The gaining trader switch process applies where a trader and a customer or embedded generator enters into an arrangement in which the trader commences trading electricity with the customer or embedded generator to trade electricity through or assume responsibility for:

- *a half hour metering installation that is not a category 1 or 2 metering installation, that has an ICP with a submission type half hour on the registry and an AMI flag of "N"; or*
- *a half hour metering installation that has a submission flag of half hour and an AMI flag of "N" and is traded by the losing trader as non-half hour; or*
- *a non-half hour metering installation at an ICP with the losing trader trades through a half hour metering installation with an AMI flag of "N".*

If the uninvited direct sale agreement applies to an arrangement described above, the gaining trader must identify the period within which the customer or embedded generator may cancel the arrangement in accordance with section 36M of the Fair Trading Act 1986. The arrangement is deemed to come into effect on the day after the expiry of that period.

A gaining trader must advise the registry of the switch and expected event date no later than 3 business days after the arrangement comes into effect.

14(2) The gaining trader must include in its advice to the registry:

- a) a proposed event date; and*
- b) that the switch type is HH.*

14(3) The proposed event date must be a date that is after the date on which the gaining trader advises the registry, unless clause 14(4) applies.

14(4) The proposed event date is a date before the date on which the gaining trader advised the registry, if:

14(4)(a) – the proposed event date is in the same month as the date on which the gaining trader advised the registry; or

14(4)(b) – the proposed event date is no more than 90 days before the date on which the gaining trader advises the registry and this date is agreed between the losing and gaining traders.

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.13. Losing trader provision of information - gaining trader switch (Clause 15 Schedule 11.3)

Code reference

Clause 15 Schedule 11.3

Code related audit information

Within three business days after the losing trader is informed about the switch by the registry, the losing trader must:

15(a) - provide to the registry a valid switch response code as approved by the Authority; or

15(b) - provide a request for withdrawal of the switch in accordance with clause 17.

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.14. Gaining trader to notify registry - gaining trader switch (Clause 16 Schedule 11.3)

Code reference

Clause 16 Schedule 11.3

Code related audit information

The gaining trader must complete the switch no later than three business days, after receiving the valid switch response code, by advising the registry of the event date.

If the ICP is being de-energised or if metering equipment is being removed, the gaining trader must either-

16(a)- give the losing trader or MEP for the ICP an opportunity to interrogate the metering installation immediately before the ICP is de-energised or the metering equipment is removed; or

16(b)- carry out an interrogation and, no later than five business days after the metering installation is de-energised or removed, advise the losing trader of the results and metering component numbers for each data channel in the metering installation.

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.15. Withdrawal of switch requests (Clauses 17 and 18 Schedule 11.3)

Code reference

Clauses 17 and 18 Schedule 11.3

Code related audit information

A losing trader or gaining trader may request that a switch request be withdrawn at any time until the expiry of two calendar months after the event date of the switch.

If a trader requests the withdrawal of a switch, the following provisions apply:

- *for each ICP, the trader withdrawing the switch request must provide the registry with (clause 18(c)):*
 - o *the participant identifier of the trader making the withdrawal request (clause 18(c)(i)); and*
 - o *the withdrawal advisory code published by the Authority. (clause 18(c)(ii))*
- *within five business days after receiving a notification from the registry of a switch, the trader receiving the withdrawal must notify the registry that the switch withdrawal request is accepted or rejected. A switch withdrawal request must not become effective until accepted by the trader who received the withdrawal (clause 18(d))*
- *on receipt of a rejection notification from the registry, in accordance with clause 18(d), a trader may re-submit the switch withdrawal request for an ICP in accordance with clause 18(c). All switch withdrawal requests must be resolved within 10 business days after the date of the initial switch withdrawal request (clause 18(e))*
- *if the trader requests that a switch request be withdrawn, and the resolution of that switch withdrawal request results in the switch proceeding, within 2 business days after receipt of notification from the registry in accordance with clause 22(b), the losing trader must comply with clauses 3,5,10 and 11 (whichever is appropriate) and the gaining trader must comply with clause 16 (clause 18(f)).*

Audit observation

UAT included 51 individual test scenarios covering all relevant processes. I checked the results and the screenshots for all scenarios.

Audit commentary

UAT results and screenshots confirm compliance.

Audit outcome

Compliant

4.16. Metering information (Clause 21 Schedule 11.3)

Code reference

Clause 21 Schedule 11.3

Code related audit information

For an interrogation or validated meter reading or permanent estimate carried out in accordance with Schedule 11.3:

21(a) - the trader who carries out the interrogation, switch event meter reading must ensure that the interrogation is as accurate as possible, or that the switch event meter reading is fair and reasonable.

21(b) and (c) - the cost of every interrogation or switch event meter reading carried out in accordance with clauses 5(b) or 11(b) or (c) must be met by the losing trader. The costs in every other case must be met by the gaining trader.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

4.17. Switch saving protection (Clause 11.15AA to 11.15AB)

Code reference

Clause 11.15AA to 11.15AB

Code related audit information

A trader that buys electricity from the clearing manager may elect to have a switch saving protection by giving notice to the Authority in writing.

If a protected trader enters into an arrangement with a customer of another trader (the losing trader), or a trader enters into an arrangement with a customer of a protected trader, to commence trading electricity with the customer, the losing trader must not, by any means, initiate contact with the customer to attempt to persuade the customer to terminate the arrangement during the period from the receipt of the NT to the event date of the switch including by:

11.15AB(4)(a) - making a counter offer to the customer; or

11.15AB(4)(b) - offering an enticement to the customer.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

5. MAINTENANCE OF UNMETERED LOAD

5.1. Maintaining shared unmetered load (Clause 11.14)

Code reference

Clause 11.14

Code related audit information

The trader must adhere to the process for maintaining shared unmetered load as outlined in clause 11.14:

11.14(2) - The distributor must notify the traders responsible for the ICPs across which the unmetered load is shared, of the ICP identifiers of the ICPs.

11.14(3) - A trader who receives such a notification from a distributor must notify the distributor if it wishes to add or omit any ICP from the ICPs across which unmetered load is to be shared.

11.14(4) - A distributor who receives such a notification of changes from the trader under (3) must notify the registry and each trader responsible for any of the ICPs across which the unmetered load is shared.

11.14(5) - If a distributor becomes aware of any change to the capacity of a shared unmetered load ICP or if a shared unmetered load ICP is decommissioned, it must notify all traders affected by that change as soon as practicable after that change or decommissioning.

11.14(6) - Each trader who receives such a notification must, as soon as practicable after receiving the notification, adjust the unmetered load information for each ICP in the list for which it is responsible to ensure that the entire shared unmetered load is shared equally across each ICP.

11.14(7) - A trader must take responsibility for shared unmetered load assigned to an ICP for which the trader becomes responsible as a result of a switch in accordance with Part 11.

11.14(8) - A trader must not relinquish responsibility for shared unmetered load assigned to an ICP if there would then be no ICPs left across which that load could be shared.

11.14(9) - A trader can change the status of an ICP across which the unmetered load is shared to inactive status, as referred to in clause 19 of Schedule 11.1. In that case, the trader is not required to notify the distributor of the change. The amount of electricity attributable to that ICP becomes UFE.

Audit observation

Unmetered load will continue to be updated in the registry manually. This process will not change.

Audit commentary

Unmetered load will continue to be updated in the registry manually. This process will not change.

Audit outcome

Not applicable

5.2. Unmetered threshold (Clause 10.14 (2)(b))

Code reference

Clause 10.14 (2)(b)

Code related audit information

The reconciliation participant must ensure that unmetered load does not exceed 3,000 kWh per annum, or 6,000 kWh per annum if the load is predictable and of a type approved and published by the Authority.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

5.3. Unmetered threshold exceeded (Clause 10.14 (5))

Code reference

Clause 10.14 (5)

Code related audit information

If the unmetered load limit is exceeded the retailer must:

- *within 20 business days, commence corrective measure to ensure it complies with Part 10*
- *within 20 business days of commencing the corrective measure, complete the corrective measures*
- *no later than 10 business days after it becomes aware of the limit having been exceeded, advise each participant who is or would be expected to be affected of:*
 - o *the date the limit was calculated or estimated to have been exceeded*
 - o *the details of the corrective measures that the MEP proposes to take or is taking to reduce the unmetered load.*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

5.4. Distributed unmetered load (Clause 11 Schedule 15.3, Clause 15.37B)

Code reference

Clause 11 Schedule 15.3, Clause 15.37B

Code related audit information

An up-to-date database must be maintained for each type of distributed unmetered load for which the retailer is responsible. The information in the database must be maintained in a manner that the resulting submission information meets the accuracy requirements of clause 15.2.

A separate audit is required for distributed unmetered load data bases.

The database must satisfy the requirements of Schedule 15.5 with regard to the methodology for deriving submission information.

Audit observation

Processes for distributed unmetered load were checked.

Audit commentary

Pulse does not supply any distributed unmetered load.

Audit outcome

Not applicable

6. GATHERING RAW METER DATA

6.1. Electricity conveyed & notification by embedded generators(Clause 10.13, Clause 10.24 and 15.13)

Code reference

Clause 10.13, Clause 10.24 and 15.13

Code related audit information

A participant must use the quantity of electricity measured by a metering installation as the raw meter data for the quantity of electricity conveyed through the point of connection.

This does not apply if data is estimated or gifted in the case of embedded generation under clause 15.13.

A trader must, for each energised ICP that is not also an NSP, and for which it is recorded in the registry as being responsible, ensure that:

- *there is one or more metering installations*
- *all electricity conveyed is quantified in accordance with the Code*
- *it does not use subtraction to determine submission information for the purposes of Part 15.*

An embedded generator must give notification to the reconciliation manager for an embedded generating station, if the intention is that the embedded generator will not be receiving payment from the clearing manager or any other person through the point of connection to which the notification relates.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.2. Responsibility for metering at GIP(Clause 10.26 (6), (7) and (8))

Code reference

Clause 10.26 (6), (7) and (8)

Code related audit information

For each proposed metering installation or change to a metering installation that is a connection to the grid, the participant, must:

- *provide to the grid owner a copy of the metering installation design (before ordering the equipment)*
- *provide at least three months for the grid owner to review and comment on the design*
- *respond within three business days of receipt to any request from the grid owner for additional details or changes to the design*
- *ensure any reasonable changes from the grid owner are carried out.*

The participant responsible for the metering installation must:

- *advise the reconciliation manager of the certification expiry date not later than 10 business days after certification of the metering installation*

- *become the MEP or contract with a person to be the MEP*
- *advise the reconciliation manager of the MEP identifier no later than 20 days after entering into a contract or assuming responsibility to be the MEP.*

Audit observation

Pulse does not have responsibility for any GIPs.

Audit commentary

Pulse does not have responsibility for any GIPs.

Audit outcome

Not applicable

6.3. Certification of control devices(Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3)

Code reference

Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3

Code related audit information

The reconciliation participant must advise the metering equipment provider if a control device is used to control load or switch meter registers.

The reconciliation participant must ensure the control device is certified prior to using it for reconciliation purposes.

Audit observation

Pulse does not use any profiles requiring control devices.

Audit commentary

Pulse does not use any profiles requiring control devices.

Audit outcome

Not applicable

6.4. Reporting of defective metering installations (Clause 10.43(2) and (3))

Code reference

Clause 10.43(2) and (3)

Code related audit information

If a participant becomes aware of an event or circumstance that lead it to believe a metering installation could be inaccurate, defective, or not fit for purpose they must:

- *advise the MEP*
- *include in the advice all relevant details.*

Audit observation

UAT included several validations to identify defective metering installations. The processes for notification to other parties has not changed as a result of GT4 implementation.

Audit commentary

UAT included several validations to identify defective metering installations. The processes for notification to other parties has not changed as a result of GT4 implementation.

Audit outcome

Not applicable

6.5. Collection of information by certified reconciliation participant (Clause 2 Schedule 15.2)

Code reference

Clause 2 Schedule 15.2

Code related audit information

Only a certified reconciliation participant may collect raw meter data, unless only the MEP can interrogate the meter, or the MEP has an arrangement which prevents the reconciliation participant from electronically interrogating the meter:

2(2) - The reconciliation participant must collect raw meter data used to determine volume information from the services interface or the metering installation or from the MEP.

2(3) - The reconciliation participant must ensure the interrogation cycle is such that it does not exceed the maximum interrogation cycle on the registry.

2(4) - The reconciliation participant must interrogate the meter at least once every maximum interrogation cycle.

2(5) - When electronically interrogating the meter the participant must:

- a) ensure the system is to within +/- 5 seconds of NZST or NZDST*
- b) compare the meter time to the system time*
- c) determine the time error of the metering installation*
- d) if the error is less than the maximum permitted error, correct the meter's clock*
- e) if the time error is greater than the maximum permitted error then:
 - i) correct the metering installation's clock*
 - ii) compare the metering installation's time with the system time*
 - iii) correct any affected raw meter data.**
- f) download the event log.*

2(6) – The interrogation systems must record:

- the time*
- the date*
- the extent of any change made to the meter clock.*

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.6. Derivation of meter readings (Clause 3(1), 3(2) and 5 Schedule 15.2)

Code reference

Clause 3(1), 3(2) and 5 Schedule 15.2

Code related audit information

All meter readings must in accordance with the participants certified processes and procedures and using its certified facilities be sourced directly from raw meter data and, if appropriate, be derived and calculated from financial records.

All validated meter readings must be derived from meter readings.

A meter reading provided by a consumer may be used as a validated meter reading only if another set of validated meter readings not provided by the consumer are used during the validation process.

During the manual interrogation of each NHH metering installation the reconciliation participant must:

- a) obtain the meter register*
- b) ensure seals are present and intact*
- c) check for phase failure (if supported by the meter)*
- d) check for signs of tampering and damage*
- e) check for electrically unsafe situations*

if the relevant parts of the metering installation are visible and it is safe to do so.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.7. NHH meter reading application (Clause 6 Schedule 15.2)

Code reference

Clause 6 Schedule 15.2

Code related audit information

For NHH switch event meter reads, for the gaining trader the reading applies from 0000 hours on the day of the relevant event date and for the losing trader at 2400 hours at the end of the day before the relevant event date.

In all other cases, All NHH readings apply from 0000hrs on the day after the last meter interrogation up to and including 2400hrs on the day of the meter interrogation.

Audit observation

I checked the test results including screenshots to confirm compliance.

Audit commentary

The test results confirmed that meter readings for continuous ICPs apply from midnight on the day of the reading and that switch event meter readings received are correctly data stamped at 2400 on the day before the relevant date.

Audit outcome

Compliant

6.8. Interrogate meters once (Clause 7(1) and (2) Schedule 15.2)

Code reference

Clause 7(1) and (2) Schedule 15.2

Code related audit information

Each reconciliation participant must ensure that a validated meter reading is obtained in respect of every meter register for every non half hour metered ICP for which the participant is responsible, at least once during the period of supply to the ICP by the reconciliation participant, and used to create volume information.

This may be a validated meter reading at the time the ICP is switched to, or from, the reconciliation participant.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 7(1).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.9. NHH meters interrogated annually (Clause 8(1) and (2) Schedule 15.2)

Code reference

Clause 8(1) and (2) Schedule 15.2

Code related audit information

At least once every 12 months, each reconciliation participant must obtain a validated meter reading for every meter register for non-half hour metered ICPs, at which the reconciliation participant trades continuously for each 12 month period.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 8(1).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.10. NHH meters 90% read rate (Clause 9(1) and (2) Schedule 15.2)

Code reference

Clause 9(1) and (2) Schedule 15.2

Code related audit information

In relation to each NSP, each reconciliation participant must ensure that for each NHH ICP at which the reconciliation participant trades continuously for each 4 months, for which consumption information is required to be reported into the reconciliation process. A validated meter reading is obtained at least once every four months for 90% of the non-half hour ICPs.

A report is to be sent to the market administrator providing the percentage, in relation to each NSP, for which consumption information has been collected no later than 20 business days after the end of each month.

If exceptional circumstances prevent a reconciliation participant from obtaining the validated meter reading, the reconciliation participant is not required to comply with clause 9(1).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.11. NHH meter interrogation log (Clause 10 Schedule 15.2)

Code reference

Clause 10 Schedule 15.2

Code related audit information

The following information must be logged as the result of each interrogation of the NHH metering:

10(a) - the means to establish the identity of the individual meter reader

10(b) - the ICP identifier of the ICP, and the meter and register identification

10(c) - the method being used for the interrogation and the device ID of equipment being used for interrogation of the meter.

10(d) - the date and time of the meter interrogation.

Audit observation

This area will not change as a result of the GT4 implementation. Testing was conducted to ensure the metering reading file upload process operated as expected.

Audit commentary

This area will not change as a result of the GT4 implementation. Testing was conducted to ensure the metering reading file upload process operated as expected.

Audit outcome

Not applicable

6.12. HHR data collection (Clause 11(1) Schedule 15.2)

Code reference

Clause 11(1) Schedule 15.2

Code related audit information

Raw meter data from all electronically interrogated metering installations must be obtained via the services access interface.

This may be carried out by a portable device or remotely.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.13. HHR interrogation data requirement (Clause 11(2) Schedule 15.2)

Code reference

Clause 11(2) Schedule 15.2

Code related audit information

The following information is collected during each interrogation:

11(2)(a) - the unique identifier of the data storage device

11(2)(b) - the time from the data storage device at the commencement of the download unless the time is within specification and the interrogation log automatically records the time of interrogation

11(2)(c) - the metering information, which represents the quantity of electricity conveyed at the point of connection, including the date and time stamp or index marker for each half hour period. This may be limited to the metering information accumulated since the last interrogation

11(2)(d) - the event log, which may be limited to the events information accumulated since the last interrogation

11(2)(e) - an interrogation log generated by the interrogation software to record details of all interrogations.

The interrogation log must be examined by the reconciliation participant responsible for collecting the data and appropriate action must be taken if problems are apparent or an automated software function flags exceptions.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

6.14. HHR interrogation log requirements (Clause 11(3) Schedule 15.2)

Code reference

Clause 11(3) Schedule 15.2

Code related audit information

The interrogation log forms part of the interrogation audit trail and, as a minimum, must contain the following information:

11(3)(a) - the date of interrogation

11(3)(b) - the time of commencement of interrogation

11(3)(c) - the operator identification (if available)

11(3)(d) - the unique identifier of the meter or data storage device

11(3)(e) - the clock errors outside the range specified in Table 1 of clause 2

11(3)(f) - the method of interrogation

11(3)(g) - the identifier of the reading device used for interrogation (if applicable).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

7. STORING RAW METER DATA

7.1. Trading period duration (Clause 13 Schedule 15.2)

Code reference

Clause 13 Schedule 15.2

Code related audit information

The trading period duration, normally 30 minutes, must be within $\pm 0.1\%$ (± 2 seconds).

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

7.2. Archiving and storage of raw meter data (Clause 18 Schedule 15.2)

Code reference

Clause 18 Schedule 15.2

Code related audit information

A reconciliation participant who is responsible for interrogating a metering installation must archive all raw meter data and any changes to the raw meter data for at least 48 months, in accordance with clause 8(6) of Schedule 10.6.

Procedures must be in place to ensure that raw meter data cannot be accessed by unauthorised personnel.

Meter readings cannot be modified without an audit trail being created.

Audit observation

UAT included testing of file transfers (interfaces section) and changes to billing and meter readings (billing section).

Audit commentary

The results confirmed that data is secure and any meter reading edits have a compliant audit trail.

Audit outcome

Compliant

7.3. Non metering information collected / archived (Clause 21(5) Schedule 15.2)

Code reference

Clause 21(5) Schedule 15.2

Code related audit information

All relevant non-metering information, such as external control equipment operation logs, used in the determination of profile data must be collected, and archived in accordance with clause 18.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

8. CREATING AND MANAGING (INCLUDING VALIDATING, ESTIMATING, STORING, CORRECTING AND ARCHIVING) VOLUME INFORMATION

8.1. Correction of NHH meter readings (Clause 19(1) Schedule 15.2)

Code reference

Clause 19(1) Schedule 15.2

Code related audit information

If errors are detected during validation of non-half hour meter readings, one of the following must be undertaken:

19(1)(a) - confirmation of the original meter reading by carrying out another meter reading

19(1)(b) - replacement of the original meter reading by another meter reading (even if the replacement meter reading may be at a different date)

19(1)(c) - if the original meter reading cannot be confirmed or replaced by a meter reading from another interrogation, then an estimated reading is substituted and the estimated reading is marked as an estimate and it is subsequently replaced in accordance with clause 4(2).

Audit observation

UAT included testing of the estimation and validation functionality and the results were checked.

Audit commentary

Tests 05.03.03 and 05.04.03 confirm the compliance of the estimation processes.

Audit outcome

Compliant

8.2. Correction of HHR metering information (Clause 19(2) Schedule 15.2)

Code reference

Clause 19(2) Schedule 15.2

Code related audit information

If errors are detected during validation of half hour metering information the correction must be as follows:

19(2)(a) - if a check meter or data storage device is installed at the metering installation, data from this source may be substituted

19(2)(b) - in the absence of any check meter or data storage device, data may be substituted from another period if the total of all substituted intervals matches the total consumption recorded on the meter, if available, and the pattern of consumption is considered materially similar to the period in error.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

8.3. Error and loss compensation arrangements (Clause 19(3) Schedule 15.2)

Code reference

Clause 19(3) Schedule 15.2

Code related audit information

If error compensation and loss compensation are carried out as part of the process of determining accurate data, the compensation process must be documented and must comply with audit trail requirements.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

8.4. Correction of HHR and NHH raw meter data (Clause 22(1) and (2) Schedule 15.2)

Code reference

Clause 22(1) and (2) Schedule 15.2

Code related audit information

In correcting a meter reading in accordance with clause 19, the raw meter data must not be overwritten. If the raw meter data and the meter readings are the same, an automatic secure backup of the affected data must be made and archived by the processing or data correction application.

If data is corrected or altered, a journal must be generated and archived with the raw meter data file. The journal must contain the following:

22(2)(a) - the date of the correction or alteration

22(2)(b) - the time of the correction or alteration

22(2)(c) - the operator identifier of the reconciliation participant

22(2)(d) - the half-hour metering data or the non-half hour metering data corrected or altered, and the total difference in volume of such corrected or altered data

22(2)(e) - the technique used to arrive at the corrected data

22(2)(f) - the reason for the correction or alteration.

Audit observation

NHH raw meter data is not edited. Working data is edited and the test results were checked.

Audit commentary

UAT tests were conducted in the billing section and confirm the appropriate audit trail for corrections.

Audit outcome

Compliant

9. ESTIMATING AND VALIDATING VOLUME INFORMATION

9.1. Identification of readings (Clause 3(3) Schedule 15.2)

Code reference

Clause 3(3) Schedule 15.2

Code related audit information

All estimated readings and permanent estimates must be clearly identified as an estimate at source and in any exchange of metering data or volume information between participants.

Audit observation

UAT results were checked to confirm compliance.

Audit commentary

UAT results confirmed meter readings were correctly identified.

Audit outcome

Compliant

9.2. Derivation of volume information (Clause 3(4) Schedule 15.2)

Code reference

Clause 3(4) Schedule 15.2

Code related audit information

Volume information must be directly derived, in accordance with Schedule 15.2, from:

3(4)(a) - validated meter readings

3(4)(b) - estimated readings

3(4)(c) - permanent estimates.

Audit observation

UAT results were checked to confirm compliance.

Audit commentary

UAT results confirmed meter readings were correctly identified and that volume information is correctly identified depending on the type of reading used.

Audit outcome

Compliant

9.3. Meter data used to derive volume information (Clause 3(5) Schedule 15.2)

Code reference

Clause 3(5) Schedule 15.2

Code related audit information

All meter data that is used for derive volume information must not be rounded or truncated from the stored data from the metering installation.

Audit observation

A sample of submission data was reviewed in section 12, to confirm that data is not rounded or truncated.

Audit commentary

Submission totals per ICP are displayed without decimal places in GT4. It is not clear whether this is just a display issue or whether the figures are actually rounded to zero decimal places. I recommend this matter is checked and resolved if necessary as part of stage 2.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 3(5) Schedule 15.2	Ensure data is not rounded until submission files are prepared.	NHH Volume submissions will continue to be performed using Cobra NHH reconciliation system until 2 decimal place accuracy of volume calculation is confirmed for Gentrack 4.	Identified

Audit outcome

Unable to determine

9.4. Half hour estimates (Clause 15 Schedule 15.2)

Code reference

Clause 15 Schedule 15.2

Code related audit information

If a reconciliation participant is unable to interrogate an electronically interrogated metering installation before the deadline for providing submission information, the submission to the reconciliation manager must be the reconciliation participant's best estimate of the quantity of electricity that was purchased or sold in each trading period during any applicable consumption period for that metering installation.

The reconciliation participant must use reasonable endeavours to ensure that estimated submission information is within the percentage specified by the Authority.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

9.5. NHH metering information data validation (Clause 16 Schedule 15.2)

Code reference

Clause 16 Schedule 15.2

Code related audit information

Each validity check of non-half hour meter readings and estimated readings must include the following:

16(2)(a) - confirmation that the meter reading or estimated reading relates to the correct ICP, meter, and register

16(2)(b) - checks for invalid dates and times

16(2)(c) - confirmation that the meter reading or estimated reading lies within an acceptable range compared with the expected pattern, previous pattern, or trend

16(2)(d) - confirmation that there is no obvious corruption of the data, including unexpected 0 values.

Audit observation

UAT tests 05.04.11 and 05.06.05 cover validation processes. These were checked during the audit.

Audit commentary

UAT results confirm compliance with the Code for validation. I also checked the total list of validations and the settings for them all. There are 25 validations in total and they include all expected checks, including:

- High/low consumption
- Negative consumption
- Long/short days
- Consumption on vacant
- Status discrepancy

Audit outcome

Compliant

9.6. Electronic meter readings and estimated readings (Clause 17 Schedule 15.2)

Code reference

Clause 17 Schedule 15.2

Code related audit information

Each validity check of electronically interrogated meter readings and estimate readings must be at a frequency that will allow a further interrogation of the data storage device before the data is overwritten within the data storage device and before this data can be used for any purpose under the Code.

Each validity check of a meter reading obtained by electronic interrogation or an estimated reading must include:

17(4)(a) - checks for missing data

17(4)(b) - checks for invalid dates and times

17(4)(c) - checks of unexpected 0 values

17(4)(d) - comparison with expected or previous flow patterns

17(4)(e) - comparisons of meter readings with data on any data storage device registers that are available

17(4)(f) - a review of meter and data storage device event list. Any event that could have affected the integrity of metering data must be investigated.

Audit observation

UAT tests 05.04.11 and 05.06.05 cover validation processes. These were checked during the audit. Event management processes have not changed.

Audit commentary

UAT results confirm compliance with the Code for validation.

Audit outcome

Compliant

10. PROVISION OF METERING INFORMATION TO THE PRICING MANAGER IN ACCORDANCE WITH SUBPART 4 OF PART 13 (CLAUSE 15.38(1)(F))

10.1. Generators to provide HHR metering information (Clause 13.136)

Code reference

Clause 13.136

Code related audit information

The generator (and/or embedded generator) must provide to the pricing manager and the grid owner connected to the local network in which the embedded generator is located, half hour metering information in accordance with clause 13.138 in relation to generating plant that is subject to a dispatch instruction:

- *that injects electricity directly into a local network; or*
- *if the meter configuration is such that the electricity flows into a local network without first passing through a grid injection point or grid exit point metering installation.*

Audit observation

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit commentary

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit outcome

Not applicable

10.2. Unoffered & intermittent generation provision of metering information (Clause 13.137)

Code reference

Clause 13.137

Code related audit information

Each generator must provide the pricing manager and the relevant grid owner half-hour metering information for:

- *any unoffered generation from a generating station with a point of connection to the grid 13.137(1)(a)*
- *any electricity supplied from an intermittent generating station with a point of connection to the grid 13.137(1)(b).*

The generator must provide the pricing manager and the relevant grid owner with the half-hour metering information required under this clause in accordance with the requirements of Part 15 for the collection of that generator's volume information (clause 13.137(2)).

If such half-hour metering information is not available, the generator must provide the pricing manager and the relevant grid owner a reasonable estimate of such data (clause 13.137(3)).

Audit observation

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit commentary

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit outcome

Not applicable

10.3. Loss adjustment of HHR metering information (Clause 13.138)

Code reference

Clause 13.138

Code related audit information

The generator must provide the information required by clauses 13.136 and 13.137,

13.138(1)(a)- adjusted for losses (if any) relative to the grid injection point or, for embedded generators the grid exit point, at which it offered the electricity

13.138(1)(b)- in the manner and form that the pricing manager stipulates

13.138(1)(c)- by 0500 hours on a trading day for each trading period of the previous trading day.

The generator must provide the half-hour metering information required under this clause in accordance with the requirements of Part 15 for the collection of the generator's volume information.

Audit observation

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit commentary

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit outcome

Not applicable

10.4. Notification of the provision of HHR metering information (Clause 13.140)

Code reference

Clause 13.140

Code related audit information

If the generator provides half-hourly metering information to the pricing manager or a grid owner under clauses 13.136 to 13.138, or 13.138A, it must also, by 0500 hours of that day, advise the relevant grid owner.

Audit observation

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit commentary

Pulse does not have responsibilities for the provision of information to the grid owner.

Audit outcome

Not applicable

11. PROVISION OF SUBMISSION INFORMATION FOR RECONCILIATION

11.1. Buying and selling notifications (Clause 15.3)

Code reference

Clause 15.3

Code related audit information

Unless an embedded generator has given a notification in respect of the point of connection under clause 15.3, a trader must notify the reconciliation manager if it is to commence or cease trading electricity at a point of connection using a profile with a profile code other than HHR, RPS, UML, EG1, or PV1 at least five business days before commencing or ceasing trader.

The notification must comply with any procedures or requirements specified by the reconciliation manager.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

11.2. Calculation of ICP days (Clause 15.6)

Code reference

Clause 15.6

Code related audit information

Each retailer and direct purchaser (excluding direct consumers) must deliver a report to the reconciliation manager detailing the number of ICP days for each NSP for each submission file of submission information in respect of:

15.6(1)(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period

15.6(1)(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.

The ICP days information must be calculated using the data contained in the retailer or direct purchaser's reconciliation system when it aggregates volume information for ICPs into submission information.

Audit observation

The process for the calculation of ICP days was checked as part of the HE scenario tests.

Audit commentary

Testing found that the ICP days calculation is one day short for four scenarios. These are scenarios where ICPs start or become active during a month and the first day of responsibility is not included. Pulse intends to resolve this matter as part of stage 2.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 11.2 With: Clause 15.6 From: 17-Sep-17 To: 17-Sep-17	ICP days calculation one day short for four scenarios Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because this matter was identified by Pulse and GT4 will not be used for ICP days until the calculations are correct. There is no impact on settlement because the matter will be resolved during stage 2. If this error was present in a live situation there could be an impact on scaling.		
Actions taken to resolve the issue		Completion date	Remedial action status
Data migration is expected to resolve this issue, however until the ICP Day calculation is compliant, Cobra NHH reconciliation system will continue to be used for ICP Days calculation and submission.		Prior to stage 2 completion	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Do not use Gentrack 4 for ICP Days calculation and AV110 submission until this is resolved.		In place Sep 2017	

11.3. Electricity supplied information provision to the reconciliation manager (Clause 15.7)

Code reference

Clause 15.7

Code related audit information

A retailer must deliver to the reconciliation manager its total monthly quantity of electricity supplied for each NSP, aggregated by invoice month, for which it has provided submission information to the reconciliation manager, including revised submission information for that period as non-loss adjusted values in respect of:

15.7(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period

15.7(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.

Audit observation

The accuracy of electricity supplied files was tested by checking file formats, that the correct aggregation was occurring and that the data was applied to the correct month. A complete file for July 2017 was prepared and compared to a file from the existing system (Cobra).

Audit commentary

The file is calculating correctly and the format is correct but some data migration issues resulted in the file being inaccurate by 0.7%. This matter will be resolved during stage 2 where the data related issues will be identified and fixed.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 11.3 With: Clause 15.6 From: 17-Sep-17 To: 17-Sep-17	Electricity supplied file errors due to data migration issues Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because this matter was identified by Pulse and GT4 will not be used for electricity supplied until the data is correct. There is no impact on settlement because the matter will be resolved during stage 2.		
Actions taken to resolve the issue		Completion date	Remedial action status
Data cleansing exercise to be performed on legacy invoice table content. This relates to Gentrack 3.8 GXP and network content for ICPs converted from HHR to NHH submission, and does not affect BAU volume supplied calculation.		Prior to stage 2 completion	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Continue to use legacy volume supplied AV120 report (which does not rely on network and GXP data from invoice tables) using data warehouse until data quality issues are resolved.		In Place Sep 2017	

11.4. HHR aggregates information provision to the reconciliation manager (Clause 15.8)

Code reference

Clause 15.8

Code related audit information

A retailer or direct purchaser (excluding direct consumers) must deliver to the reconciliation manager its total monthly quantity of electricity supplied for each half hourly metered ICP for which it has provided submission information to the reconciliation manager, including:

15.8(a) - submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period

15.8(b) - revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

12. SUBMISSION COMPUTATION

12.1. Daylight saving adjustment (Clause 15.36)

Code reference

Clause 15.36

Code related audit information

The reconciliation participant must provide submission information to the reconciliation manager that is adjusted for NZDT using one of the techniques set out in clause 15.36(3) specified by the Authority.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

12.2. Creation of submission information (Clause 15.4)

Code reference

Clause 15.4

Code related audit information

By 1600 hours on the 4th business day of each reconciliation period, the reconciliation participant must deliver submission information to the reconciliation manager for all NSPs for which the reconciliation participant is recorded in the registry as having traded electricity during the consumption period immediately before that reconciliation period (in accordance with Schedule 15.3).

By 1600 hours on the 13th business day of each reconciliation period, the reconciliation participant must deliver submission information to the reconciliation manager for all points of connection for which the reconciliation participant is recorded in the registry as having traded electricity during any consumption period being reconciled in accordance with clauses 15.27 and 15.28, and in respect of which it has obtained revised submission information (in accordance with Schedule 15.3).

Audit observation

This clause relates to the timing of sending of files, which will not change as part of the GT4 implementation.

Audit commentary

This clause relates to the timing of sending of files, which will not change as part of the GT4 implementation.

Audit outcome

Not applicable

12.3. Allocation of submission information (Clause 15.5)

Code reference

Clause 15.5

Code related audit information

In preparing and submitting submission information, the reconciliation participant must allocate volume information for each ICP to the NSP indicated by the data held by the registry for the relevant consumption period at the time the reconciliation participant assembles the submission information. Volume information must be derived in accordance with Schedule 15.2.

However, if, in relation to a point of connection at which the reconciliation participant trades electricity, a notification given by an embedded generator under clause 15.13 for an embedded generating station is in force, the reconciliation participant is not required to comply with the above in relation to electricity generated by the embedded generating station.

Audit observation

The aggregation process for the AV080 file was tested and confirmed as accurate.

Audit commentary

The aggregation process for the AV080 file was tested and confirmed as accurate.

Audit outcome

Compliant

12.4. Grid owner volumes information (Clause 15.9)

Code reference

Clause 15.9

Code related audit information

The participant (if a grid owner) must deliver to the reconciliation manager for each point of connection for all of its GXPs, the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.9(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period (clause 15.9(b)).*

Audit observation

Pulse is not a grid owner.

Audit commentary

Pulse is not a grid owner.

Audit outcome

Not applicable

12.5. Provision of NSP submission information (Clause 15.10)

Code reference

Clause 15.10

Code related audit information

The participant (if a local or embedded network owner) must provide to the reconciliation manager for each NSP for which the participant has given a notification under clause 25(1) Schedule 11.1 (which relates to the creation, decommissioning, and transfer of NSPs) the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.10(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period (clause 15.10(b)).*

Audit observation

Pulse is not an embedded network owner.

Audit commentary

Pulse is not an embedded network owner.

Audit outcome

Not applicable

12.6. Grid connected generation (Clause 15.11)

Code reference

Clause 15.11

Code related audit information

The participant (if a grid connected generator) must deliver to the reconciliation manager for each of its points of connection, the following:

- *submission information for the immediately preceding consumption period, by 1600 hours on the 4th business day of each reconciliation period (clause 15.11(a))*
- *revised submission information provided in accordance with clause 15.4(2), by 1600 hours on the 13th business day of each reconciliation period. (clause 15.11(b))*

Audit observation

Pulse does not have any grid connected generation.

Audit commentary

Pulse does not have any grid connected generation.

Audit outcome

Not applicable

12.7. Accuracy of submission information (Clause 15.12)

Code reference

Clause 15.12

Code related audit information

If the reconciliation participant has submitted information and then subsequently obtained more accurate information, the participant must provide the most accurate information available to the reconciliation manager or participant, as the case may be, at the next available opportunity for submission (in accordance with clauses 15.20A, 15.27, and 15.28).

Audit observation

Several tests were conducted to confirm corrections flowed through to relevant revision files. The test results were checked.

Audit commentary

The following tests were conducted to confirm the accurate management of corrections:

- Compensation factor change
- Backdated meter installation
- Change to unmetered load
- Tariff change
- Meter reading change

In all cases the correct volume was calculated for the correct time period.

Audit outcome

Compliant

12.8. Permanence of meter readings for reconciliation (Clause 4 Schedule 15.2)

Code reference

Clause 4 Schedule 15.2

Code related audit information

Only volume information created using validated meter readings, or if such values are unavailable, permanent estimates, has permanence within the reconciliation processes (unless subsequently found to be in error).

Volume information created using estimated readings must be subsequently replaced at the earliest opportunity by the reconciliation participant by volume information that has been created using validated meter readings or permanent estimates by, at the latest, the month 14 revision cycle.

A permanent estimate may be used in place of a validated meter reading, but only if, despite having used reasonable endeavours; the reconciliation participant has been unable to obtain a validated meter reading.

Audit observation

The process for changing estimates to permanent estimates at the 14 month revision has not yet been tested.

Audit commentary

The process for changing estimates to permanent estimates at the 14 month revision has not yet been tested. I recommend this is tested during stage 2.

Recommendation	Description	Audited party comment	Remedial action
Regarding clause 4 Schedule 15.2	Test the process for changing estimates to permanent estimates at 14 months during stage 2.	Continue to use Cobra NHH reconciliation system for treatment of Permanent Estimates until the Permanent Estimate process is transferred to Gentrack 4 system.	Identified

Audit outcome

Unable to determine

12.9. Reconciliation participants to prepare information (Clause 2 Schedule 15.3)

Code reference

Clause 2 Schedule 15.3

Code related audit information

If a reconciliation participant prepares submission information for each NSP for the relevant consumption periods in accordance with the Code, such submission information must comprise the following:

- *half hour volume information for each ICP notified in accordance with clause 11.7(2) for which there is a category 3 or higher metering installation (clause 2(1)(a))*
- *for each ICP about which information is provided under clause 11.7(2) for which there is a category 1 or category 2 metering installation (clause 2(1)(b)):*
 - a) *half hour volume information for the ICP; or*
 - b) *non-half hour volumes information calculated under clauses 4 to 6 (as applicable).*
 - c) *unmetered load quantities for each ICP that has unmetered load associated with it derived from the quantity recorded in the registry against the relevant ICP and the number of days in the period, the distributed unmetered load database, or other sources of relevant information (clause 2(1)(c))*
- *to create non half hour submission information a reconciliation participant must only use information that is dependent on a control device if (clause 2(2)):*
 - a) *the certification of the control device is recorded on the registry; or*
 - b) *the metering installation in which the control device is location has interim certification*
- *to create submission information for a point of connection the reconciliation participant must apply to the raw meter data (clause 2(3)):*
 - a) *for each ICP, the compensation factor that is recorded in the registry (clause 2(3)(a))*
 - b) *for each NSP the compensation factor that is recorded in the metering installations most recent certification report (clause 2(3)(b)).*

Audit observation

Testing occurred for the relevant parts of this clause.

Audit commentary

The relevant parts of this clause are as follows:

- Compensation factors
- NHH submission
- Unmetered submission

Testing confirmed the accurate management of the points above, including changes.

Audit outcome

Compliant

12.10. Historical estimates and forward estimates (Clause 3 Schedule 15.3)

Code reference

Clause 3 Schedule 15.3

Code related audit information

For each ICP that has a non-half hour metering installation, volume information derived from validated meter readings, estimated readings, or permanent estimates must be allocated to consumption periods using the following techniques to create historical estimates and forward estimates (clause 3(1)).

Each estimate that is a forward estimate or a historical estimate must clearly be identified as such (clause 3(2)).

If validated meter readings are not available for the purpose of clauses 4 and 5, permanent estimates may be used in place of validated meter readings (clause 3(3)).

Audit observation

Testing occurred of the forward and historic estimate processes.

Audit commentary

Identification of estimates, including forward and historic estimates is compliant.

Audit outcome

Compliant

12.11. Historical estimate process (Clause 4 and 5 Schedule 15.3)

Code reference

Clause 4 and 5 Schedule 15.3

Code related audit information

The methodology outlined in clause 4 of Schedule 15.3 must be used when preparing historic estimates of volume information for each ICP when the relevant seasonal adjustment shape is available.

If a seasonal adjustment shape is not available, the methodology for preparing an historical estimate of volume information for each ICP must be the same as in clause 4, except that the relevant quantities kWh_{Px} must be prorated as determined by the reconciliation participant using its own methodology or on a flat shape basis using the relevant number of days that are within the consumption period and within the period covered by kWh_{Px}.

Audit observation

The historic estimate calculations were tested against a set of scenarios provided by Veritek. GT4 is designed to use the GR020 profile shape rather than the GR030 profile shape. The GR020 is at HHR level and is aggregated up to daily figures by GT4.

Audit commentary

One scenario did not calculate correctly, where an ICP was active, then inactive, then active within a month. This matter will be resolved during stage 2.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 12.11 With: Clause 4 and 5 Schedule 15.3 From: 17-Sep-17 To: 17-Sep-17	One HE scenario calculating incorrectly Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	Rationale for audit risk rating		
Low	I have recorded the controls as strong because this matter was identified by Pulse and GT4 will not be used until all HE scenarios are accurate. There is no impact on settlement because the matter will be resolved during stage 2.		
Actions taken to resolve the issue		Completion date	Remedial action status
Data cleansing of legacy data produced by Gentrack 3.8 will be performed. This will be a pre-requisite for submission of NHH volume data from Gentrack 4.		Prior to stage 2 completion	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Do not use Gentrack 4 for NHH Volume calculation and AV080 submission until this is resolved.		In Place Sep 2017	

12.12. Forward estimate process (Clause 6 Schedule 15.3)

Code reference

Clause 6 Schedule 15.3

Code related audit information

Forward estimates may be used only in respect of any period for which an historical estimate cannot be calculated.

The methodology used for calculating a forward estimate may be determined by the reconciliation participant, only if it ensures that the accuracy is within the percentage of error specified by the Authority.

Audit observation

I checked the GT4 design documentation to ensure compliance.

Audit commentary

The forward estimate methodology is detailed and robust in GT4. I've included the entire section from the specification because it provides excellent clarity regarding the end to end process and how different scenarios are catered for.

Forward Estimate Method

Estimating forward consumption uses historic readings. The simplest estimation method is to take the consumption from the same period one year earlier and adjust it according to the profile shape data. However as the consumption usage may have changed over the course of the year, another date range is compared and the more suitable of the two is used.

To decide which period to use for estimation - the prior year or most recent consumption - the following is done:

1. Find the most recent period that has a real reading; this is referred to as the last read period. Three months' worth of history is collected.
2. Consumption for the three months prior to the last read period is adjusted to a value that can be compared to the last read period. To do this the consumption is multiplied by the ratio of the profile shape value for that period to the profile shape of the last read period. This is referred to as the Check Period.
3. Consumption for the same period one year prior to the last read period is also adjusted using the method described in step 2. Again three months of history is used.
4. The absolute difference in adjusted consumption values is calculated for the check period and the one year prior period compared to the last read period.
5. If the difference between the last read period and the period one year prior is less than the check period difference, then the last year period will be used, otherwise the last read period will be used.

In the case where there has not been a read in the year preceding the estimation period, the last read period will always be used.

Where there is no reading history, the daily average value for the register will be used. This is common in the case of new installations or registers. The daily average consumption for a register is normally initialised as a result of customer acquisition. This can also be manually entered for a specific meter register. If no available daily consumption value is available, then the fallback is to call an activity point where site-specific business logic can return a value based on the customer type. The final action if a consumption value cannot be found is to raise a warning.

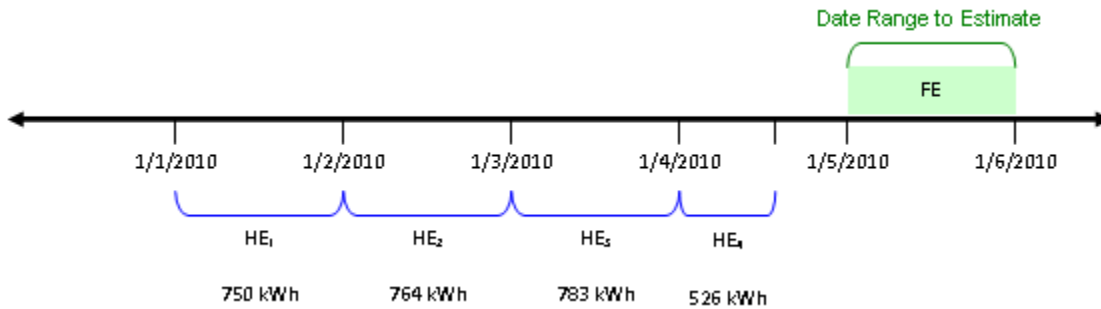
If daily consumption is used instead of historic readings, seasonal adjustment is calculated by using profile shape values in the 30 days preceding the effective date of the daily consumption value.

When profile shape data is unavailable, seasonal adjustment cannot be done. Consumption is estimated by multiplying the average daily consumption of the last year or previous period by the number of days in the date range.

The register can optionally provide an override estimate value that will be used instead of the method described above. The only override type that is currently supported for FE calculations is a daily consumption value.

Example 1 - Previous Period

In this example the reading history does not go back a full 12 months, which means the last read period will be used. Because the month immediately prior to the calculation date range does not have sufficient historic data, the consumption starting from two months prior is used.

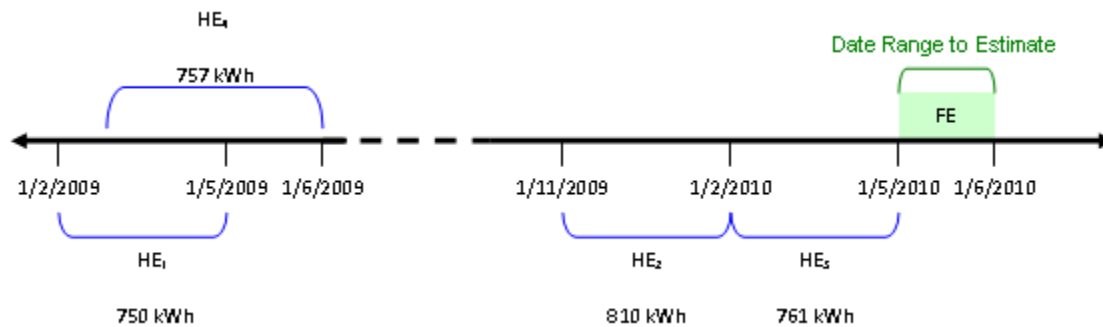


The first task is to find the most recent three months of consumption. HE₄ end date is the 20th April 2010, three months up to this date starts from the 1st February 2010. The consumption value for this period is all of HE₂, HE₃ and HE₄.

		With Profile Data	Without Profile Data	
HE _{TOT}	HE ₂ + HE ₃ + HE ₄	2073 kWh	2073 kWh	Total estimated consumption for 1st February to 20th April 2010.
S ₁	1/2/2010 to 20/4/2010	19242.78	79	Sum of profile values for 1st February to 20th April 2010.
S ₂	1/5/2010 to 31/5/2010	8062.28	31	Sum of profile values for May 2010.
FE	HE _{TOT} X S ₂ / S ₁	869 kWh	813 kWh	Estimated consumption for May 2010.

Example 2 - Previous Year

This example describes how to calculate a forward estimate by first deciding on the estimation method to use:



	With Profile Data	Without Profile Data	
S ₁ 1/2/2009 to 30/4/2009	21443.63	89	Sum of profile values for 3 months prior to end of April 2009.
S ₂ 1/11/2009 to 30/1/2010	21807.01	92	Sum of profile values for 3 months prior to end of January 2010.
S ₃ 1/2/2010 to 30/4/2010	21787.33	89	Sum of profile values for 3 months prior to end of April 2010.
D ₁ $HE_3 - (HE_1 \times S_3 / S_1)$	1.02	11.00	Adjusted difference in consumption between 2009 and 2010.
D ₂ $HE_3 - (HE_2 \times S_3 / S_2)$	48.27	22.59	Adjusted difference in consumption between last read and the check period.

The last year difference D₁ is smaller than the previous month difference D₂. This means consumption from the same period last year will be used when calculating the FE.

	With Profile Data	Without Profile Data	
S ₁ 1/3/2009 to 31/5/2009	22810.73	92	Sum of profile values for 90 days prior to end of May 2009.
S ₂ 1/5/2010 to 31/5/2010	8062.28	31	Sum of profile values for the estimation period.
FE $HE_4 \times S_2 / S_1$	268 kWh	255 kWh	Estimated consumption from the 1st to the 31st of May 2010.

Audit outcome

Compliant

12.13. Compulsory meter reading after profile change (Clause 7 Schedule 15.3)

Code reference

Clause 7 Schedule 15.3

Code related audit information

If the reconciliation participant changes the profile associated with a meter, it must, when determining the volume information for that meter and its respective ICP, use a validated meter reading or permanent estimate on the day on which the profile change is to take effect.

The reconciliation participant must use the volume information from that validated meter reading or permanent estimate in calculating the relevant historical estimates of each profile for that meter.

Audit observation

This area will not change as a result of the GT4 implementation.

Audit commentary

This area will not change as a result of the GT4 implementation.

Audit outcome

Not applicable

13. SUBMISSION FORMAT AND TIMING

13.1. Provision of submission information to the RM (Clause 8 Schedule 15.3)

Code reference

Clause 8 Schedule 15.3

Code related audit information

Submission information provided to the reconciliation manager must be aggregated to the following level:

- *NSP code (clause 8(a))*
- *reconciliation type (clause 8(b))*
- *profile (clause 8(c))*
- *loss category code (clause 8(d))*
- *flow direction (clause 8(e))*
- *dedicated NSP (clause 8(f))*
- *trading period for half hour metered ICPs and consumption period or day for all other ICPs (clause 8(g)).*

Audit observation

Testing confirmed the correct aggregation of files.

Audit commentary

Testing confirmed the correct aggregation of files.

Audit outcome

Compliant

13.2. Reporting resolution (Clause 9 Schedule 15.3)

Code reference

Clause 9 Schedule 15.3

Code related audit information

When reporting submission information, the number of decimal places must be rounded to not more than two decimal places.

If the unrounded digit to the right of the second decimal place is greater than or equal to five, the second digit is rounded up, and if the digit to the right of the second decimal place is less than five, the second digit is unchanged.

Audit observation

Aggregation of the submission files was reviewed and as part of these checks.

Audit commentary

The data in GT4 and the test AV080 file both appear to be rounded to zero decimal places. I recommend this matter is checked and resolved as part of stage 2.

Recommendation	Description	Audited party comment	Remedial action
Regarding clause 9 Schedule 15.3	The data in GT4 and the test AV080 file both appear to be rounded to zero decimal places. I recommend this matter is checked and resolved as part of stage 2	Configuration of Gentrack 4 estimation process will be undertaken to ensure 2 decimal place calculation prior to aggregation before Gentrack 4 is used for NHH volume calculation and AV080 file preparation. Legacy Cobra NHH reconciliation system will continue to be used until stage 2 completion.	Identified

Audit outcome

Unable to determine

13.3. Historical estimate reporting to RM (Clause 10 Schedule 15.3)

Code reference

Clause 10 Schedule 15.3

Code related audit information

By 1600 hours on the 13th business day of each reconciliation period the reconciliation participant must report to the reconciliation manager the proportion of historical estimates per NSP contained within its non-half hour submission information.

The proportion of submission information per NSP that is comprised of historical estimates must (unless exceptional circumstances exist) be:

- *at least 80% for revised data provided at the month 3 revision (clause 10(3)(a))*
- *at least 90% for revised data provided at the month 7 revision (clause 10(3)(b))*
- *100% for revised data provided at the month 14 revision. (clause 10(3)(c)).*

Audit observation

The AV080 file format and calculation was tested and compliance is confirmed for reporting the proportion of HE. The processes to ensure thresholds are met will not change.

Audit commentary

The AV080 file format and calculation was tested and compliance is confirmed for reporting the proportion of HE. The processes to ensure thresholds are met will not change.

Audit outcome

Compliant

CONCLUSION

This report includes findings for stage 1 (registry and switching management) and stage 2 (reconciliation). Pulse intends to go live with stage 1 on 25/09/17 but stage 2 will not be implemented until all issues are resolved. The stage 2 findings are recorded to ensure there is clarity regarding the areas that need resolution.

The audit involved a site visit, review of the test plan and a review of test results.

The testing process is comprehensive and the format of the results is clear and easy to understand. The test registry was not used as part of the process, but output files were provided, which I checked against the registry functional specification.

In summary, compliance is confirmed for stage 1 of the implementation. There are some issues with historic estimates. ICP days and electricity supplied files which will be resolved prior to stage 2 going live. A further review will be conducted to ensure compliance of these items.

PARTICIPANT RESPONSE

APPENDIX A - TEMPLATE FOR NON-COMPLIANCE, ISSUES AND RECOMMENDATIONS.

NON-COMPLIANCE

Non-compliance	Description		
Audit Ref: With: From: Click here to enter a date. To: Click here to enter a date.	Potential impact: Choose an item. Actual impact: Choose an item. Audit history: Controls: Choose an item. Breach risk rating:		
Audit risk rating	Rationale for audit risk rating		
Choose an item.			
Actions taken to resolve the issue		Completion date	Remedial action status
			Choose an item.
Preventative actions taken to ensure no further issues will occur		Completion date	

RECOMMENDATION

Recommendation	Description	Audited party comment	Remedial action

ISSUE

Issue	Description	Remedial action