ELECTRICITY INDUSTRY PARTICIPATION CODE
RECONCILIATION PARTICIPANT AUDIT REPORT

For

MERIDIAN ENERGY LIMITED

Prepared by: Steve Woods and Tara Gannon

Date audit commenced: 22 October 2019

Date audit report completed: 12 December 2019

Audit report due date: 18 December 2019

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EXECUTIVE SUMMARY

This Electricity Industry Participation Code Reconciliation Participant audit was performed at the request of **Meridian Energy Ltd (Meridian),** to support their application for renewal of certification in accordance with clauses 5 and 7 of schedule 15.1.

The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits version 7.1.

Meridian has implemented a new system (Flux) and has gradually transferred NHH ICPs from Velocity to Flux since November 2018. A material change audit for the implementation of Flux was completed in October 2018.

The MERX trader code is applied for ICPs managed in Flux, and the MERI trader code is applied for all other Meridian ICPs. Unless otherwise specified, the processes and non-compliances described in the report apply to all codes.

The activities completed by MERX are restricted while processes are being finalised and refined. ICPs are required to meet certain criteria, including having a communicating AMI meter, before switching to MERX. New connections are not completed, and only one ICP with unmetered load is supplied. Most non-compliances for MERX have occurred soon after the affected processes were implemented, and improvements have been made over time.

Meridian continue to make good progress in improving their level of compliance for registry and read information management, and the timeliness of registry updates has generally improved.

Overall, switching processes are very well managed with almost all files sent on time. There were some issues with the content of CS files for MERI and MERX, specifically the accuracy of switch event meter readings, which Meridian intends to investigate.

Submission related processes are generally operating well with an experienced team overseeing this area. The main issues requiring attention are:

- consumption is not quantified or submitted for some distributed generation ICPs;
- NHH corrections are not always apportioned to the correct months and some are outside the 14-month revision period;
- correction has not yet been made for two Category 2 ICPs with defective metering; and
- some historic estimates are labelled as forward estimates.

This audit of Meridian's systems and processes found 42 (35 last time) non-compliances and makes four (two last time) recommendations. No issues are raised. The increase in non-compliances and the increase in the score from 68 to 88 is largely attributed to the addition of the Flux system, which has some issues yet to be resolved.

The date of the next audit is determined by the Electricity Authority and is dependent on the level of compliance during this audit. The table below provides some guidance on this matter and contains a future risk rating score of 88 which results in an indicative audit frequency of three months. I have considered this result in conjunction with Meridian's responses and my recommendation for the next audit date is 12 months to recognise that plans are in place to resolve most of the issues and many of these plans will take several months to implement because they involve system enhancements.

The matters raised are shown in the tables below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Relevant information	2.1	11.2 & 15.2	**MERI** Some registry information is incorrect. DUML ICPs 0000545297NR91E, 0000500236NR1F1 and 0000500015NRA63 have the unmetered flag incorrectly set to "N" on the registry. 12 incorrect statuses/status dates identified in the 2018 audit have not yet been corrected. Most of the affected ICPs have now switched out or been decommissioned.	Moderate	Low	2	Identified
Electricity conveyed	2.6	10.7(2),(4),(5) and (6)	**MERI** Meridian has been unable to arrange meter access to 27 ICPs at the request of MEPs as at 24/10/19. Meridian has attempted to gain access to all the affected ICPs, and continues to do so.	Strong	Low	1	Investigating
Electrical Connection of Point of Connection	2.11	10.33A	**MERI** 23 ICPs were certified later than 5 days after electrical connection. 100 ICPs which had expired and/or interim certification were reconnected.	Moderate	Low	2	Identified
Changes to registry information	3.3	10 Schedule 11.1	**MERI** 584 late updates to active status for reconnections. 283 late updates to inactive status for disconnections.	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			6,858 late trader updates. **MERX** Three late updates to active status for reconnections. Two late updates to inactive status for disconnections. Five late trader updates.				
Provision of information to the registry manager	3.5	9 Schedule 11.1	**MERI** 448 late updates to active status for new connections. ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to active yet. 15 ICPs had incorrect active dates recorded. Corrections were processed for all affected ICPs except 1002051414LC0BD, 1002054748LCF88 and 0007186223RNCC6.	Moderate	Low	2	Identified
ANZSIC codes	3.6	9 (1(k) of Schedule 11.1	**MERI** Six ICPs with category 2 meters and residential ANZSIC codes had the incorrect ANZSIC code applied. The ANZSIC codes were corrected during the audit. 11 ICPs had an incorrect ANZSIC code assigned. Ten were corrected during the audit period, and ICP 0000006490DEACF still has an incorrect code.	Strong	Low	1	Cleared
Management of "active" status	3.8	17 Schedule 11.1	**MERI**	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			Five reconnections have incorrect active status dates recorded. 16 new connections had incorrect status dates recorded. 12 ICPs have been corrected, and four require correction. **MERX** One reconnection has an incorrect status date recorded.				
Management of "inactive" status	3.9	19 Schedule 11.1	**MERI** One update to inactive ready for decommissioning was processed with an incorrect date, and one update to inactive ready for decommissioning which should have been processed as inactive vacant. Both were corrected during the audit. ICP 0006402933RN7AA's inactive record should have been processed with an event date of 22/12/09 instead of 02/12/10.	Moderate	Low	2	Identified
Inform registry of switch request for ICPs - standard switch	4.1	2 Schedule 11.3	**MERI** ICP 0000010351EA96E had a category three meter and switch type TR was applied instead of HH.	Strong	Low	1	Cleared
Losing trader response to switch request and event dates - standard switch	4.2	3 and 4 Schedule 11.3	**MERX** The AN file for 1001130587UNCD5 was three business days late.	Strong	Low	1	Identified
Losing trader must provide final	4.3	5 Schedule 11.3	**MERI** The CS file for ICP 0000402279TP7DB was	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
information - standard switch			recorded as one business day late. At least eight CS files had incorrect estimated daily kWh. At least seven CS files contained an incorrect switch event read and read type. At least one CS file contained an incorrect switch event read. **MERX** At least seven CS files had incorrect estimated daily kWh. At least three CS files did not have the correct switch event reading applied. In one case the difference between the correct reading and the reading applied was so small there was no impact.				
Retailers must use same reading - standard switch	4.4	Clause 6(1) and 6A Schedule 11.3	**MERI** For five accepted RRs (0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19) the read type was recorded as actual when the agreed switch reading was an estimate. The switch event readings for 0000008456TEC2E 22/01/19, 0000029677CH179 29/07/19 and 0005940982RNCE1 18/07/19 did not reflect	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			the outcome of the RR process. **MERX** For 0006002854RN52B 01/07/19 the read in Flux on the event date did not reflect the outcome of the RR process for one meter register. Meter 208210212/1 showed 49303 estimate in Flux, and the agreed reading was 49304 actual. The RR for 0006788017RNF2D 19/08/19 was not supported by two actual readings. The read type in the RR was incorrectly recorded as actual, when the reading was an estimate.				
Non-half hour switch event meter reading - standard switch	4.5	Clause 6(2) and (3) Schedule 11.3	**MERX** An RR for ICP 0000212760MPDC7 (switch event date 23/08/19) issued under clause 6(2) and (3) of Schedule 11.3 was invalidly rejected.	Moderate	Low	2	Identified
Gaining trader informs registry of switch request - switch move	4.7	9 Schedule 11.3	**MERI** ICPs 0007173962RN394, 0122019044LC168, 1001150580CK73A and 1001300918LC300 were requested as switch moves although the customer was not moving in from the switch event date, because a certain switch date was required by the customer. ICP 0004560540TCE54's NT was not sent within two business days of pre-conditions being cleared. **MERX**	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			ICPs 0007179906RN32E and 0007187575RNBE3 were requested as switch moves although the customer was not moving in from the switch event date. NTs were sent more than two business days after pre-conditions were cleared for ICPs 0007179906RN32E, 0007187575RNBE3 and 0247536180LCEA0.				
Losing trader provides information - switch move	4.8	10(1) Schedule 11.3	**MERI** The AN file for 0000027328WE348 was one business day late. The ANs for 0000404696MP91D and 0208099496LC406 had a proposed event date before the gaining trader's proposed event date. **MERX** The AN file for 0000125771TR8A5 was one business day late. The AN for 0005781574RNE73 had a proposed event date before the gaining trader's proposed event date.	Strong	Low	1	Identified
Losing trader must provide final information - switch move	4.10	11 Schedule 11.3	**MERI** At least seven CS files had incorrect estimated daily kWh. At least five CS files contained an incorrect switch event read and read type.	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			At least four CS file contained an incorrect switch event read. **MERX** At least six CS files had incorrect estimated daily kWh. At least four CS files did not have the correct switch event reading applied. In one case the difference between the correct reading and the reading applied was so small there was no impact.				
Gaining trader changes to switch meter reading - switch move	4.11	12 Schedule 11.3	**MERI** For five accepted RRs (0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19) the read type was recorded as actual when the agreed switch reading was an estimate. **MERX** ICP 0007162236RN0D9 14/08/19 had an incorrect read type recorded in Flux. The agreed reading was actual but was recorded in Flux as an estimate.	Weak	Low	1	Identified
Withdrawal of switch requests	4.15	17 and 18 Schedule 11.3	**MERI** At least five NWs were issued in error where a new customer application for an existing Meridian ICP was cancelled. 152 NWs were issued late. **MERX**	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			Three NWs had an incorrect withdrawal reason code applied.				
Metering information	4.16	21 Schedule 11.3	**MERI** 16 CS files contained an incorrect switch event read. **MERX** Seven CS files contained an incorrect switch event read. In two cases the difference between the correct reading and the reading applied was so small there was no impact**.**	Weak	Low	3	Identified
Unmetered threshold	5.2	10.14 (2)(b)	Four unmetered ICPs have estimated daily kWh of 3,000-6,000 kWh but have not been confirmed to have an approved load type.	Moderate	Low	2	Identified
Unmetered threshold exceeded	5.3	10.14 (5)	Six standard unmetered ICP with annual consumption over 6,000 kWh.	Moderate	Low	2	Identified
Distributed unmetered load	5.4	11 Schedule 15.3, Clause 15.37B & 16A.26	26 of 29 distributed unmetered databases not compliant. Two distributed unmetered databases not yet audited.	Moderate	High	6	Identified
Electricity conveyed & notification by embedded generators	6.1	10.13, 10.24 and 15.13	**MERI** Electricity not quantified from the time generation is installed for 36 ICPs. While meters were bridged, energy was not metered and quantified according to the code for 10 ICPs. ICP 0000840407WE388 is calculated by subtraction	Moderate	Low	2	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			without an exemption being in place. **MERX** 8 ICPs with solar installed but not being quantified due to import/export metering not being installed				
Responsibility for metering at GIP	6.2	10.26 (6), (7) and (8)	One certification update made late for Manapouri.	Moderate	Low	2	Cleared
Certification of control devices	6.3	Clause 33 Schedule 10.7 and 2(2) Schedule 15.3	**MERI** Two ICPs had a profile requiring control device certification without a certified control device or an AMI meter installed.	Strong	Low	1	Identified
Derivation of meter readings	6.6	3(1), 3(2) and 5 Schedule 15.2	**MERI** Customer reads are treated as actual reads when they are not validated against a set of actual meter reads from another source in some instances.	Moderate	Low	2	Identified
NHH meter reading application	6.7	6 Schedule 15.2	**MERX** MERX switch event meter readings supplied for the incorrect date.	Moderate	Low	2	Identified
Interrogate meters once (Clause 7(1) and (2) Schedule 15.2)	6.8	7(1) and (2) Schedule 15.2	**MERI** Some ICPs were not read during the period of supply.	Strong	Low	1	Identified
Correction of NHH meter readings	8.1	19(1) Schedule 15.2	**MERI** Corrections not apportioned to the correct months for at least two ICPs. Some of the corrected consumption for ICP	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			1926004000CH077 is outside the 14-month window. Metering not yet replaced, therefore correction not made for ICP 0000931760NV71C where the metering is under recording by 18%. Correction not yet made for ICP 0005170923RN2E6, which was over recording by 32.39%. Metering was replaced on 12/03/19. **MERX** The correction is not for the correct period for ICP 0005758831RN460.				
Identification of readings	9.1	3(3) Schedule 15.2	Customer reads are treated as actual reads when not validated against a set of validated actual reads from another source in some instances. **MERI** 0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19 have estimated agreed switch move readings recorded as actuals. 0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19 have estimated	Weak	Low	3	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			agreed transfer switch readings recorded as actuals. **MERX** 0006788017RNF2D 19/08/19 has an estimated agreed transfer switch reading recorded as actual. 0007162236RN0D9 14/08/19 has an estimated agreed switch move reading recorded as actual.				
Meter data used to derive volume information	9.3	3(5) Schedule 15.2	**MERI** Raw meter data is truncated upon receipt and not when volume information is created.	Moderate	Low	2	Identified
NHH metering information data validation	9.5	16 Schedule 15.2	**MERI** Zero consumption not monitored for all ICPs.	Moderate	Low	2	Identified
Buying and selling notifications	11.1	15.3	No trading notification was provided for some profiles.	Strong	Low	1	Cleared
Calculation of ICP days	11.2	15.6	**MERI** Incorrect ICP days for one inactive ICP. Incorrect ICP days for upgrades and downgrades. Where ICP statuses or status dates are recorded incorrectly, incorrect ICP days may be reported.	Moderate	Low	2	Identified
HHR aggregates information provision to the reconciliation manager	11.4	15.8	HHR aggregates file does not contain electricity supplied information.	Strong	Low	1	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Accuracy of submission information	12.7	15.7	Some submission information was inaccurate.	Moderate	Low	2	Identified
Permanence of meter readings for reconciliation	12.8	4 of Schedule 15.2	**MERI** Some estimates not replaced at R14.	Moderate	Medium	4	Identified
Historical estimates and forward estimates	12.10	3 of schedule 15.3	Incorrect labelling of HE as FE.	Moderate	Low	2	Identified
Forward estimate process	12.12	6 Schedule 15.3	**MERI** The accuracy threshold was not met for all months and revisions.	Moderate	Low	2	Identified
Historical estimate reporting to RM	13.3	10 Schedule 15.3	**MERI** Historic estimate thresholds were not met for some revisions.	Moderate	Low	2	Identified
Future Risk Rating						88	

Future risk rating	0	1-3	4-15	16-40	41-55	55+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Status
Review of registry acknowledgement files	2.1	Consider reviewing the registry acknowledgement files, so that failed registry updates can be identified and resolved promptly.	Identified
Registry validation	2.1	Check that trader maintained information in Flux is consistent with distributor and MEP maintained information on the registry, such as unmetered load details, and distributed generation details at least monthly. Investigate and resolve any discrepancies.	Identified
Management of "active" status	3.8	Compare active dates, initial electrical connection dates and meter certification dates (if metered).	Identified

		Check discrepancies and update Meridian's active dates as necessary.	
Monitoring of new and ready ICPs	3.10	I recommend MERX run a registry list six monthly with: Status: 000 or 999 Proposed trader: MERX End date: the day the report is run, and compare the results to the ICPs MERX expects to be at "new" or "ready" status. Any ICPs which appear to have been assigned to MERX in error can then be checked with the distributor.	Investigating

ISSUES

Subject	Section	Description	Issue

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

The Electricity Authority website was checked to confirm any exemptions currently in place for Meridian.

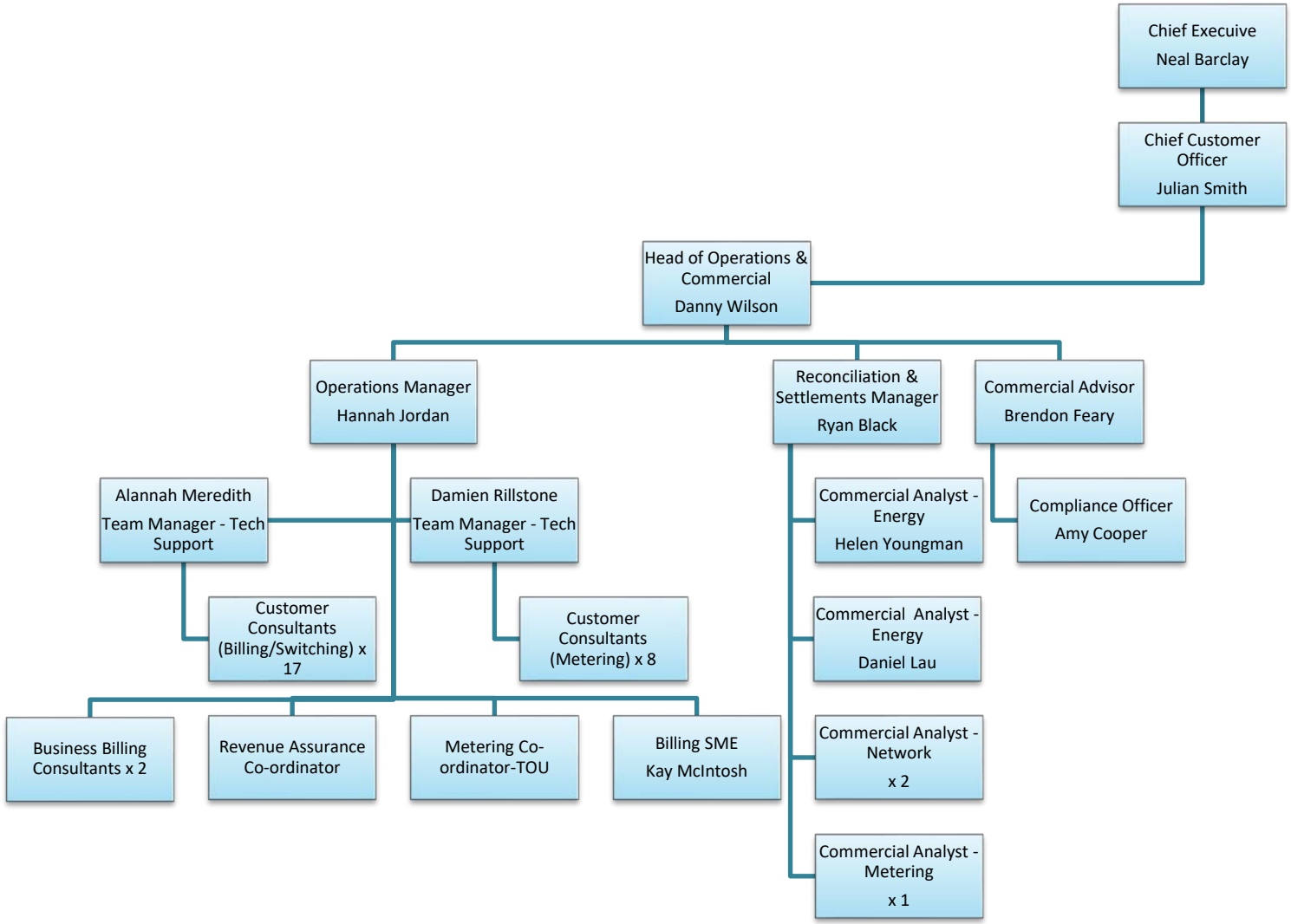
Audit commentary

Exemption 245 allows Meridian to use subtraction to determine submission information for ICP 0009805800AL991. The exemption is in place from 23 December 2016 until the earlier of:

- 30 June 2025;
- the date AccuCal ceases to be the MEP;
- the date Meridian ceases to be the trader for the ICP; or
- when embedded generation is injected through any one of the four meters currently used in the calculation of submission information by subtraction.

None of the above events have occurred so the exemption remains in place.

1.2. Structure of Organisation



1.3. Persons involved in this audit

Auditors:

Name	Company	Role
Steve Woods	Veritek Limited	Lead Auditor
Tara Gannon	Veritek Limited	Supporting Auditor

Personnel assisting in this audit were:

Name	Title
Amy Cooper	Compliance Officer
Helen Youngman	Energy Data Analyst
Mark Mirasole	Senior Customer Consultant
Alannah Meredith	Team Manager - Tech Support
Damien Rillstone	Team Manager - Tech Support
Pat Baker	Metering Co-ordinator - TOU
Chris Bull	Customer Consultant
Carolyn Bowater	Customer Consultant
Kay McIntosh	Billing SME
Helen Pepping	Operations Support Specialist
Marlaina Rees	Revenue Assurance Specialist
Lenore Richards	Operations Support Specialist
Wendy Jin	Customer Consultant

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 contractor's fulfilment of the participant's 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

The use of agents was discussed with Meridian.

Audit commentary

Meridian understands that they remain responsible for meeting their code obligations where agents are used. The relevant agents are identified in **section 1.9**. The agents' compliance was assessed as part of this audit, and their agent audits.

1.5. Hardware and Software

MERX

The Flux system is used for registry management, switching, and reconciliation and is provided and maintained by Flux Federation. Flux Federation operates an Information Security Management System (ISMS), supporting the design, development, provision, operation and maintenance of the Flux system, that has been certified as compliant with the requirements of ISO/IEC 27001:2013.

MERI

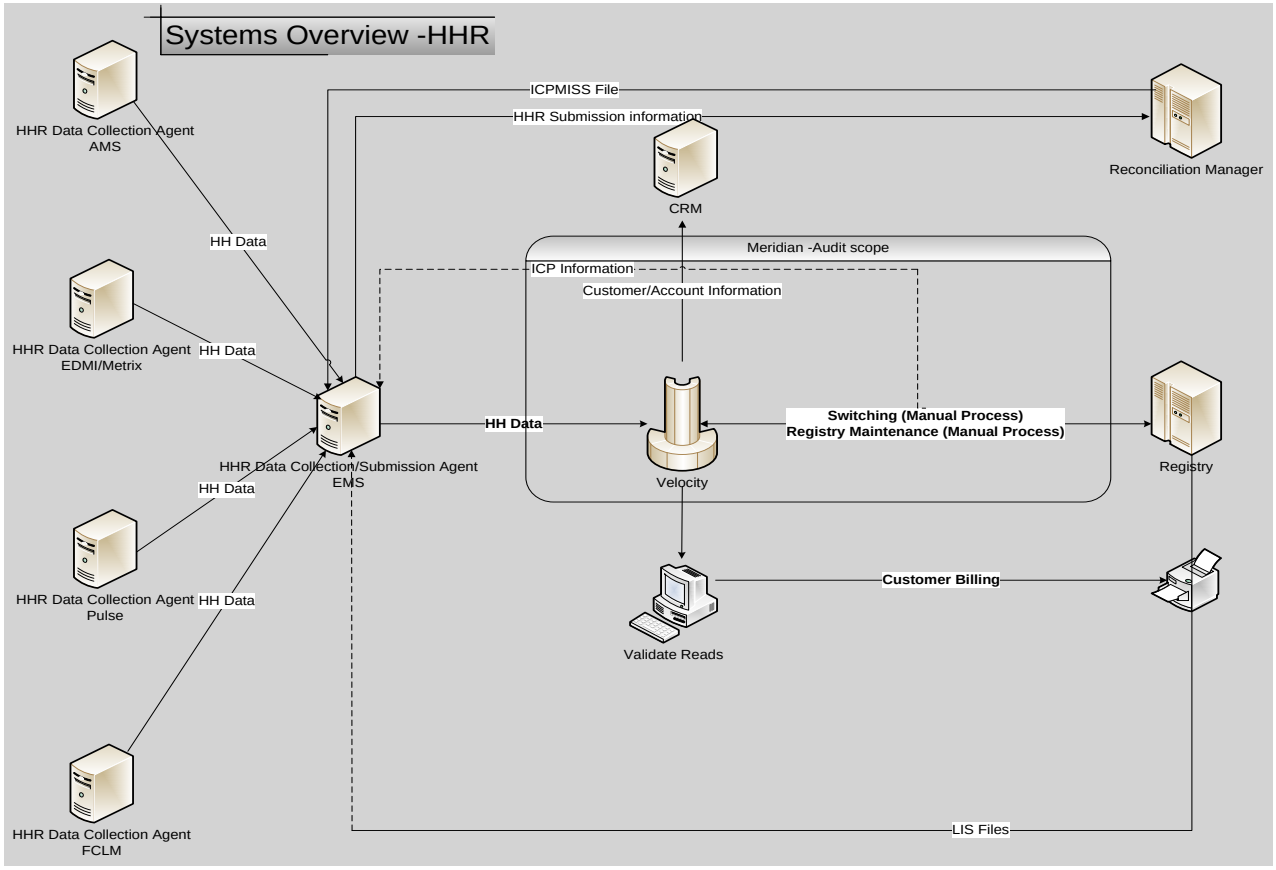
The following are the primary systems used for reconciliation participant activities.

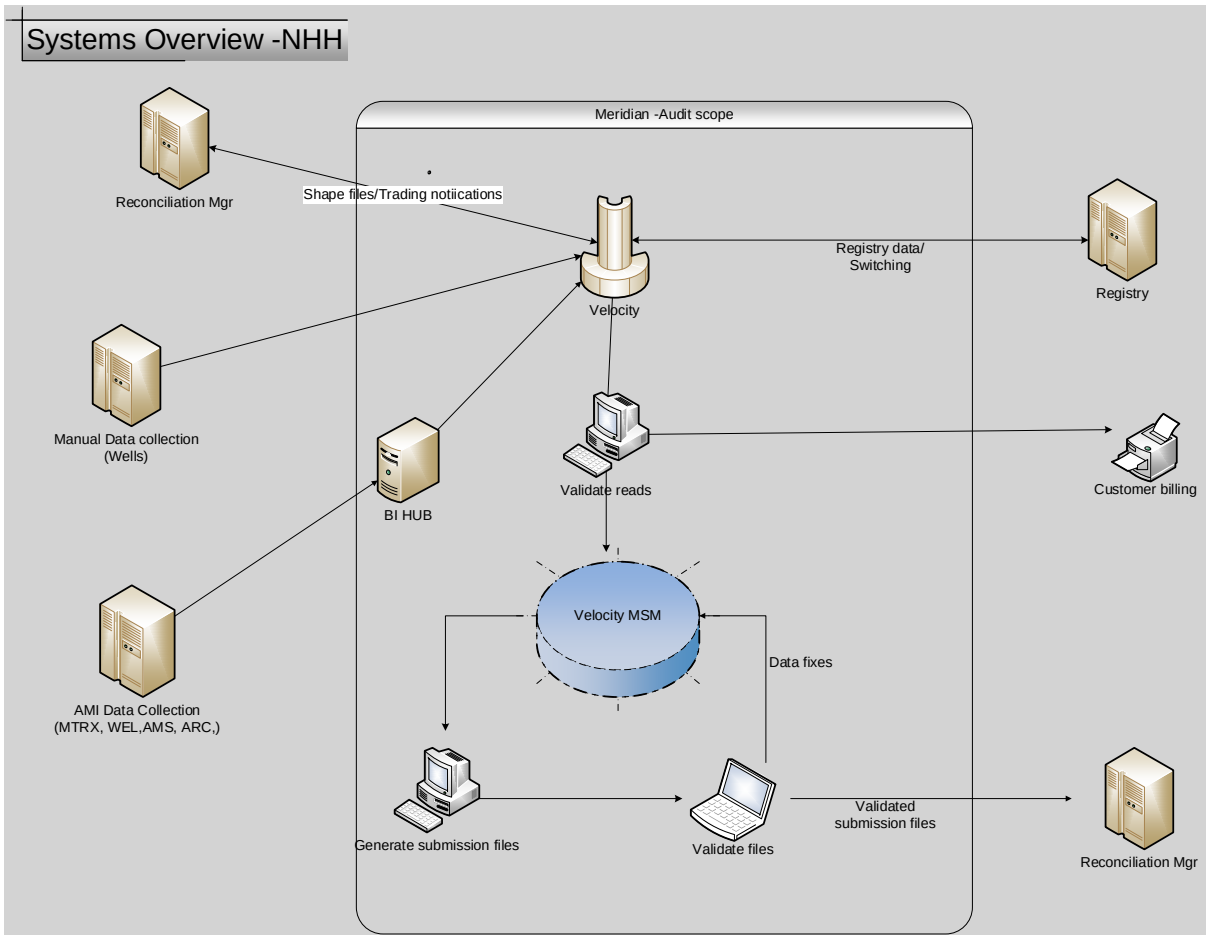
Velocity – used for NHH registry management, NHH meter read validation and storage, NHH switching and computation of NHH submission information. Support for the system is provided by Gentrack and access is restricted using individual logins and passwords.

STARK – used for data collection, validation and storage of HH data for MERI Generation. Support is provided by Quasar Systems and access is restricted using individual logins and passwords.

Meridian conducts backups of both systems data to tape daily, weekly, monthly and annually in accordance with good ICT practice.

System diagrams for MERI showing information flows are below;


Systems Overview -HHR
HHR Data Collection Agent AMS
ICPMISS File
HHR Submission information
Reconciliation Manager
CRM
HH Data
Meridian -Audit scope
ICP Information
Customer/Account Information
HHR Data Collection Agent EDMI/Metrix
HH Data
HH Data
Switching (Manual Process)
Registry Maintenance (Manual Process)
Registry
HHR Data Collection/Submission Agent EMS
Velocity
HH Data
HHR Data Collection Agent Pulse
HH Data
Customer Billing
Validate Reads
HHR Data Collection Agent FCLM
LIS Files


Systems Overview -NHH
Meridian -Audit scope
Reconciliation Mgr
Shape files/Trading notiications
Registry data/ Switching
Registry
Velocity
Manual Data collection (Wells)
Validate reads
Customer billing
BI HUB
Velocity MSM
Data fixes
AMI Data Collection (MTRX, WEL,AMS, ARC,)
Generate submission files
Validate files
Validated submission files
Reconciliation Mgr

1.6. Breaches or Breach Allegations

Meridian had no breach allegations relevant to the scope of this audit during the audit period.

1.7. ICP Data

MERI

The active ICPs from Meridian's MERI registry list are summarised by meter category in the table below. 3,628 of the 3,655 active ICPs with a metering category of nine or blank have unmetered load recorded. The 27 ICPs without metering or unmetered load recorded on the 16/08/19 registry list were checked:

- three ICPs have been moved to "ready for decommissioning" or "decommissioned" status;
- one ICP has since had meter details recorded;
- nine ICPs have MEP nominations made and accepted, and are awaiting the update of metering details; and
- 14 ICPs do not have metering or unmetered load recorded.

The AC020 report as at 16/09/19 recorded 37 active ICPs with metering category 9, null or zero which were not unmetered. These ICPs are discussed further in **section 3.4**.

Metering Category	(2019)	(2018)	(2017)	(2016)
1	198,405	215,064	208,967	209,799
2	8942	8,234	7,893	7,442
3	927	751	692	660
4	391	313	273	265
5	70	54	57	54
9	1,014	993	891	958
Blank	2,641	2,387	1,929	2,177

Status	Number of ICPs (2019)	Number of ICPs (2018)	Number of ICPs (2017)	Number of ICPs (2016)
Active (2,0)	212,390	227,796	220,702	221,355
Inactive – new connection in progress (1,12)	288	377	378	341
Inactive – electrically disconnected vacant property (1,4)	4,917	4,986	5,111	4,793
Inactive – electrically disconnected remotely by AMI meter (1,7)	34	29	20	18
Inactive – electrically disconnected at pole fuse (1,8)	4	5	2	1

Inactive – electrically disconnected due to meter disconnected (1,9)	1	3	-	-
Inactive – electrically disconnected at meter box fuse (1,10)	-	-	-	-
Inactive – electrically disconnected at meter box switch (1,11)	-	1	-	-
Inactive – electrically disconnected ready for decommissioning (1,6)	94	127	168	385
Inactive – reconciled elsewhere (1,5)	6	4	6	4
Inactive – code not recognised (1,0)	-	1	1	-
Decommissioned (3)	36,862	35,405	33,779	31,821

MERX

The active ICPs from Meridian's MERX registry list are summarised by meter category in the table below.

Metering Category	(2019)
1	18,898
2	10
3	-
4	-
5	-
9	-
Blank	-

Status	Number of ICPs (2019)
Active (2,0)	18,908
Inactive – new connection in progress (1,12)	-
Inactive – electrically disconnected vacant property (1,4)	1
Inactive – electrically disconnected remotely by AMI meter (1,7)	-
Inactive – electrically disconnected at pole fuse (1,8)	-

Inactive – electrically disconnected due to meter disconnected (1,9)	-
Inactive – electrically disconnected at meter box fuse (1,10)	-
Inactive – electrically disconnected at meter box switch (1,11)	-
Inactive – electrically disconnected ready for decommissioning (1,6)	-
Inactive – reconciled elsewhere (1,5)	-
Inactive – code not recognised (1,0)	-
Decommissioned (3)	1

1.8. Authorisation Received

No letter of authorisation was required.

1.9. Scope of Audit

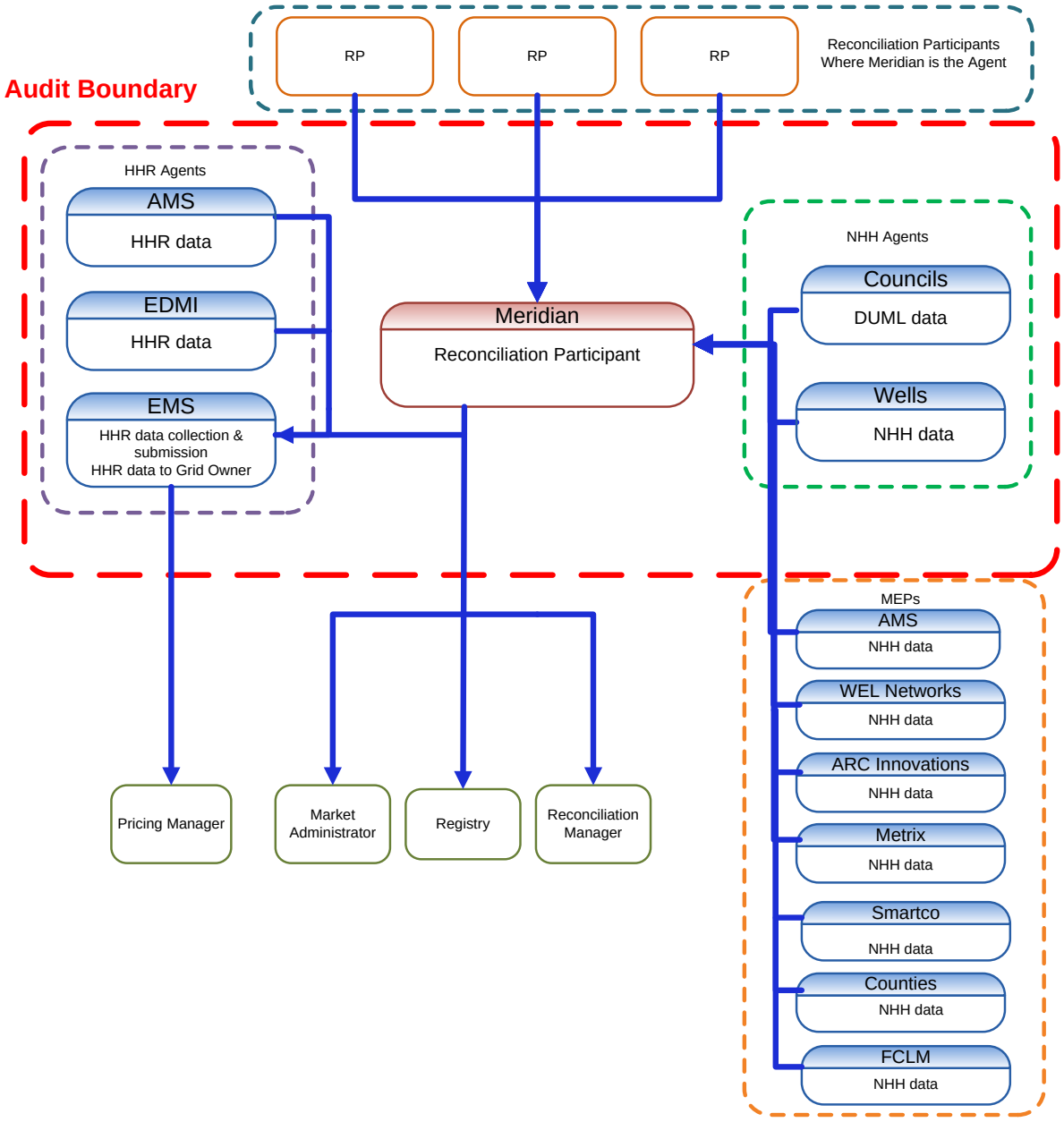
This Electricity Industry Participation Code Reconciliation Participant audit was performed at the request of Meridian, to support their application for renewal of certification in accordance with clauses 5 and 7 of schedule 15.1. The audit was conducted in accordance with the Guideline for Reconciliation Participant Audits version 7.1.

The audit was carried out at Meridian's premises in Christchurch on 22-24 October 2019.

The table below shows the tasks under clause 15.38 of part 15 for which Meridian requires certification, and agents who assist with those tasks.

Tasks Requiring Certification Under Clause 15.38(1) of Part 15	Agents Involved in Performance of Tasks	MEPs Providing Data
(a) - Maintaining registry information and performing customer and embedded generator switching		
(b) – Gathering and storing raw meter data	Wells (NHH) AMS (HHR and manual HHR) EMS (HHR) EDMI (HHR)	AMS Arc Counties Power FCLM Metrix Smartco WEL Networks
(c)(iii) - Creation and management of volume information	Councils (DUML data) EMS (HHR)	
(d) (i)– Calculation of ICP days		
(d)(ii) - delivery of electricity supplied information under clause 15.7		
(d)(iii) - delivery of information from retailer and direct purchaser half hourly metered ICPs under clause 15.8		
(e) – Provision of submission information for reconciliation		
(f) - Provision of metering information to the Grid Owner	EMS	

The scope of the audit is shown in the diagram below, with the Meridian audit boundary shown for clarity.


Audit Boundary
RP
RP
RP
Reconciliation Participants
Where Meridian is the Agent
HHR Agents
AMS
HHR data
EDMI
HHR data
EMS
HHR data collection & submission
HHR data to Grid Owner
Meridian
Reconciliation Participant
NHH Agents
Councils
DUML data
Wells
NHH data
MEPs
AMS
NHH data
WEL Networks
NHH data
ARC Innovations
NHH data
Metrix
NHH data
Smartco
NHH data
Counties
NHH data
FCLM
NHH data
Pricing Manager
Market Administrator
Registry
Reconciliation Manager

1.10. Summary of previous audit

Meridian provided a copy of their previous audit report conducted in November 2018 by Tara Gannon (lead auditor) and Rebecca Elliot of Veritek Limited. The summary tables below show the statuses of the non-compliances and recommendations raised in the previous audit. Further comment is made in the relevant sections of this report.

Subject	Section	Clause	Non-compliance	Status
Relevant information	2.1	11.2 & 15.2	Some errors found in registry data.	Still existing
Electrical Connection of Point of Connection	2.11	10.33A	Seven ICPs were certified later than 5 days after electrical connection. 109 ICPs which had expired and/or interim certification were reconnected.	Still existing
Changes to registry information	3.3	10 Schedule 11.1	Registry information not updated within 5 business days of the event.	Still existing
Provision of information to the registry manager	3.5	9 Schedule 11.1	Some registry information was not updated within 5 business days of the event.	Still existing
ANZSIC codes	3.6	9 (1(k) of Schedule 11.1	Two active occupied ICPs had an unknown ANZSIC code. One ICP had an incorrect ANZSIC code but is no longer supplied by Meridian.	Still existing
Management of "active" status	3.8	17 Schedule 11.1	ICP 0001394423UN83B has an incorrect active date on the registry.	Cleared, the status date has been corrected. Some new non-compliances were identified.
Management of "inactive" status	3.9	19 Schedule 11.1	Five status updates to inactive had incorrect status dates applied. 11 ICPs did not have their status returned to active where consumption during a period with inactive status was detected.	Still existing
Losing trader must provide final information - standard switch	4.3	5 Schedule 11.3	Some CS read and average daily kWh information recorded in CS files is incorrect.	Still existing

Subject	Section	Clause	Non-compliance	Status
Retailers must use same reading - standard switch	4.4	Clause 6(1) and 6A Schedule 11.3	One RR issued to Meridian was rejected in error.	Cleared, but some new non-compliances were identified.
Non-half hour switch event meter reading - standard switch	4.5	Clause 6(2) and (3) Schedule 11.3	Five RRs issued to Meridian under clause 6(2) and (3) of Schedule 11.3 were invalidly rejected.	Still existing
Gaining trader informs registry of switch request - switch move	4.7	9 Schedule 11.3	Switch move NTs were sent for two contract customer groups, where the customers were not moving in effective from the switch date.	Still existing
Losing trader provides information - switch move	4.8	10(1) Schedule 11.3	Incorrect AN response codes were applied for two switch moves.	Still existing
Losing trader must provide final information - switch move	4.10	11 Schedule 11.3	Some CS read and average daily kWh information recorded in CS files is incorrect.	Still existing
Losing trader provision of information - gaining trader switch	4.13	15 Schedule 11.3	One late AN file for a HH switch.	Cleared
Withdrawal of switch requests	4.15	17 and 18 Schedule 11.3	Three NWs had incorrect withdrawal codes applied. 151 NWs were issued late.	Still existing
Unmetered threshold	5.2	10.14 (2)(b)	14 unmetered ICPs have estimated daily kWh of 3,000-6,000 kWh but have not been confirmed to have an approved load type.	Still existing
Unmetered threshold exceeded	5.3	10.14 (5)	Five standard unmetered ICP with annual consumption over 6,000 kWh.	Still existing

Subject	Section	Clause	Non-compliance	Status
Distributed unmetered load	5.4	11 Schedule 15.3, Clause 15.37B & 16A.26	12 of 17 distributed unmetered databases not accurate. Two distributed unmetered databases not yet audited. One database audited late.	Still existing
Electricity conveyed & notification by embedded generators	6.1	10.13, 10.24 and 15.13	While meters were bridged, energy was not metered and quantified according to the code for four ICPs. ICP 0000100018WP6F5 is settled by difference without an exemption being in place.	Still existing
Certification of control devices	6.3	Clause 33 Schedule 10.7 and 2(2) Schedule 15.3	Seven ICPs had a profile requiring control device certification without a certified control device or an AMI meter installed.	Still existing
Derivation of meter readings	6.6	3(1), 3(2) and 5 Schedule 15.2	Customer reads are treated as actual reads when they are not validated against a set of actual meter reads from another source in some instances.	Still existing
Interrogate meters once (Clause 7(1) and (2) Schedule 15.2)	6.8	7(1) and (2) Schedule 15.2	Some ICPs were not read during the period of supply.	Still existing
NHH meters interrogated annually	6.9	8(1) and (2) Schedule 15.2	One ICP where exceptional circumstances were not met.	Cleared
Correction of NHH meter readings	8.1	19(1) Schedule 15.2	A NHH correction for a bridged period for ICP 0000555986NR419 was not processed accurately.	Still existing
Identification of readings	9.1	3(3) Schedule 15.2	Customer reads are treated as actual reads when not validated against a set of validated actual reads from another source in some instances.	Still existing
NHH metering information data validation	9.5	16 Schedule 15.2	Zero consumption not monitored for all ICPs.	Still existing

Subject	Section	Clause	Non-compliance	Status
Electronic meter readings and estimated reading	9.6	17 Schedule 15.2	EMS did not check event logs for phase failure for some meter types prior to July 2018.	Cleared
Buying and selling notifications	11.1	15.3	No trading notification was provided for TOC TON and DST profiles.	Still existing
Calculation of ICP days	11.2	15.6	ICP days incorrect due to meter start read being omitted from reconciliation for one example. Two changes from HHR to NHH, and four changes from NHH to HHR had incorrect meter installation dates recorded in Velocity, resulting in one ICP day being omitted per ICP. Where ICP statuses or status dates are recorded incorrectly, incorrect ICP days may be reported.	Still existing
HHR aggregates information provision to the reconciliation manager	11.4	15.8	HHR aggregates file does not contain electricity supplied information.	Still existing
Accuracy of submission information	12.7	15.7	Some submission information was inaccurate.	Still existing
Permanence of meter readings for reconciliation	12.8	4 of Schedule 15.2	Some estimates not replaced at R14.	Still existing
Forward estimate process	12.12	6 Schedule 15.3	The accuracy threshold was not met for all months and revisions.	Still existing
Compulsory meter reading after profile change	12.13	7 Schedule 15.3	Reads or permanent estimates were not applied to the profile change date for two ICPs downgraded from HHR to NHH, and four meters upgraded from NHH to HHR.	Cleared
Historical estimate reporting to RM	13.3	10 Schedule 15.3	Historic estimate thresholds were not met for some revisions.	Still existing

Subject	Section	Description	Recommendation	Status
Changes to unmetered load (Clause 9(1)(f) of Schedule 11.1)	3.7	Changes to unmetered load	Confirm the unmetered load for ICPs where Meridian's unmetered load is more than ± 2 kWh different to the distributor's unmetered load, including: • 0000039251HRF8A • 0000040201HR19B • 0000040202HRD5B • 0000742354TE377 • 1001102586UN2FC • 0007169385RN84F.	Cleared
Electricity conveyed & notification by embedded generators (Clause 10.13, Clause 10.24 and 15.13)	6.1	Distributed generation metering	Query the flow direction for 0003330452ML44E meter 00095947 register 2, which has flow direction X and register content EG with the MEP.	Cleared

Meridian provided a copy of their material change audit conducted in October 2018 by Steve Woods of Veritek Limited for MERX. The summary tables below show the statuses of the non-compliances and recommendations raised in the material change audit. Further comment is made in the relevant sections of this report.

Subject	Section	Clause	Non-compliance	Status
Meter reading application	6.7	6 of Schedule 15.2	Not all meter readings are correctly applied.	Still existing
HE and FE	12.10	3 of schedule 15.3	Incorrect labelling of HE as FE.	Still existing

Subject	Section	Description	Recommendation	Status
Average daily consumption	4.3	Regarding Clause 5 Schedule 11.3	I recommend Meridian considers changing the way the average daily consumption figure is derived, to provide a more meaningful figure for a reasonable period where the ICP was active prior to switching.	Estimated daily kWh is not consistently calculated correctly.
Derivation of meter readings	6.6	Regarding Clause 5 Schedule 15.2	Ensure all meter condition notes are loaded and actioned from the Wells file, whether a reading is obtained or not.	Cleared
Permanence of meter readings	12.8	Regarding Clause 4 Schedule 15.2	Ensure Flux has the capability to label estimates as permanent in time for the first 14-month revision.	Still existing
Inactive consumption	12.9	Regarding Clause 2 Schedule 15.3	Ensure reporting is in place to identify and manage consumption on inactive ICPs.	Cleared

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 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

The process to find and correct incorrect information was examined. The registry list files as at 16/08/19 and AC020 trader compliance report for 01/11/18 to 16/09/19 were examined to confirm that information was correct and not misleading. The registry validation process was examined in detail in relation to the achievement of this requirement.

Audit commentary

MERI

When information held on the registry is updated in Velocity, the change is automatically sent to the registry. Notification files and acknowledgements received from the registry are loaded into Velocity. If action is required for a notification or acknowledgement item, it is directed to a work queue. Work queue items are actioned and monitored daily.

Velocity data is validated against the registry three times each month.

- A snapshot of distributor and trader data is compared at the beginning of each month. Discrepancies which affect billing or reconciliation are investigated and resolved.
- Prior to initial and wash up submissions a registry list with history is compared to detailed submission data from Velocity. This validation identifies ICPs which are missing from Velocity or the registry during the period being reviewed, mismatched profiles, mismatched NSPs, mismatched networks, missing trader notifications, and generation flow with an inconsistent profile. High and low consumption is also identified and reviewed.

Some additional checks are completed for ANZSIC codes (discussed in **section 3.6**), unmetered load (discussed in **section 3.7**), and distributed generation (discussed in **section 6.1**).

Meridian's controls are generally sound with regard to the identification and correction of information. Analysis of the list file and AC020 returned the following findings:

Issue	2019 Qty	2018 Qty	2017 Qty	2016 Qty	Comments
ICP at status "new connection in progress" (1,12) or "ready" (0,0) with an initial energisation date populated by the Distributor	53	14	16	22	See **section 3.9.**
Active date variance with initial electrical connection date	356	94	81	39	See **section 3.8.**
Incorrect status or status date	9	15	-	-	5 updates to active (see **section 3.8**) and four updates to inactive (see **section 3.9**).
Submission flag discrepancies	2	-	2	5	Two ICPs had HHR profiles but NHH submission flags. Both are now resolved. No ICPs with metering categories greater than 2 and the NHH submission flag were identified on the AC020 report.
Distributed Generation profile not recorded on the registry	61	-	-	58	61 ICPs with generation indicated by the distributor and no generation profile were identified. 8 now corrected. 36 confirmed as having solar but not import/export metering. 15 do not appear to have solar. 2 have switched away. This is discussed further in **section 6.1**.
Active with blank ANZSIC codes	1	-	-	1	See **section 3.6.**
Active with incorrect ANZSIC code applied	11	1	2	8	
Active with ANZSIC "T999" not stated	-	1	12	5	
Active with ANZSIC "T994" don't know	4	6	29	48	
Active with ANZSIC "T995" refused to answer	-	2	-	-	

Issue	2019 Qty	2018 Qty	2017 Qty	2016 Qty	Comments
Active with ANZSIC "T997" response unidentifiable	-	1	-	-	
Active with ANZSIC "T999" not stated	-	1	-	-	
Meter cat 3 or known commercial site with residential ANZSIC code	-	-	2	2	
Active ICPs with blank MEP and no MEP nominated and UML =N	-	-	-	1	All ICPs with a blank MEP were unmetered or had an MEP nomination.
ICPs with Distributor unmetered load populated but Meridian has none	12	4	86	90	Nine ICPs were confirmed to be metered, and the distributor's details are incorrect. The remaining three ICPs relate to NZTA Northland DUML ICPs. These being reconciled using the Northpower database information therefore the UML flag is incorrectly set. See **sections 3.7** & **5.4.**
ICPs with standard unmetered load flag Y but load is recorded as zero	106	93	2	89	All 106 are tsunami sirens or residual load ICPs and are correctly recorded with 0 daily unmetered kWh. See **section 3.7.**
ICPs with incorrect shared unmetered load	-	-	-	10	Compliant
ICPs have UML flag N and no shared unmetered load but Distributor field shows shared unmetered load.	-	-	-	-	Compliant

Some corrections identified in the 2018 audit have still not been made, specifically, as detailed in **section 3.9**, 12 incorrect statuses/status dates identified in the 2018 audit have not yet been corrected. Most of the affected ICPs have now switched out or been decommissioned.

MERX

Flux's daily discrepancy process imports a registry list and compares it to the current values for the corresponding trader-maintained fields in Flux. Where a field MERX maintains is different a status or trader update is automatically created with the appropriate event date and downloaded to a csv file, which is manually moved to the Registry SFTP directory.

Inactive ready for decommissioning (1,6) status is not available in Flux, and this status is manually updated directly on the registry.

MERX does not currently review acknowledgement files from the registry. At present, if a registry update fails it will continue to be resent each day by the daily discrepancy process without the user realising there is an issue.

Description	Recommendation	Audited party comment	Remedial action
Review of registry acknowledgement files	Consider reviewing the registry acknowledgement files, so that failed registry updates can be identified and resolved promptly.	We will review and adapt our controls related to Registry updates in Flux as ICP volumes increase.	Identified

Where fields held in Flux maintained by another participant are different, including all GXP related information and distributor-maintained statuses, a notification file is generated by the registry. The file is imported into Flux but does not automatically update the affected fields. Users manually trigger updates to GXPs by running the "update GXP changes" process and can review changes in the notification files using Flux reports to determine any changes required.

Flux does not record the distributor's installation type or generation fuel type. Processes should be developed to ensure that ICPs with distributed generation are checked against registry information, to ensure that profiles, metering and submission information are correct.

There are no regular discrepancy reporting processes to identify instances where:

- ICP, network, and metering details in Flux are inconsistent with the registry; or
- trader maintained data is inconsistent with data maintained by other parties (such as unmetered load or distributed generation).

I recommend that further checks are implemented, and I note that MERX intends to use the audit compliance reports to help them to identify discrepancies in the future.

Description	Recommendation	Audited party comment	Remedial action
Registry validation	Check that trader maintained information in Flux is consistent with distributor and MEP maintained information on the registry, such as unmetered load details, and distributed generation details at least monthly. Investigate and resolve any discrepancies.	We are in the process of operationalising the AC-020 for both MERI and MERX.	Identified

Analysis of the list file and AC020 returned the following findings:

Issue	2019 Qty	Comments
ICP at status "new connection in progress" (1,12) with an initial energisation date populated by the Distributor	-	Compliant
Active date variance with initial electrical connection date	-	Compliant

Issue	2019 Qty	Comments
Incorrect status or status date	1	One reconnection had an incorrect status date applied. See **section 3.8.**
Submission flag discrepancies	-	Compliant No ICPs with metering categories greater than 2 and the NHH submission flag were identified on the AC020 report.
Distributed Generation profile not recorded on the registry	8	All were confirmed to have solar installed but no import/export metering.
Active with blank ANZSIC codes	-	Compliant
Active with incorrect ANZSIC code applied	-	
Active with ANZSIC "T999" not stated	-	
Active with ANZSIC "T994" don't know	-	
Active with ANZSIC "T995" refused to answer	-	
Active with ANZSIC "T997" response unidentifiable	-	
Active with ANZSIC "T999" not stated	-	
Meter cat 3 or known commercial site with residential ANZSIC code	-	
Active ICPs with blank MEP and no MEP nominated and UML =N	-	All ICPs with a blank MEP were unmetered or had an MEP nomination.
ICPs with Distributor unmetered load populated but Meridian has none	-	Compliant
ICPs with standard unmetered load flag Y but load is recorded as zero	-	Compliant
ICPs with incorrect shared unmetered load	-	Compliant
ICPs have UML flag N and no shared unmetered load but Distributor field shows shared unmetered load.	-	Compliant

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: 11.2 & 15.2 From: 01-Nov-18 To: 24-Oct-19	**MERI** Some registry information is incorrect. DUML ICPs 0000545297NR91E, 0000500236NR1F1 and 0000500015NRA63 have the unmetered flag incorrectly set to "N" on the registry. 12 incorrect statuses/status dates identified in the 2018 audit have not yet been corrected. Most of the affected ICPs have now switched out or been decommissioned. Potential impact: Low Actual impact: Low Audit history: Multiple Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate as they identify most of the errors but not all. The audit risk rating is low as the discrepancies identified will only have a minor effect on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Actions to resolve issues noted here are included in the relevant sections of this report		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

This area is discussed in a number of sections in this report.

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

I reviewed the method to receive meter reading information.

HHR

All HHR data is collected by EMS, and data transmission was reviewed as part of their agent audit.

NHH (MERI and MERX)

Manual NHH data has been provided by Wells via SFTP. NHH AMI data has been provided by Arc, Metrix (for Metrix and Counties Power meters), and AMS (for AMS and Smartco meters) and WEL Networks via SFTP. All other AMI meters are read manually by Wells.

Upon receipt all AMI reads are imported into the BI hub which generates a REA (reading) file which contains readings for all ICPs scheduled to be read on the selected date for all MEPs. This file is imported into Velocity. All AMI reads are retained in the BI Hub.

I traced a diverse sample of reads for 18 NHH ICPs from the source files to Velocity. Readings for six ICPs for Wells were checked, along with readings for two ICPs for each of the following meter reading providers:

- AMS
- Arc
- Counties Power
- Metrix
- Smartco
- WEL Networks.

Generation

The Stark system retrieves meter information from the generation meters every half hour, and data is also received via SCADA. I reviewed processes to ensure that generation data is transmitted completely and accurately.

I matched the generation data received by Stark to the data received from SCADA for the first six half hours of a day for five generation station meters.

Audit commentary

HHR

HHR data transmission was reviewed as part of EMS' agent audit and found to be compliant.

NHH (MERI and MERX)

NHH meter data is transmitted to Meridian using SFTP. I traced reads for a sample of 20 ICPs from the source files to Velocity. All reads were recorded and labelled correctly.

Generation

The Stark system retrieves meter information from the generation meters every half hour, and data is also received via SCADA. Stark sends an automated email to the reconciliation team where data is missing, or the number of seconds recorded does not match the expected number for the half hour. The internet time source was changed in February 2018. An error occurred with this on 19/2/18. As detailed in **section 6.5**, I confirmed that the missing data was retrieved and flowed through to submission correctly.

I matched the generation data received by Stark to the data received from SCADA for the first six half hours of a day for five generation station meters. In all cases the data matched.

Generation metering and activity is monitored in real time by the generation team, who report any metering or data issues to the reconciliation team.

Audit outcome

Compliant

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 manager*
- *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 for the person who performed the activity (clause 21(4)(c)).*

Audit observation

A complete audit trail was checked for all data gathering, validation and processing functions. I reviewed audit trails for a small sample of events. Large samples were not necessary because audit trail fields are expected to be the same for every transaction of the same type.

Audit commentary

MERI

A complete audit trail was viewed for all data gathering, validation and processing functions. The logs of these activities for Meridian and all agents include the activity identifier, date and time and an operator identifier.

MERX

The Flux system contains a complete and compliant audit trail.

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

I reviewed Meridian's current terms and conditions.

Audit commentary

Meridian's current terms and conditions with their customers includes consent to access for authorised parties for the duration of the contract.

Audit outcome

Compliant

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

I reviewed Meridian's current terms and conditions and stepped through the compliance process.

Audit commentary

Meridian's contract with their customers includes consent to access for authorised parties for the duration of the contract. Access is most commonly required by the MEP to meet their metering compliance obligations.

Where other parties (such as MEPs) require access to a Meridian ICP, a letter is generated to advise the customer. Meridian provides contact details for the affected ICPs to the MEP in a password protected spreadsheet, and the MEP liaises directly with the customer to arrange access.

Where the customer refuses access, the MEP will advise Meridian and/or the field services paperwork will be returned as a "turn down" and directed to a work queue. Meridian will then send another letter to the customer with further explanation on the reasons access is required and invite the customer to contact Meridian to arrange an alternative solution if necessary.

Meridian is developing a revised process for customers who refuse access, which includes letters and phone calls. Meridian is working with its lawyers and the Authority to determine the best course of action where a customer continues to refuse access.

As at 24/10/19 there were 27 MERI ICPs where customers had declined access to their meters. No MERX ICPs are affected.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.6 With: Clause 10.7(2),(4),(5) and (6) From: 24-Oct-19 To: 24-Oct-19	**MERI** Meridian has been unable to arrange meter access to 27 ICPs at the request of MEPs as at 24/10/19. Meridian has attempted to gain access to all the affected ICPs and continues to do so. Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Meridian has strong controls in place and is seeking legal advice from its lawyers and the Authority to further strengthen controls. This is a technical non-compliance because the code specifies that Meridian "must" provide access, rather than use best or reasonable endeavours to provide access. A very small proportion of ICPs are affected. The impact is low, access is generally required to complete meter changes.

Actions taken to resolve the issue	Completion date	Remedial action status
As reported, Meridian is investigating implementation of further process steps to gain access to these ICPs in accordance with our terms and conditions.	Ongoing	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
In general, we consider our processes and controls in this area are adequate to ensure access is provided when requested the majority of the time. Issues with access are generally related to customer refusal and not straight forward to resolve.		

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

The physical meter location point is not specifically mentioned in the Terms and Conditions, but the existing practices in the electrical industry achieve compliance.

Meridian was requested to provide details of any installations with loss compensation.

Audit commentary

Compensation arrangements are in place for some generation stations. I checked the loss calculation inputs for Whitehill, Manapouri and Te Apati. I confirmed that the loss compensation functionality was "enabled" and contained the appropriate inputs of transformer losses and line losses.

Audit outcome

Compliant

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 subclause (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

I reviewed Meridian's current terms and conditions.

Audit commentary

Meridian's terms and conditions contain the appropriate clauses to achieve compliance with this requirement.

Audit outcome

Compliant

2.9. Connection of an ICP (Clause 10.32)

Code reference

Clause 10.32

Code related audit information

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

- *accept responsibility for their obligations in Parts 10, 11 and 15 for the point of connection; and*
- *have an arrangement with an MEP to provide 1 or more metering installations for the point of connection.*

Audit observation

The new connection process was examined in detail to evaluate the strength of controls. The registry list files as at 16/08/19 and AC020 trader compliance reports for 01/11/18 to 16/09/19 were examined were analysed to confirm whether process compliance and controls are functioning as expected.

Audit commentary

MERI

Meridian claims ICPs at 1,12 ("inactive new connection in progress") status, and the MEP is nominated at the same time.

NHH new connections are managed using Velocity's work queues. HH new connections are managed manually, and closely monitored.

MERX

New connections are not completed by MERX.

Audit outcome

Compliant

2.10. Temporary Electrical Connection of an ICP (Clause 10.33)

Code reference

Clause 10.33(1)

Code related audit information

A reconciliation participant may temporarily electrically connect a point of connection, or authorise a MEP to temporarily electrically connect a point of connection, only if:

- *for a point of connection to the grid – the grid owner has approved the connection*
- *for an NSP that is not a point of connection to the grid - the relevant distributor has approved the connection.*
- *for a point of connection that is an ICP, but is not as NSP:*
- *the reconciliation participant is recorded in the registry as the trader responsible for the ICP*
- *if the ICP has metered load, 1 or more certified metering installations are in place*
- *if the ICP has not previously been electrically connected, the relevant distributor has given written approval of the temporary electrical connection.*

Audit observation

The new connection process was examined in detail.

Audit commentary

MERI

Meridian claims ICPs at 1,12 ("inactive new connection in progress") status which helps to ensure that the trader is recorded on the registry if an ICP is temporarily electrically connected. No temporary electrical connections were identified.

MERX

New connections are not completed by MERX.

Audit outcome

Compliant

2.11. Electrical Connection of Point of Connection (Clause 10.33A)

Code reference

Clause 10.33A(1)

Code related audit information

A reconciliation participant may electrically connect or authorise the electrical connection of a point of connection only if:

- *for a point of connection to the grid – the grid owner has approved the connection*
- *for an NSP that is not a point of connection to the grid - the relevant distributor has approved the connection.*
- *for a point of connection that is an ICP, but is not as NSP:*
- *the reconciliation participant is recorded in the registry as the trader responsible for the ICP*
- *if the ICP has metered load, 1 or more certified metering installations are in place*
- *if the ICP has not previously been electrically connected, the relevant distributor has given written approval of the temporary electrical connection.*

Audit observation

The new connection process was examined in detail to evaluate the strength of controls.

The AC020 trader compliance reports for 01/11/18 to 16/09/19 was examined to confirm process compliance and that controls are functioning as expected.

Audit commentary

MERI

The new connection process ensures that an MEP is nominated. Meridian requires meter certification for metered sites as part of the new connection process.

Meridian have a report which identifies meters that have been reconnected which are not certified. The report is intended to be run and reviewed weekly but is not currently monitored. Meridian is investigating how to best use this report to improve compliance and add it to their business as usual processes.

Review of the AC020 audit compliance report found:

- 23 late certifications for new connections of metered ICPs; and
- 100 late certifications for reconnections of metered ICPs.

Meridian provided a list of ten ICPs which had bridged meters at some time during the audit period. All were appropriately re-certified by the MEP when they were unbridged.

MERX

New connections are not completed by MERX.

Review of the AC020 audit compliance report confirmed that there were no late meter certifications for reconnections.

No bridged meters were identified for MERX.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.11 With: Clause 10.33A From: 13-Sep-18 To: 13-Sep-19	**MERI** 23 ICPs were certified later than 5 days after electrical connection. 100 ICPs which had expired and/or interim certification were reconnected. Potential impact: Low Actual impact: None Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate. The new connection process has good controls to ensure that MEPs are in place for new connections. Meridian is strengthening their controls for reconnections to ensure that reconnections requiring certification are identified and recertified by the MEPs. The audit risk rating is low as a small proportion of ICPs were affected.

Actions taken to resolve the issue	Completion date	Remedial action status
We have good controls in place to ensure meters are certified at the time of initial electrical connection when possible – situations where load is too low to certify are infrequent and processes are in place to ensure certification is completed when it is possible	Ongoing	Identified
We have clarified internal responsibility for providing the list of reconnected ICPs with uncertified metering to MEPs and have reinstated this process.	2 Dec 2019	
Preventative actions taken to ensure no further issues will occur	**Completion date**	

2.12. Arrangements for line function services (Clause 11.16)

Code reference

Clause 11.16

Code related audit information

Before providing the registry manager with 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 providing the registry manager with 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

The process to ensure an arrangement is in place before trading commences on a Network was examined. Controls within Velocity and Flux were checked.

Registry list files for 01/06/18 to 18/06/19 were reviewed to identify all the networks MERI and MERX trade on. Arrangements for line function services with these networks were discussed.

Audit commentary

The MERI and MERX codes are both covered by Meridian's existing Use of System Agreements.

Meridian confirmed the existence of either a Use of System Agreement or other trading arrangement for all networks it trades on.

ICPs can only be created or switched in if the network and NSP have been created in Velocity for MERI, or Flux for MERX.

Audit outcome

Compliant

2.13. 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

The process to ensure an arrangement is in place before an MEP is assigned was examined. Controls within Velocity and Flux were checked.

Audit commentary

The MERI and MERX codes are both covered by Meridian's existing MEP agreements and arrangements.

Meridian confirmed the existence of either an agreement or arrangement with the MEPs for their ICPs.

Intellihub's meters are covered under Meridian's MEP agreement with Metrix. All Intellihub ICPs supplied have submission type NHH and will be read manually until Intellihub is able to provide AMI readings. The arrangements in place meet the requirements of clause 10.36.

ICPs can only be created or switched in if the MEP has been created in Velocity for MERI, or Flux for MERX.

Audit outcome

Compliant

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

The "new connections" process was examined in detail to confirm compliance with the requirement to obtain ICP identifiers for points of connection to local or embedded networks.

Audit commentary

This requirement is well understood and managed by Meridian.

Audit outcome

Compliant

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 manager about each ICP at which it trades electricity in accordance with Schedule 11.1.

Audit observation

The new connection process was examined in detail. The registry lists as at 16/08/19 and event detail reports for 01/01/19 to 12/09/19 were analysed to evaluate the updating of the registry in relation to new connections. This clause links directly to **section 3.5** below. The findings for the timeliness of updates is detailed there.

The process to update the registry was reviewed for a diverse sample of 30 new connections.

Audit commentary

MERI

The new connection process is detailed in **section 2.9** above. The process in place ensures that the trader required information is populated as required by this clause.

I walked through the registry update process for a sample of 30 new connections including HHR and NHH. The accuracy and timeliness of registry updates is discussed in **section 3.5**.

MERX

New connections are not completed by MERX.

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 manager about an ICP changes, the trader must provide written notice to the registry manager of the change no later than 5 business days after the change.

Audit observation

The process to manage status changes is discussed in detail in **sections 3.8** and **3.9** below. The process to manage trader updates, including MEP nominations was reviewed.

The AC020 trader compliance report for 01/11/18 to 16/09/19 was examined. I examined:

- an extreme case sample of 42 late status updates, 20 late trader updates, 10 NHH MEP nominations and eight HHR MEP nominations for MERI; and
- all late MEP nominations, and all trader updates for MERX.

Audit commentary

The event detail report was examined to confirm the registry is notified within five business days when information referred to in clause 9 of schedule 11.1 changes. Timeliness of updates has generally improved.

MERI – status updates

Status updates are only processed once Meridian has received confirmation of the correct status and date.

B2B workflow and automation processes send and receive new disconnection and reconnection data for Arc, AMS, Smartco and Metrix. Full B2B automation is in place for AMS, Arc, and Smartco; Velocity is automatically updated when disconnection and reconnection information is received. Light B2B

automation is in place for Metrix; Velocity is automatically updated with the information that it can populate.

If partial data is provided through the B2B process, a validation work queue item is created. A field services team member checks the data and completes any remaining updates. Disconnection and reconnection reads are not entered as part of the disconnection or reconnection process.

Counties Power and FCLM data is sent and received using SFTP. Delta information received via SFTP is imported into Velocity and creates a validation queue item. A field services team member checks and updates the data as necessary, referring to Deltaview (Delta's information portal).

Intellihub disconnection and reconnection information is provided via email.

Disconnection and reconnection service requests are managed using the queue management functionality in Velocity. The field services team monitors these queues to ensure that all service requests are resolved. Meridian's service level agreements require disconnection and reconnection paperwork to be returned to Meridian within two business days of work completion.

The timeliness of status updates to active (for reconnections) is set out on the table below.

Status	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
Active	2015	1,059	61%	36.0
	2016	1,037	73%	12.0
	2017	623	80%	12.9
	2018	449	83.2%	9.8
	2019	**584**	**84.89%**	**7.03**

The percentage of reconnections updated within five days has improved from 83.2% to 84.89%. There were 103 reconnected ICPs where the notification date was more than 30 business days. A sample of ten updates to active more than 30 business days after the event date were checked to determine the reason for the late update.

- One was delayed by late receipt of disconnection paperwork.
- Five were corrections following revenue assurance investigations confirming the ICP was connected, or further information being obtained confirming that the ICP required a status correction. ICP 0005144523RN946 requires a further correction to move the status date from 28/08/19 to 25/05/19.
- Decommissioning service orders can only be raised for ICPs with an active status. To allow a service order to be processed, the status is returned to active status temporarily from the last status update date. Once the service order is created, the redundant active status record can be removed. In some cases, the step to remove the active record is missed. Four of the late status updates related to these redundant active records, which had not been removed for ICPs 0006802300CAE74 (01/03/10), 0000166990TR124 (04/05/10), 0006300260RN627 (04/05/15) and 0005706661RN1D7 (07/01/19).

The incorrect active status updates are recorded as non-compliance in **section 3.8**.

The timeliness of status updates to inactive for disconnections is set out on the table below.

Status	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
Inactive	2015	1,243	82.08%	9.22
	2016	450	81.22%	8.41
	2017	406	95.45%	4.07
	2018	533	90.29%	6.03
	2019	**283**	**96.42%**	**6.53**

The percentage of disconnections updated within five days has improved from 90.29% to 96.42%. 93 late updates were not processed within 30 business days of the event date; 46 of these were updates to "ready for decommissioning" status.

- Review of the ten latest updates to ready for decommissioning found they related to late confirmation from the network or customer that the ICP had been decommissioned, or corrections.
- Review of the ten latest updates to inactive vacant found eight of the updates were to replace redundant active status records entered to allow service orders for decommissioning to be raised, and two were status corrections.
- One late update to reconciled elsewhere occurred and was caused by a correction.
- Review of all 11 late updates to inactive new connection in progress confirmed that they were not genuinely late, and the status update occurred before the ICP was electrically connected.

Review of the accuracy of the updates found some incorrect data, which is recorded as non-compliance in **section 3.9**.

MERI – trader updates

The average days to complete trader updates has improved since the 2018 audit, but the percentage on time has decreased. 286 late updates were not processed within 30 business days of the event date.

Code	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
MERX	2018	5,691	71.95%	18.50
	2019	**6,858**	**63.93%**	**6.94**

<u>HHR MEP nominations</u>

The MEP nomination process for HHR ICPs is manual and managed directly on the registry. I checked all late MEP nominations which were made over 15 business days after the event date, and found they were caused by:

- a metering change in progress which prevented the MEP nomination from being processed on the registry; or
- corrections to data where an MEP nomination had been reversed in error.

<u>NHH MEP nominations</u>

There have been no bulk meter roll outs during the audit period. Bulk roll outs are carefully managed and tracked to ensure that the correct MEP is nominated.

Controls are in place to improve the timeliness of MEP nominations, including:

- a daily report is reviewed to identify meter service requests raised the previous business day which may require an MEP change, such as meter replacements. The field services team raise MEP nominations as required based on the findings of their daily review.
- AMS also provides a weekly report showing any ICPs where they have installed metering for Meridian but have not received an MEP nomination. This report identifies ICPs changing from Arc to AMS, which Meridian would not otherwise be aware of, and ICPs where the MEP nomination trader record has been replaced with another trader update (e.g. to correct a profile) before the MEP has accepted the nomination.

I checked a sample of ten late MEP nominations which were made over 30 business days after the event date, and found they were caused by:

- Corrections following another trader update replacing the MEP nomination which can occur because the MEP nomination is raised as a service order rather as an event within the ICP's lifecycle in Velocity. Once the nomination is accepted, the lifecycle is updated. If another trader event is sent before an open MEP nomination is accepted, it will be processed with the existing MEP in the lifecycle and can remove the MEP nomination from the registry.
- Corrections to incorrect nomination information.
- Corrections following switch withdrawals.

Trader updates to unmetered load details

I checked the five latest updates to unmetered load details, which were delayed by investigation to confirm the correct unmetered load details. The late updates were accurately processed from the correct event date.

Trader updates to profiles

I checked the five latest updates to profiles, four were corrections and one related to a switch withdrawal. Three corrections were reinstatement of the correct profile after it was incorrectly reversed by an MEP nomination due to timing, and one correction was to adjust the date that the profile applied from. The late updates were accurately processed from the correct event date.

Trader updates to submission types

I checked the five latest updates to submission types and found they were caused by delays in metering updates being processed on the registry, or metering paperwork being received. The late updates were accurately processed from the correct event date.

Trader updates to ANZSIC codes

I checked the five latest updates to ANZSIC codes and found they were caused by backdated sign ups and switch withdrawals. The late updates were accurately processed from the correct event date.

MERX – status updates

Status updates are only processed once Meridian has received confirmation of the correct status and date.

B2B workflow and light automation processes are used for AMS; returned paperwork is "stamped" onto the corresponding field services job in Flux. I observed this process in operation and viewed the job completion notes in the system. When paperwork is received an item is added to a work queue, where a user will review the paperwork and update the relevant fields in Flux. For other field services providers paperwork is received via email and processed manually with notes added to Flux.

Inactive ready for decommissioning (1,6) status is not available in Flux, and this status is manually updated directly on the registry.

Updated statuses are sent to the registry as part of the daily discrepancy process described in **section 2.1**.

The timeliness of status updates to active and inactive is set out on the table below.

Status	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
Active	**2019**	**3**	**82.35%**	**3.71**
Inactive	**2019**	**2**	**0.00%**	**18.00**

All late updates were reviewed and found to be caused by delays in receiving paperwork and backdated switches.

I checked the accuracy of all MERX status updates which had not been reversed. All the updates were correct, except for 0006546307RN22B which was updated to active from the switch in date (01/07/19) instead of the reconnection date (02/07/19). Flux automatically marks ICPs as "active" on switch in date, and users must manually update the status to "inactive" if an ICP is not reconnected on switch in. ICPs which have been assigned an "active" status early are normally identified and corrected when reconnection paperwork is received and processed, or through the meter reading validation process. This is recorded as non-compliance in **section 3.8**.

MERX – trader updates

Flux's daily discrepancy process imports a registry list and compares it to the current values for the corresponding fields in Flux. Where the trader details in Flux differ from the registry, a trader update is automatically created with the appropriate event date and downloaded to a csv file, which is manually moved to the Registry SFTP directory.

Code	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
MERX	**2019**	**5**	**86.11%**	**2.36**

NHH MEP nominations

Two late MEP nominations were identified; both were made within 12 business days of the event date. I confirmed that the nominations were processed accurately but were delayed because the MEP nomination process in Flux needed to be confirmed before the nominations were processed.

Trader updates to profiles

I checked the all three late updates to profiles and found they related to corrections, where an ICP had switched in with a profile which was not RPS. The late updates were accurately processed from the correct event date.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.3 With: 10 Schedule 11.1 From: 01-Nov-18 To: 16-Sep-19	**MERI** 584 late updates to active status for reconnections. 283 late updates to inactive status for disconnections. 6,858 late trader updates. **MERX** Three late updates to active status for reconnections. Two late updates to inactive status for disconnections. Five late trader updates. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls in this area are robust but late notification from other areas of the business or networks shows there is room for improvement. The audit risk rating is low as overall the timeliness to update the registry is high and showing an improved performance year on year, especially with those events that have a direct impact on submission accuracy. I found some late updates often related to data corrections, which improved overall data accuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
All updates have been processed.	N/A	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
MERI We will continue with our existing controls that ensure Registry information is updated within 5 business days where this is within our control. **MERX** ICP changes are relatively low currently but will be monitored to ensure processes and controls are adequate as the number of ICP's and Registry activity increases.	Ongoing Ongoing	

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)):*
    - *arrange for a final interrogation to take place prior to or upon meter removal (clause 11.18(3)(a)); and*
    - *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

Retailers responsibility to nominate and record an MEP in the registry

The AC020 trader compliance reports for 01/11/18 to 16/09/19, was examined to confirm whether all active ICPs have an MEP recorded.

The event detail reports for 01/01/19 to 12/09/19 were examined to identify all MEP nominations and their outcome.

ICP decommissioning

The process for the decommissioning of ICPs was examined. A diverse sample of ten decommissioned ICPs for MERI and all decommissioned ICPs for MERX were checked to prove the process and confirm controls are in place.

Audit commentary

MERI - Retailers responsibility to nominate and record an MEP in the registry

The new connection process is discussed in detail in **sections 2.9** and **3.5**. Meridian claims ICPs at 1,12 ("inactive new connection in progress") status, and the MEP is nominated at the same time. All new connections have an MEP nominated.

The AC020 report as at 16/09/19 recorded 37 active ICPs with metering category 9, null or zero which were not unmetered. The ICPs were checked:

- four ICPs have been moved to "ready for decommissioning" or "decommissioned" status;
- two ICPs have since had meter details recorded;
- 13 ICPs have MEP nominations made and accepted, and are awaiting the update of metering details; and
- 18 ICPs do not have metering or unmetered load recorded. Four have been decommissioned, six are in the process of being decommissioned, three now have metering installed, three have the

correct MEP nominated but metering details are not yet populated, one is calculated by subtraction and needs an exemption (as recorded in Sections 3.5 and 6.1) and one has access issues preventing confirmation that metering is removed.

The two ICPs with meter category nine and the unmetered flag set to no under investigation at the time of the 2018 audit were checked:

- 0005965470RN796 is still inaccessible following the Christchurch earthquakes and the status of the metering cannot be confirmed; and
- 0198679831LC926 has had meters reinstated on the registry.

32 (0.4%) of the 8,138 MEP nominations made were rejected. Rejected nominations are directed to a work queue for review. All rejected nominations were examined.

- 20 were reissued and accepted. For four of these, the incorrect MEP had been nominated initially due to incorrect data entry.
- 12 were not reissued because either an incorrect MEP had been taken from the lifecycle at the time another trader update was processed (e.g. a profile change), or the incorrect MEP was nominated due to incorrect data entry. Because the MEP rejected the incorrect nomination, no further action was required.

MERI - ICP decommissioning

Meridian continues with their obligations under this clause. ICPs that are vacant and active, or inactive are still maintained in Velocity.

The decommissioning process varies from network to network with some advising Meridian to move the ICP to "ready for decommissioning" status after the event, and Meridian moving the ICP to "ready for decommissioning" before the event for others. Where an Orion ICP requires decommissioning Orion updates the address on the registry, and Meridian runs a weekly registry report to identify the affected ICPs and update their statuses.

Following the 2017 and 2018 audits, the Authority expressed concerns about status updates and MEP nominations still being delayed by issues following the Christchurch earthquakes. Most post-earthquake issues have been resolved but there are still a small number of sites which are vacant and inaccessible for safety reasons. Meridian is completing a project to review long term vacant and disconnected sites to try to determine the property owner, and whether the site can be decommissioned. All affected sites are monitored each time a reading is received to determine whether they are consuming. There are currently 145 ICPs on this report, located all over NZ.

Decommissioning service orders are raised in Velocity, which are sent to both the distributor and MEP at the same time. Meridian makes an attempt to read the meter at the time of removal and if this is not possible then the last actual meter reading is used. This last actual reading is normally the one taken at the time of de-energisation.

A diverse sample of ten decommissioned ICPs connected to ten different networks were examined. In all cases Meridian had advised the MEP that the ICP was to be decommissioned, or the MEP had advised Meridian where the ICP was demolished without Meridian's knowledge. Reads were obtained prior to decommissioning for nine of the ICPs, and for one ICP the site was demolished without Meridian's knowledge and Meridian completed a site visit to attempt to gain a read.

MERX - Retailers responsibility to nominate and record an MEP in the registry

New connections are not completed by MERX.

All ICPs have an MEP recorded. MEP nominations are created in Flux by entering a proposed MEP and effective date, and are sent to the registry as part of the registry update process described in **section 2.1**.

All MN files identified on the event detail report accepted the MEP nomination. Where a MEP nomination is rejected, Flux will create an exception for review and all exceptions are reviewed daily. I walked through the process to monitor MEP nominations and viewed lists for MEP nominations, nomination acceptances, and nomination rejections. There were no nomination rejections when the rejection list was checked on 23/10/19.

MERX - ICP decommissioning

ICPs that are vacant and active, or inactive are still maintained in Flux.

MERX makes an attempt to read the meter at the time of removal and if this is not possible then the last actual meter reading is used. This last actual reading is normally the one taken at the time of de-energisation. MERX also advises the MEP responsible that the site is to be decommissioned or has been decommissioned, dependant on the Distributor's process.

One decommissioned ICP was checked. The MEP was notified, and a removal meter reading was obtained.

Audit outcome

Compliant

3.5. Provision of information to the registry manager (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 manager 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 Authority (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

The new connection process was examined in detail.

The process to find and correct incorrect information was examined. The registry list files as at 16/08/19 and AC020 trader compliance reports for 01/11/18 to 16/09/19 were examined to confirm process compliance and that controls are functioning as expected.

An extreme case sample of 20 late status updates for NHH new connections and ten late status updates for HHR new connections were checked.

The accuracy of all status event dates for new connections was checked by comparing the earliest active date, meter certification date (if available) and initial electrical connection date (if available). A sample of discrepancies were checked against supporting information to confirm the correct status date.

Audit commentary

MERI

The new connection process is described in detail in **section 2.9**. MEP nomination occurs when the ICP is at new connection in progress (1,12) status as part of the service request process.

The table below shows the level of compliance compared to earlier years.

Code	Year	ICPs notified greater than 5 days	Percentage on time	Average Business Days between Status Event and Status Input Dates
MERI	2015	589	74%	6.2
	2016	69	90%	3.6
	2017	259	82%	3.7
	2018	163	92%	2.7
	2019	**448**	**85.68%**	**6.20**

NHH new connections

Velocity's work flow processes are used to manage NHH new connection service requests.

B2B workflow and automation processes send and receive new connection data for Arc, AMS, Metrix and Smartco.

B2B workflow and automation processes send and receive new disconnection and reconnection data for Arc, AMS, Smartco and Metrix. Full B2B automation is in place for AMS, Arc, and Smartco; Velocity is automatically updated new connection information is received. Light B2B automation is in place for Metrix; Velocity is automatically updated with the information that it can populate.

If partial data is provided through the B2B process, or a meter is category 2, a validation work queue item is created. A field services team member checks the data (including multipliers for category 2 meters) and completes any remaining updates. I stepped through this validation process and observed examples which had failed validation because of incomplete information, including missing reads and dates. In most cases the information required is present, but not recorded in a field or format where it can easily be extracted by the B2B processes.

Counties Power and FCLM data is sent and received using SFTP Delta information received via SFTP is imported into Velocity and creates a validation queue item. A field services team member checks and updates the data as necessary, referring to Deltaview (Delta's information portal).

Unmetered service requests are sent via email to Orion. Emails received regarding unmetered load are processed manually.

All service requests appear in a work queue and remain open until the job has been completed. Job notes received from contractors are uploaded weekly against the ICPs. The field services team work through the work queue items and follow up as necessary, focussing on the oldest service requests first. Once a service request's progress has been reviewed, the user can reset the date when it will next appear in the work queue for review. Once reset the queue item remains open but will not be visible in the queue until the next review date.

AMS and Metrix send weekly reports on progress with service requests, and the reasons any jobs are overdue. This information is imported against the affected ICPs in Velocity. I walked through this process and noted that most requests were overdue because the customer's electrician or site was not ready. If a job is deferred three times AMS cancels the service request and requests the electrician contact Meridian when the site will be ready for energisation. The service level agreement in place requires that paperwork be returned to Meridian within two business days of completion.

The timeliness of status updates to active for new connections has declined, 85.68% of status updates to "active" for new connections occurred within five business days. 47 new connections were updated 30 days or more after the event date. A sample of 20 updates to active status made over 30 business days after the event date were checked:

- two late updates were made following revenue assurance investigations which confirmed the correct active date;
- six late updates were corrections to the initial electrical connection date, which had originally been populated incorrectly;
- one was a backdated ICP split, and the distributor confirmed the correct date;
- one update was late because paperwork was received before the MEP nomination was accepted, which disrupts the Velocity workflow which requires the new connection to be raised with the MEP nomination (acceptance or rejection of the nomination must be complete before the workflow is ready to receive the returned paperwork) - this happens infrequently and is normally identified through tracking of new connections and the review of service request progress; and
- the other ten updates were late due to late receipt of paperwork, or in one case a delay in processing paperwork once it was received.

All the updates checked were processed with the correct status and status date except:

ICP	Registry active date	Correct active date	Comment
1099576901CNCA3	18/01/2018	2/02/2018	A correction has been processed on the registry and in Velocity.
1002051414LC0BD	13/08/2018	24/07/2018	Meridian requires the network to correct an event before processing the date correction.

I also checked a sample of five late updates to ANZSIC codes for new connections identified on the AC020 report. I found all the late updates were processed correctly and were delayed by late notification that the new connection had been completed.

The 2017 audit recommended that Meridian check for ICPs with "inactive new connection in progress" status with an initial electrical connection date populated. Review of the registry list identified 46 ICPs with "new connection in progress" status and seven ICPs with "ready" status which had an initial electrical connection date recorded. A sample of 38 these ICPs were checked, and 37 had the correct

status recorded. ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to "active" yet. This is recorded as non-compliance in **section 3.8**.

HHR New Connections

The HHR new connection process was examined. As found with other traders, this process is largely manual due to the complexity of such connections. The progress of HHR new connections is managed closely.

Meridian updates the ICP status to active as soon as they confirm that the ICP is active and the metering is recording load, rather than waiting for the metering details to be updated on the registry. The ten latest status updates to active status for HHR new connections were checked:

- eight were delayed by late receipt of metering paperwork;
- one was delayed while Meridian waited for the network to remove a registry update, which prevented Meridian from updating their status information; and
- one was late because the network required Meridian to correct their active date.

All the updates checked were processed with the correct status and date.

New connection information accuracy

Active dates for new connections were compared to the distributor's initial electrical connection date, and MEP's certification date using the AC020 report. The following exceptions were identified:

Exception	Total ICPs	ICPs confirmed to have incorrect updates	Comment
No IECD No meter cert	220	-	195 of the ICPs had their unmetered flag set to Y. A sample of 11 ICPs were checked. All were confirmed to have the correct status date and status recorded.
Unmetered ICP Active date ≠ IECD	2	2	The active dates were entered incorrectly and were corrected during the audit.
Metered ICP Active date ≠ IECD Active date ≠ meter cert date	9	9	All nine ICPs had incorrect active dates recorded: • five ICPs had active dates entered incorrectly from the paperwork; and • for four ICPs further information was provided after the initial paperwork, which confirmed a different correction date. Corrections were processed for seven of the ICPs. 1002054748LCF88 requires an active date correction from 11/10/18 to 12/10/18, and 0007186223RNCC6 requires an active date correction from 14/10/19 to 26/10/19.
Active date ≠ IECD No meter cert date	19	-	A sample of 13 ICPs were checked. All were confirmed to have the correct status date and status recorded.

Exception	Total ICPs	ICPs confirmed to have incorrect updates	Comment
Active date ≠ IECD Active date = meter cert date	29	2	A sample of ten ICPs were checked. Eight were confirmed to have the correct status date and status recorded. Two had incorrect status dates and were corrected during the audit.
Active date = IECD Active date ≠ meter cert date	77	-	A sample of 14 ICPs were checked. All were confirmed to have the correct status date and status recorded.

The registry list was reviewed to identified ICPs at with "ready" or "inactive new connection in progress" status with an initial electrical connection date populated:

- There were seven ICPs with "ready" status and an initial electrical connection date populated. All were new ICPs created as part of an ICP split, and confirmed not to be connected.
- There were 46 ICPs with inactive new connection in progress" status with an initial electrical connection date populated. A sample of 31 were checked. 28 were timing differences and have been updated to "active" status from the correct date. Two remain inactive, and Meridian is awaiting confirmation the connection has been completed and the connection date before updating the status. ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to active yet. This is recorded as non-compliance below, and in **section 3.8**.

MERX

New connections are not completed by MERX.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.5 With: Clause 9 Schedule 11.1 From: 01-Nov-18 To: 16-Sep-19	**MERI** 448 late updates to active status for new connections. ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to active yet. 15 ICPs had incorrect active dates recorded. Corrections were processed for all affected ICPs except 1002051414LC0BD, 1002054748LCF88 and 0007186223RNCC6. Potential impact: Medium Actual impact: Low Audit history: Multiple Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**

Non-compliance	Description		
Low	The controls are rated as moderate, in most cases the registry was updated on time. Where information was late, circumstances beyond Meridian's direct control had contributed to the late update. The audit risk rating is low as the impact to the market of the ICPs not being updated within five business days is low.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
All incorrect active dates have been identified have been corrected where possible. ICP 0007190640RNED6 – status has been updated to active ICP 1002051414LC0BD – can not be corrected until the network reverse entries from the Registry – we have had no response to our request to date ICP 0007186223RNCC6 – further investigation found our active status date is correct		4 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur		**Completion date**	
We will continue with our existing controls that ensure Registry information is updated within 5 business days where this is within our control.		Ongoing	
We intend to utilise information now available in the AC-020 report to more regularly monitor both timeliness and accuracy of Registry information for new connections.		31 March 2020	

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

The process to capture and manage ANZISC codes was examined.

The registry list files as at 16/08/19 and AC020 trader compliance reports for 01/11/18 to 16/09/19 were examined to check ANZSIC codes, including active ICPs with T99 series or blank ANZSIC codes.

To confirm the validity of the ANZSIC codes selected I checked:

- a diverse sample of at least five active ICPs for the top 20 most frequently applied ANZSIC codes for MERI; and
- a diverse sample of at least five (or all) active ICPs per ANZSIC code for MERX.

Audit commentary

Meridian

ANZSIC codes are captured at the time the customer switches in or is connected by Meridian.

A report is run approximately every six months to check and update any ICPs with T9 series codes. The registry list is also occasionally checked for ANZSIC code anomalies.

The list file recorded five ICPs with blank or T99 series ANZSIC codes, a decrease from ten ICPs found during the previous audit:

Code	Number of active ICPs 2019	Number of active ICPs 2018	Number of active ICPs 2017	Comments
Active with ANZSIC "T999" not stated	-	1	12	Compliant
Active with ANZSIC "T994" don't know	4	6	29	Compliant – all are vacant properties and the ANZSIC code is genuinely unknown.
Active with ANZSIC "T995" refused to answer	-	2	-	Compliant
Active with ANZSIC "T997" response unidentifiable	-	1	-	Compliant
Active with blank ANZSIC code	1	-	-	Compliant - Reversal of a trader update for ICP 0000614682TP0E0 resulted in the previous trader's update (which contained a blank ANZSIC code) temporarily being applied during Meridian's period of supply. The issue was found and corrected prior to the audit and is considered a timing difference.
Total	**5**	**10**	**41**	

No ICPs with a meter category of 3 or above were recorded with a residential ANZSIC code. I checked a sample of ten of the 455 ICPs with category two meters and residential ANZSIC codes and found six ICPs had incorrect ANZSIC codes applied, which were corrected during the audit.

I checked 100 ANZSIC codes by comparing them to Google streetview information. Where the codes were inconsistent with Google streetview, I checked the customer account details to confirm the code. I found:

- 89 ICPs had an ANZSIC code consistent with the customer industry information; and
- 11 ICPs did not have an ANZSIC code consistent with the customer industry information, ten of these were corrected during the audit but ICP 0000006490DEACF still has a code of R911 (Sport and Physical Recreation Activities) and should have a code of G425 (Clothing Footwear and Personal Accessories Retailing).

MERX

Flux requires ANZSIC codes to be consistent with the customer's pricing. Customers with residential pricing are expected to have residential ANZSIC codes and customers with commercial pricing are expected to have commercial ANZSIC codes. Typically, the ANZSIC code is retrieved from the registry for new switches in.

The validity of ANZSIC codes was checked:

- no ICPs with blank or T99 series ANZSIC codes were recorded on the registry list;

- no ICPs have meter category three or higher; and
- three ICPs have meter category two and a residential ANZSIC code, two were confirmed to be correct, and one is now vacant, and the code recorded by the previous trader has been applied.

I checked a sample of five (or all) active ICPs for each ANZSIC code by comparing them to Google streetview information. Where the codes were inconsistent with Google streetview, I checked the customer account details to confirm the code. All codes were confirmed to be correct.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.6 With: 9 (1(k) Schedule 11.1 From: 16-Aug-19 To: 24-Oct-19	**MERI** Six ICPs with category 2 meters and residential ANZSIC codes had the incorrect ANZSIC code applied. The ANZSIC codes were corrected during the audit. 11 ICPs had an incorrect ANZSIC code assigned. They are all now updated. Potential impact: None Actual impact: None Audit history: Multiple Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are strong. There are preventative controls are in place to ensure that ANZSIC codes are initially recorded accurately, and monitoring controls are periodically used to check and correct ANZSIC codes. The audit risk rating is low this has no direct impact on submission accuracy.

Actions taken to resolve the issue	Completion date	Remedial action status
All incorrect ANZSIC codes identified have now been corrected.	Complete	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will continue with our current controls which are reported as strong.	Ongoing	

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

The process to manage unmetered load was examined. The registry list files as at 16/08/19 and AC020 trader compliance report for 01/11/18 to 16/09/19 were examined to identify any ICPs where:

- unmetered load is identified by the Distributor and none is recorded by Meridian; and
- Meridian's unmetered load figure does not match with the Distributor's figure (where it is possible to calculate this if the Distributor is using the recommended format) and the variance is greater than 1.0 kWh per day (1.0 kWh per day was chosen as a sample only; this does not indicate compliance is achieved if an error is found that is less than 1.0 kWh per day).

Audit commentary

MERI

Meridian has processes in place to validate unmetered load.

- Any unmetered load that switches in is allocated to the reconciliation team's work queue for checking.
- The daily capacity report is reviewed monthly. This report compares the trader daily kWh recorded on the registry and the daily kWh recorded in the Velocity life cycle, which is used for billing purposes. The registry value is applied for settlement and differences are investigated and resolved by the reconciliation team monthly. It was recorded in the previous audit report that Meridian was working with Wellington Electricity to ensure that shared unmetered load was added for 0001409077UN5D7. This has not occurred, and in the meantime 0.71 kWh per day is recorded on the registry and for submission.
- Where a distributor changes unmetered load information on the registry, a notification file is sent and automatically loaded into Velocity. Changes to unmetered load details are not directed to a workflow for review; these will be identified through the daily capacity report checks. Orion also normally emails Meridian if unmetered load details for any of their ICPs have changed.
- Periodically a report is generated to compare all distributor and trader unmetered load fields on the registry. The notes are compared to ensure that the trader and distributor details are consistent, and also consistent with the daily unmetered kWh which Meridian has calculated.

If any of the checks identify that unmetered load corrections are required, the corrections are backdated so that consumption will be correct for any revision submissions.

Active ICPs with no metering or unmetered load recorded by MERI

ICP 0000840407WE388 is not metered. Submission is calculated by subtraction and an exemption is not yet in place. This is discussed further in **Section 6.1**.

ICPs with unmetered load recorded by the distributor but not by MERI

13 ICPs have distributor unmetered load details and no unmetered load populated by MERI. Nine ICPs were confirmed to be metered, and the distrubutor's details are incorrect.

The remaining three ICPs relate to NZTA Northland DUML ICPs. These being reconciled using the Northpower database information therefore the UML flag is incorrectly set. This is also discussed in **section 5.4** and recorded as non-compliance in **section 2.1**.

ICPs with unmetered load recorded by MERI but not the distributor

All ICPs with distributor unmetered load populated also had unmetered load recorded by MERI.

ICPs with blank or zero daily kWh

106 ICPs have zero populated in the daily unmetered kWh field. All 106 are tsunami sirens or residual load ICPs and are correctly recorded with 0 daily unmetered kWh.

Accuracy of trader unmetered daily kWh

The AC020 report identified 78 ICPs where the daily unmetered kWh calculated from the distributor's unmetered load field was not within ± 1 kWh per day of Meridian's daily unmetered load. These were all examined, with the following findings:

- 42 are ARC Innovations controllers and Meridian has used the figure provided by ARC, which seems reasonable;
- lights cannot be located for ICP 0005904986RN0FE to confirm their wattage;
- the Distributor's figure changed recently for four ICPs and these will be updated;
- the loads for 22 ICPs are being checked with the customer, and data will be updated as required; and
- the other nine ICPs are settled based on information provided by the previous retailer and is different to the information recorded by the distributor on the registry. Meridian is checking these ICPs to confirm the correct unmetered load.

I confirmed that Meridian is submitting unmetered load correctly where their unmetered field is populated correctly.

MERX

Registry notification files are imported into Flux and reviewed. This process should identify any changes to distributor unmetered load details.

MERX currently supplies one ICP with unmetered load - 0006931278RNDBB. The daily unmetered load populated in Flux is consistent with the trader and distributor registry data.

Audit outcome

Compliant

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 be managed by the relevant trader and indicates that:

- *the associated electrical installations are electrically connected (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

The new connection process was examined in detail as discussed in **sections 2.9** and **3.5**.

The process to manage unmetered load was examined. The registry list files as at 16/08/19 and AC020 trader compliance report for 01/11/18 to 16/09/19 were to determine compliance.

- The timeliness and accuracy of data for new connections is assessed in **section 3.5**.
- The timeliness of data for reconnections is assessed in **section 3.3**, and a sample of 13 updates were checked for accuracy.

Audit commentary

MERI

Velocity will not allow more than one party per ICP, nor will it allow an ICP to be set up without either a meter or, if it is unmetered, the daily unmetered kWh.

As described in **section 3.3** and **3.5**, the processing of reconnections and new connections is largely automated unless documentation is incomplete, or dates are inconsistent. Reads are entered as part of the new connection process, but not the reconnection process. This has led to some submission accuracy issues, which are discussed further in **section 12.7**.

Review of the accuracy of data for a sample of reconnections in **section 3.3** identified:

- ICP 0005144523RN946 which requires correction to move the status date from 28/08/19 to 25/05/19; and
- four ICPs have invalid active records which were created so service orders could be raised but were not subsequently removed - the affected ICPs are 0006802300CAE74 (01/03/10), 0000166990TR124 (04/05/10), 0006300260RN627 (04/05/15) and 0005706661RN1D7 (07/01/19).

Discrepancies between active dates, meter certification dates and initial electrical connection dates for new connections are not currently monitored. Review of discrepancies for new connections in **sections 3.5** and **3.8** identified the following inaccuracies:

- ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to active yet; and
- 15 new connections had incorrect active dates, and corrections were processed for all affected ICPs except:

ICP	Registry active date	Correct active date
1002051414LC0BD	13/08/18	24/07/18
1002054748LCF88	11/10/18	12/10/18
0007186223RNCC6	14/10/19	26/10/19

It is recommended that active dates, initial electrical connection dates and meter certification dates (if metered) are compared for new connections, so that discrepancies are identified, and checked, with Meridian's active dates updated as necessary.

Description	Recommendation	Audited party comment	Remedial action
Management of "active" status	Compare active dates, initial electrical connection dates and meter certification dates (if metered). Check discrepancies and update Meridian's active dates as necessary.	We are in the process of operationalising the AC-020 for both MERI and MERX which includes this check.	Identified

MERX

Flux will not allow more than one party per ICP, nor will it allow an ICP to be set up without either a meter or, if it is unmetered, the daily unmetered kWh.

I checked the accuracy of all MERX status updates to "active" which had not been reversed. All the updates were correct, except for 0006546307RN22B which was updated to "active" from the switch in date (01/07/19) instead of the reconnection date (02/07/19). Flux automatically marks ICPs as "active" on switch in date, and users must manually update the status to "inactive" if an ICP is not reconnected on switch in. ICPs which have been assigned an "active" status early are normally identified and corrected when reconnection paperwork is received and processed, or through the meter reading validation process. This is recorded as non-compliance in **section 3.8**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.8 With: 17 Schedule 11.1 From: 11-Nov-18 To: 16-Sep-19	**MERI** • Five reconnections have incorrect active status dates recorded. • 16 new connections had incorrect status dates recorded. 12 ICPs have been corrected, and four require correction. **MERX** • One reconnection has an incorrect status date recorded. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate. Preventative controls are in place; status updates are at least partially automated in both Velocity and Flux through the B2B processes. Work queues are created where information is incomplete or requires checking. Controls would improve to strong if new connection dates were checked by comparing them to distributor and MEP date, and active records created to produce service orders were monitored to ensure that they were removed. The audit risk rating is low, as a small number of differences were identified.

Actions taken to resolve the issue	Completion date	Remedial action status
All incorrect status dates have been or will be corrected where possible.	15 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We are in the process of operationalising the AC-020 for both MERI and MERX which includes this comparison for new connections.	31 March 2020	

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

The inactive status of "new connections in progress" is used for all new connections. The list file was examined to identify any ICPs that had been at the "Inactive - new connection in progress" with an initial energisation date populated, and for any of these ICPs that had been at this status for greater than 24 months.

The process to manage ICPs at the other inactive statuses was examined. A sample of 32 status updates to inactive were checked for MERI, and all status updates to inactive which were not reversed were checked for MERX.

The findings in relation to the timeliness of updates to registry is recorded in **section 3.3.**

Audit commentary

MERI

As described in **section 3.3**, the processing of disconnections is largely automated unless documentation is incomplete, or dates are inconsistent. Reads are not entered as part of the disconnection process. This has led to some submission accuracy issues, which are discussed further in **section 12.7**.

Meridian follows a vacant disconnection process, which is described in the table below.

Day	Process
3	A letter is sent to the occupier, encouraging them to open an account.
9	A reminder letter is sent to the occupier.
16	AMI ICPs with consumption under a set threshold (5 kWh for residential and 10 kWh per day for commercial) are disconnected. AMI ICPs with consumption over the set threshold are left connected. ICPs with non-AMI metering are also left connected as there is usually insufficient reading information to confirm they are unoccupied.
28	The ICP is referred to external investigators who attempt to contact the customer or landlord. Depending on the outcome of the investigation the ICP will be disconnected with the landlord or owner's consent or will remain connected.

<u>Inactive - new connection in progress</u>

Analysis of the list file found three ICPs which had been at "new connection in progress" status for more than 24 months. All were timing differences, one has become active, one has been decommissioned and one was moved to "new connection in progress" status in error, and the record has been reversed.

46 ICPs with "new connection in progress" status had an initial electrical connection date recorded. A sample of 31 were checked. 28 were timing differences and have been updated to "active" status from the correct date. Two remain inactive, and Meridian is awaiting confirmation the connection has been

completed and the connection date before updating the status. ICP 0007190640RNED6 has been confirmed to be connected from 21/06/19, but the status has not been updated to active yet. This is recorded as non-compliance in **sections 3.5** and **3.8**.

Inactive Status (excluding new connection in progress)

Inactive statuses are only applied once Meridian's approved contractor has confirmed that the ICP has been disconnected. Meridian records disconnections in Velocity as vacant or credit, and all disconnections are initially processed on the registry as vacant disconnections (1,4 status). Once an ICP has moved to 1,4 status Velocity will allow update to 1,6 if the ICP is to be decommissioned.

Review of status updates to inactive identified some inaccurate data, including:

- one update to inactive ready for decommissioning which was processed with an incorrect date, and one update to inactive ready for decommissioning which should have been processed as inactive vacant; both were corrected during the audit; and
- one update to inactive vacant to remove a redundant active record created to allow a service order to be raised was processed from an incorrect date - ICP 0006402933RN7AA's inactive record should have been processed with an event date of 22/12/09 instead of 02/12/10.

The 2018 audit identified the following status errors which were rechecked during the audit, and the discrepancies that are still existing are recorded as non-compliance in **section 2.1**.

ICP	Applied date	Correct date	Status	Comments	2019 comments
0131735977LCD5F	12/04/18	13/04/18	1,4	Incorrect date applied. A safety disconnection was performed on 13/04/18 following storm damage.	Cleared.
0005970172RNDD7	01/12/12	17/05/12	1,6	Incorrect date applied. This backdated correction was processed from an incorrect date. The meter was removed, and the site was ready for decommissioning from 17/05/12.	Cleared.
0000012816EA64F	04/12/17	15/12/17	1,6	Incorrect date applied.	Still existing, now decommissioned.
0006663520AL0B4	20/07/18	17/07/18	1,6	Incorrect date applied.	Still existing, now decommissioned.
0005590809RN0E4	23/03/08	20/03/18	1,4	Incorrect date applied.	Cleared.

Meridian has processes in place to identify ICPs with inactive consumption. These processes are discussed in **section 9.5**, and corrections are discussed in **section 8.1**. A sample of 10 ICPs was checked where consumption was present, but the status was inactive. Only one of these had the incorrect status recorded. This is discussed further in **Section 8.1**.

During the 2018 audit, I found that for 11 ICPs where consumption occurred while the ICP was inactive, the status was not returned to active for the affected period. The ICPs were rechecked during the audit, and the discrepancies that are still existing are recorded as non-compliance in **section 2.1**.

ICP	Inactive date	Read indicating consumption	Status	2019 comment
0000471616WED25	22/06/2018	22/07/2018	Status is inactive for period with consumption	Still existing.
0000538781NR7A0	22/05/2018	24/07/2018	Switched out using last validated read in May, but switch event date was 01/10/18	Still existing, switched out.
0001398150UNF23	21/06/2018	29/07/2018	Switched out using last validated read in May, but switch event date was 06/06/18	Still existing, switched out.
0005934877RN484	18/05/2018	2/07/2018	Status is inactive for period with consumption	Still existing.
0006183506RN247	30/04/2018	26/07/2018	Switched out using last validated read in May, but switch event date was 18/08/18	Still existing, switched out.
0006470807RN1A5	3/04/2018	29/07/2018	Switched out using last validated read in March, but switch event date was 22/08/18	Still existing, switched out.
0006780130RNBB6	18/04/2018	20/07/2018	Status is inactive for period with consumption	Cleared.
0011007681PC3DB	4/05/2018	12/07/2018	Switched out using last validated read in May, but switch event date was 27/08/18	Still existing, switched out.
1001104752LCB67	25/05/2018	30/06/2018	Status is inactive for period with consumption	Still existing, switched out.
1001113708LCD7F	8/05/2018	23/07/2018	Status is inactive for period with consumption	Still existing, switched out.
1001263098LCB97	29/05/2018	27/07/2018	Status is inactive for period with consumption	Still existing, switched out.

MERX

I checked the accuracy of all MERX status updates to inactive which had not been reversed. All the updates were correct.

Inactive ready for decommissioning (1,6) status is not available in Flux, and this status is manually updated directly on the registry.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.9 With: 19 Schedule 11.1 From: 11-Nov-18 To: 16-Sep-19	**MERI** • One update to inactive ready for decommissioning was processed with an incorrect date, and one update to inactive ready for decommissioning which should have been processed as inactive vacant. Both were corrected during the audit. • ICP 0006402933RN7AA's inactive record should have been processed with an event date of 22/12/09 instead of 02/12/10. Potential impact: Low Actual impact: Low Audit history: Multiple Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate. Preventative controls are in place; status updates are at least partially automated in both Velocity and Flux through the B2B processes. Work queues are created where information is incomplete or requires checking. The audit risk rating is low, as a small number of ICPs were affected. There may be a small impact on settlement if the whole read period in which consumption occurred is inactive.

Actions taken to resolve the issue	Completion date	Remedial action status
All incorrect status dates have been or will be corrected where possible.	15 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We are in the process of operationalising the AC-020 for both MERI and MERX which includes this comparison for new connections.	31 March 2020	

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

Whilst this is a Distributor's code obligation, I investigated whether any queries had been received from Distributors in relation to ICPs at the "new" or "ready" status for more than 24 months and what process is in place to manage and respond to such requests.

I analysed the registry list of ICPs with "new" or "ready" status.

Audit commentary

MERI

Meridian uses the status "inactive – new connection in progress", and usually changes the status once it is set to "ready".

HH ICPs at "new" or "ready" status are manually monitored using spreadsheets and a physical book which contains a checklist for each new connection. HH new connections are closely monitored and new connection completion paperwork is processed daily.

NHH ICPs at "new" or "ready" status are monitored using Velocity's workflows, as discussed in **section 3.5**.

Requests from distributors on ICPs which have been at "new" or "ready" for more than two years are investigated and responded to when they are received. Meridian endeavours to respond as quickly as possible.

I found six ICPs had "new" status for more than two years. Meridian has not received applications for any of the six ICPs at "new" and believes they have been assigned as the proposed trader in error.

I found 68 had "ready" status for more than two years:

- Meridian has not received applications for 22 ICPs at "ready" status and believes they have been assigned as the proposed trader in error;
- two ICPs at "ready" status have now become "active", and a further two have been moved to "inactive new connection in progress" after Meridian confirmed that the connection is required and progressing; and
- 42 ICPs at "ready" status were confirmed not to be required - 17 of these have been decommissioned and the other 25 remain at "ready" status.

Analysis of the list file found three ICPs that had been at "new connection in progress" status for more than 24 months. All were timing differences, one has become active, one has been decommissioned and one was moved to "new connection in progress" status in error and the record has been reversed.

MERX

MERX does not complete new connections and is not expected to have any ICPs at "new" or "ready" status unless they have been assigned to MERX as the proposed trader in error. There is currently no monitoring of ICPs at "new" or "ready" statuses. I recommend that MERX periodically runs a registry list to identify ICPs that have been assigned to them in error and advises the distributor.

Description	Recommendation	Audited party comment	Remedial action
Monitoring of new and ready ICPs	I recommend MERX run a registry list six monthly with: Status: 000 or 999 Proposed trader: MERX End date: the day the report is run and compare the results to the ICPs MERX expects to be at "new" or "ready" status. Any ICPs which appear to have been assigned to MERX in error can then be checked with the distributor.	We will consider running this report periodically as an additional control.	Investigating

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 manager of a switch no later than 2 business days after the arrangement comes into effect and include in its advice to the registry manager that the switch type is TR and 1 or more profile codes associated with that ICP.

Audit observation

The switch gain process was examined to determine when Meridian deem all conditions to be met. A typical sample of five NTs per code were checked to confirm whether they were notified to the registry within two business days, and if the correct switch type was selected.

Audit commentary

Meridian's processes are compliant with the requirements of Section 36M of the Fair Trading Act 1986. NT files are sent as soon as all pre-conditions are met (including a credit check) and the withdrawal process is used if the customer changes their mind.

Switch type is selected based on information provided by the customer on application. The customer is asked whether they have been billed at the property by another retailer as part of the application process.

MERI

Review of the event detail report found 12,333 transfer switch NTs for MERI. For 8,312 transfer switch NTs I checked the ICP's meter category recorded on the meter event detail report and found three where the metering category was 3 or 4.

- Two of the ICPs had backdated meter changes made after the switch was completed, and the switch type was correct based on the information available at the time of the switch.
- ICP 0000010351EA96E had a category 3 meter and switch type TR was applied instead of HH. The switch was later withdrawn and reprocessed as MI.

The five NT files checked were sent within two business days of pre-conditions being cleared, and the correct switch type was selected.

MERX

Review of the event detail report found 31,879 transfer NTs for MERX; all had meter category 1 or 2.

The five NT files checked were sent within two business days of pre-conditions being cleared, and the correct switch type was selected.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.1 With: Clause 2 Schedule 11.3 From: 14-Feb-19 To: 18-Feb-19	**MERI** ICP 0000010351EA96E had a category three meter and switch type TR was applied instead of HH. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong. The HH switching team are aware of the requirements for HH switches, but occasionally process TR and MI switches for commercial and industrial customers. The wrong switch type was accidentally selected, and all other switches for ICPs with metering category 3 or above had the correct switch type recorded. The impact is low, the switch was completed as required.

Actions taken to resolve the issue	Completion date	Remedial action status
The switch was reissued with the correct switch type	Complete	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The cause of the error was not systemic and existing controls are considered adequate.		

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 receiving notice of a switch from the registry manager, 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 manager 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 may disregard every event date established by the losing trader for an ICP for which when the losing trader received notice from the registry manager under clause 22(a) the losing trader had been responsible for less than two months.

Audit observation

Event detail reports for 01/01/19 to 12/09/19 were reviewed to:

- identify AN files issued by Meridian during the audit period;
- assess compliance with the requirement to meet the setting of event dates requirement; and
- a sample of two ANs per trader code and response code were reviewed to determine whether the codes had been correctly applied.

The switch breach report was examined for the audit period.

Audit commentary

MERI

The check of the AN codes found all were correct. AN code selection is managed by Meridian using business rules that are set within Velocity.

The event detail report was reviewed for all 42,064 transfer ANs to assess compliance with the setting of event dates requirements:

- 40,930 (97.3%) of ANs had proposed event dates within five business days of the NT receipt date;
- 42,055 (99.9%) had proposed event dates within ten business days of NT receipt; and
- nine ANs had event dates more than ten business days after the NT receipt date, for all nine, the AN proposed event date matched the gaining trader's NT proposed event date.

The switch breach report did not record any late AN files.

MERX

AN files are generated by Flux. Flux automatically applies the AN response code unless more than one option is applicable. In these cases the AN is directed to a work queue where the user manually selects the code. All AN codes reviewed were correctly applied.

Proposed event dates are populated by Flux. The event detail report was reviewed for all 331 transfer ANs to assess compliance with the setting of event dates requirements. All 331 ANs had proposed event dates within five business days of the NT receipt date.

The switch breach report recorded one late transfer switch AN file for 1001130587UNCD5, which was due between Christmas and New Year. The file was delayed because the staff member processing ANs was on leave.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.2 With: Clauses 3 and 4 Schedule 11.3 From: 03-Jan-19 To: 03-Jan-19	**MERX** The AN file for 1001130587UNCD5 was three business days late. Potential impact: Low Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls over AN responses are strong. They are automated and sufficient to ensure that the correct response code will be applied most of the time. The impact is assessed as low. The AN file was three business days late.

Actions taken to resolve the issue	Completion date	Remedial action status
The AN file was sent as soon as identified	Complete	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We consider that existing controls are robust however we will ensure there is adequate cover to process and manual AN's over the upcoming Christmas period to avoid recurrence of this issue on a potentially larger scale.	31 Dec 2019	

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 manager 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 manager (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 in 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

Event detail reports for 01/01/19 to 12/09/19 were reviewed to reviewed to identify CS files issued by Meridian during the audit period. The accuracy of the content of CS files was confirmed by checking a sample of ten records per code. The content checked included:

- correct identification of meter readings and correct date of last meter reading;
- accuracy of meter readings; and
- accuracy of average daily consumption.

CS files with average daily kWh that was negative, zero, or over 200 kWh were identified. A sample of 20 of these CS files were checked to determine whether the average daily consumption was correct.

The process to manage the sending of the CS file within five business days of the event date was examined, and the switch breach history report for the audit period was reviewed to identify late CS files.

Audit commentary

MERI

CS timeliness

Velocity's work queues manage the switching process, and most switches are processed automatically. The work queues are prioritised as follows, and the priority increases if issues are not resolved as the due date nears:

- **Priority 1** includes switch acknowledgement errors where there is a difference between the registry and Velocity data, AN files not sent, and CS files not sent;
- **Priority 2** includes files not sent because Velocity is waiting for information, but the switch is not close to the due date;
- **Priority 3** includes sites gained with export meters (where Meridian needs to check and update profiles), and withdrawals requiring responses.

In addition, the switching team runs the switch breach report twice daily to identify any switches which have not been sent within two business days. A report to show failed switch acknowledgement codes relating to metering issues is run if there are delays in processing work queues, to ensure that issues are identified and resolved promptly.

The switch breach report recorded two late transfer CS files. One was not genuine, because the switch was withdrawn before completion and no CS was issued. The CS file for ICP 0000402279TP7DB was recorded as one business day late, because Meridian was awaiting an actual AMI read to use as the switch event reading.

CS content

The registry functional specification requires estimated daily kWh to be based on the average daily consumption for the last read to read period for meters with flow direction X.

Velocity's estimated daily kWh calculation has not changed during the audit period. In some cases, the calculation does match the daily average consumption between the last two actual readings, but the following issues are present:

- estimated readings are included in the calculation;
- where the last two readings occur on the same day, the divisor is zero and the calculation produces unexpected results;
- where a meter has flow direction I, the average consumption is calculated as a negative value, instead of being excluded from the calculation; and
- where a CS file fails to be generated, Velocity re-creates the file and when this occurs Velocity reapplies the switch event read and the difference between this and the previous read is zero.

Meridian does not intend to make any changes to the estimated daily consumption calculation until the Authority's switching review is complete.

Analysis of the estimated daily kWh on the event detail report identified:

Estimated daily kWh	Count of transfer CS files	Findings
Negative	40	A sample of five ICPs were checked, and found to be incorrect: • two were based on the difference between actual and estimated reads, and the estimated reads should have been excluded from the calculation; • two were calculated from reads on the same date, and did not reflect the correct average daily kWh which should have been 0; and • one was calculated from the reads available on the customer account, but one of those reads appears to be a misread.
Zero	847	A sample of five ICPs were checked, and one was found to be incorrect. Velocity attempted to recreate the CS file using the same reading and calculated the difference between the current CS attempt read and previous reading as zero in error.
More than 200 kWh	300	A sample of five ICPs were checked, and one was found to be incorrect. A dummy meter was installed as part of the ICP set up and not removed. The reading on the real meter was applied to the dummy meter, which created a high daily average consumption for the ICP.

Processes for switch readings were changed during the audit period. Velocity now applies the last actual reading recorded against the ICP's customer account (including unbilled readings), instead of the last billed reading. From October 2019, Meridian has attempted to obtain AMI readings from the smart read portal where a recent actual reading is not available against the ICP's customer account.

I checked the content of ten transfer switch CS files, focusing on CS files where the last actual read date was inconsistent with the switch read type, and found the following issues:

ICP	Event date	Issue
0000532038NRA01	23/03/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 23/03/19 was applied as the switch event read. For 216037151/1 the reads on 21/03/19 and 23/03/19 were the same, but no read was recorded on 22/03/19. CS applied read: 32285 A Correct read: 32285 E For 216037156/1 there were actual reads on 21/03/19 (7705) and 23/03/19 (7720). CS applied read: 7720 A Correct read: between 7705 and 7720 E
0000328301MP973	05/02/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 05/02/19 was applied as the agreed switch reading, although a read was available on the last day of supply (04/02/19). CS applied read: 43932 A Correct read: 43887 A

ICP	Event date	Issue
0002221455TG838	30/04/19	The read type was incorrect, and the read did not relate to the last day of supply. A user manually repeated an actual read taken on 30/04/19 on 29/04/19 as an actual read, to be used as the final reading. This read should have been recorded as an estimate both in the reading information and CS file. An actual read was available on 26/04/19 (287369). CS applied read: 288480 A Correct read: between 287369 and 288480 E Estimated daily kWh was recorded as 0, but should be 370.
0000531367NRC34	27/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual reading on 24/08/19 was applied as an actual switch event reading, and no later readings were available. CS applied read: 43932 A Correct read: (43932 + est for 25-26/08/19) E
0000534541NR1C8	23/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual reading on 21/08/19 was applied as an actual switch event reading. For meter 214134839/1 actual reads were available for 21/08/19 and 23/08/19 CS applied read: 15335 A Correct read: between 15335 and 15350 E For meter 214134839/2 actual reads were available for 21/08/19 and 23/08/19 CS applied read: 0 A Correct read: 0 E
0000535718NRC36	21/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual reading on 19/08/19 was applied as an actual switch event reading. An actual reading of 9074 was recorded on 21/08/19. CS applied read: 9065 A Correct read: between 9065 and 9074 E
0000558230NRE0A	12/07/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual reading on 07/07/19 was applied as an actual switch event reading. An actual reading of 145 was recorded on 14/07/19. CS applied read: 143 A Correct read: between 143 and 145 E

MERX

CS timeliness

I reviewed a process map for CS files in Flux and confirmed that CS files are automatically sent once all information required to complete the switch is available. If there is missing information, or a conflict in the information, a work queue item is generated. This happens rarely and I confirmed there were no CS file exceptions on 22/10/19.

The switching team runs the switch breach report daily (prior to October 2019 it was run twice weekly) to identify any switches which have not been sent within two business days.

The switch breach report did not record any late transfer CS files.

CS content

The registry functional specification requires estimated daily kWh to be based on the average daily consumption for the last read to read period. Flux calculates the estimated daily kWh based on the last two reads with a "verified" status. For the purpose of this calculation validated reads include validated customer and estimate readings in Flux, as well as validated actual readings. Disconnected ICPs have an estimated daily consumption of zero applied.

Analysis of the estimated daily kWh on the event detail report identified:

Estimated daily kWh	Count of transfer CS files	Findings
Negative	-	
Zero	2	Both ICPs were checked and found to be correct within a fraction of a kWh.
More than 200 kWh	-	

Flux automatically generates CS files based on the information recorded against the ICP.

A switch event reading is created by Flux as at 23.59.57 on the day before the switch event date. This is expected to be based on the read recorded at the end of that day.

Flux records read dates and times for all reads. Readings which are provided as at 23.59.59 on the read date are rolled forward one second on import into Flux to be recorded against 00.00.00 the next day. This is because 23.59.59 is reserved for stop reads (including meter removals and decommissions). Other readings are imported with the date and time recorded in the read file.

Based on the Powershop audit, Flux was expected to estimate consumption between the actual reading received on the last day of supply and 23.59.57 on the last day of supply if the actual reading did not occur within five seconds of the switch event reading time. I found that Flux is not estimating consumption between actual readings received earlier on the event date and the switch event reading. Any reads recorded against the event date are consistently pulled forward to 23.59.57 to become the switch event reading. This creates an issue for reads provided at 23.59.59 which are rolled forward to be recorded against 00.00.00 the following day. When the ICP switches, the 00.00.00 read is pulled forward to become the switch event reading at 23.59.57 on the last day of supply, but it is actually from 23.59.59 on the second to last day of supply.

I checked the content of ten transfer switch CS files and found the following issues:

ICP	Event date	Issue
0000000994TR3DA	03/09/19	Estimated daily kWh was recorded as 23, but should be 19
0005818656RN5BE	18/07/19	The switch event read was recorded against 00.00.00 on 17/07/19 (taken at 23.59.59 on 16/07/19). An RR was completed and accepted to correct the read. CS applied read: 77440 Correct read: 77463
1001153475CK186	14/08/19	The switch event read was recorded against 00.00.00 on 13/08/19 (taken at 23.59.59 on 12/08/19). An RR was completed and accepted to correct the read. CS applied read: 59777 Correct read: 59803
0005319137RNF6C	27/08/19	Estimated daily kWh was recorded as 14, but should be 17

ICP	Event date	Issue
0007117530RN3CD	12/09/19	Estimated daily kWh was recorded as 14, but should be 20
0000504828NR44D	29/08/19	Estimated daily kWh was recorded as 26, but should be 30
0157601390LC346	21/08/19	Estimated daily kWh was recorded as 24, but should be 17
0397427840LC38B	30/08/19	Estimated daily kWh was recorded as 40, but should be 47
0000222933MPE28	13/08/19	The switch event read was recorded against 00.00.00 on 12/08/19 (taken at 23.59.59 on 11/08/19). The read happened to be the same as the expected switch event reading, so there was no impact. CS applied read: 22263 Correct read: 22263
0000223416MPA9A	31/07/19	Estimated daily kWh was recorded as 43, but should be 32

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.3 With: Clause 5 Schedule 11.3 From: 05-Feb-19 To: 27-Aug-19	**MERI** The CS file for ICP 0000402279TP7DB was recorded as one business day late. At least seven CS files had incorrect estimated daily kWh. At least six CS files contained an incorrect switch event read and read type. At least one CS file contained an incorrect switch event read. **MERX** At least seven CS files had incorrect estimated daily kWh. At least three CS files did not have the correct switch event reading applied. In one case the difference between the correct reading and the reading applied was so small there was no impact. Potential impact: Low Actual impact: Low Audit history: Multiple Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak. Read and read type errors are likely to occur for MERI where the latest actual read does not occur on the last day of supply, and read type errors are likely to occur for MERX where the last actual read is recorded at 00.00.00. The audit risk rating is low because the kWh differences found are generally small, the issue is present for all CS files and has an impact on other participants.

Actions taken to resolve the issue	Completion date	Remedial action status
MERI We acknowledge the audit findings regarding switch event meter reads, read types and estimated daily consumption contained in CS files. As all ICPs are being transitioned off this platform over the coming months and given the Authority's switch process review that is currently underway, changes will not be made to the Velocity system at this time. **MERX** We are investigating the audit findings in relation to the use of the switch read from the day before the switch event date to determine whether this is system or process/timing related. We note that the average daily consumption field is one of the issues included in the Authority's Switch Process Review and will await the outcome of that before any changes to Flux logic are considered.	N/A 31 Dec 2019 N/A	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
MERX We will implement a system or process change to resolve the switch event meter read issue when the cause of this is confirmed.	30 April 2020	

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 registry manager giving the gaining trader written notice of having received information about the switch completion, 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

The process for the management of read change requests was examined.

Event detail reports for 01/01/19 to 12/09/19 were analysed to identify all read change requests and acknowledgements during the audit period. A sample of 20 RR files issued by Meridian, and ten AC files issued by Meridian were checked.

I also checked a sample of ten estimated CS files provided by other traders where no RR was issued to determine whether the correct readings were recorded in Velocity.

Audit commentary

RR requests are generally initiated via email between the two parties and an RR file is usually sent once agreement is reached. All RR requests are evaluated and validated against the ICP information and in the AMI read database. Validated requests are accepted.

MERI

A daily report is run from the BI Hub to find discrepancies between gain reads and the first reads received by Meridian, and these are investigated to determine whether a read renegotiation is required. ICPs which may require read renegotiation are also identified through the reading validation process and referred to the switching team for action.

MERI issued 184 RR files for transfer switches. 139 were accepted and 45 were rejected. A sample of five rejected files and five accepted files were checked. In all cases there was a genuine reason for Meridian's RR, the file content was accurate and supported by two actual reads obtained by Meridian (or was as requested by the other trader), and the reads recorded in Meridian's system reflected the outcome of the RR process. For five accepted RRs (0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19) the read type was recorded as actual when the agreed switch reading was an estimate. This is because a new meter needed to be created to adjust the agreed switch reading, and Velocity does not allow estimated opening reads for new meters.

MERI issued 233 AC files for transfer switches. 168 were accepted and 65 were rejected. Where the difference between the agreed switch reading and Meridian's reading is within ± 1 kWh, a correction is not normally processed. Where the difference is more than ± 1 kWh, the switching team normally asks the reconciliation team to adjust the switch event reading in Velocity.

A sample of five ACs were checked. The two rejections were valid. For three RRs which were accepted by Meridian the agreed switch reading was not applied in Velocity. Two of these differences were within ± 1 kWh.

ICP	Event No	Event date	Meter serial	Meter channel	Agreed read	Applied read	Difference
0000008456TEC2E	RR-110021	22/01/2019	TPL1505806	1	6026	6025	-1
0000029677CH179	RR-123348	29/07/2019	70C06J011466	1	55633	55632	-1
0005940982RNCE1	RR-122370	18/07/2019	60B07G010609	1	50828	50818	-10

Review of five transfer CS files with estimated reads where no RR was issued confirmed that the correct readings were recorded in Velocity.

The switch breach report confirmed all transfer RR and AC files were sent within the required timeframe.

MERX

RRs are managed through tickets in Flux. A ticket is raised for the switching team where an ICP requiring a read change is identified, and the ICP is added to the replacement reads list. Readings are automatically replaced once the AC is returned. The switch breach report confirmed all transfer RR and AC files were sent within the required timeframe.

MERX issued three RR files for transfer switches. Two were accepted and one were rejected. All three RRs were checked to confirm whether there was a genuine reason for MERX's RR, the file content was accurate and supported by two actual reads, and the reads recorded in Flux reflected the outcome of the RR process. The following issues were identified:

- for 0006002854RN52B (switch event 01/07/19) the read in Flux on the event date did not reflect the outcome of the RR process for one meter register - meter 208210212/1 showed 49303 estimate in Flux, and the agreed reading was 49304 actual; and
- the RR for 0006788017RNF2D (switch event 19/08/19) was not supported by two actual readings - the read type in the RR was incorrectly recorded as actual, when the reading was an estimate.

MERX issued ten AC files for transfer switches. Eight were accepted and two were rejected. A sample of five ACs including all rejected files were checked. Both rejections were valid, and the switch event reading recorded in Flux matched the agreed switch reading.

Review of five transfer CS files with estimated reads where no RR was issued confirmed that the correct readings were recorded in Flux.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.4 With: Clause 6(1) and 6A Schedule 11.3 From: 11-Jan-18 To: 19-Aug-19	**MERI** For five accepted RRs (0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19) the read type was recorded as actual when the agreed switch reading was an estimate. The switch event readings for 0000008456TEC2E 22/01/19, 0000029677CH179 29/07/19 and 0005940982RNCE1 18/07/19 did not reflect the outcome of the RR process. **MERX** For 0006002854RN52B 01/07/19 the read in Flux on the event date did not reflect the outcome of the RR process for one meter register. Meter 208210212/1 showed 49303 estimate in Flux, and the agreed reading was 49304 actual. The RR for 0006788017RNF2D 19/08/19 was not supported by two actual readings. The read type in the RR was incorrectly recorded as actual, when the reading was an estimate. Potential impact: Low Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because they are not sufficient to ensure that the agreed switch reading is consistently recorded, particularly where differences are small. It was expected that corrections of ± 1 kWh would not be processed, but I found a larger discrepancy of 10 kWh was also not processed. The impact is low: • the difference in read types has no impact on submission. All switch event readings are treated as actual or permanent estimate; • the difference in agreed switch readings resulted in over submission of 12 kWh for MERI and 1 kWh for MERX; • failure to process corrections where the agreed switch reading is within ± 1 kWh of MERI's recorded reading is unlikely to have a significant impact; and • the estimated RR reading for 0006788017RNF2D was calculated from an actual reading.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

MERI We will review the process with staff members to ensure it is clear when a revised switch read should be applied in the system. This is a manual process that can have impacts for customers therefore we consider were differences are negligible (i.e. +/- 1kWh) the cost of processing outweighs the benefit. **MERX** We will review the RR process in Flux with relevant staff members to ensure controls are adequate.	31 March 2020 31 March 2020	

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 in 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 manager, 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

The process for the management of read requests was examined. Event detail reports for 01/01/19 to 12/09/19 were analysed to identify read change requests issued and received under Clause 6(2) and (3) Schedule 11.3 and determine compliance.

Audit commentary

MERI

MERI did not issue any RR requests under clause 6(2) and (3) of Schedule 11.3.

Review of the event detail report found 161 RR files were issued to MERI within five business days of switch completion, by traders using a half hour profile. Of those, 109 files were accepted, and 52 files were validly rejected because the CS reading was an actual AMI reading.

MERX

MERX did not issue any RR requests under clause 6(2) and (3) of Schedule 11.3.

Review of the event detail report found ten RR files were issued to Meridian within five business days of switch completion, by traders using a half hour profile. Of those, eight were accepted and two were rejected. One rejection was valid, because the ICP switched out on actual readings. The rejection for ICP 0000212760MPDC7 (switch event date 23/08/19) was invalid because the ICP switched on estimated readings and was rejected due to a processing error.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.5 With: Clause 6(2) and (3) Schedule 11.3 From: 01-Sep-19 To: 01-Sep-19	**MERX** An RR for ICP 0000212760MPDC7 (switch event date 23/08/19) issued under clause 6(2) and (3) of Schedule 11.3 was invalidly rejected. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as moderate because most RRs issued under clause 6(2) and (3) of Schedule 11.3 were accepted or validly rejected. The RR was invalidly rejected due to a processing error, another similar RR was correctly accepted. The impact is rated as low because one RR was invalidly rejected and the difference in readings was 5 kWh.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We consider existing controls and staff understanding in relation to when RR's must be accepted under clause 6(2) and (3) Schedule 11.3 is adequate.		

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 give written notice to the other that it disputes a switch event meter reading provided under clauses 1 to 6. Such a dispute must be resolved in accordance with clause 15.29 (with all necessary amendments).

Audit observation

I confirmed with Meridian whether any disputes have needed to be resolved in accordance with this clause.

Audit commentary

Meridian confirmed that no disputes have needed to be resolved in accordance with this clause.

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 manager 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 manager 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

The switch gain process was examined to determine when Meridian deem all conditions to be met. A typical sample of five NTs per code were checked to confirm whether they were notified to the registry within two business days, and if the correct switch type was selected.

Audit commentary

Meridian's processes are compliant with the requirements of Section 36M of the Fair Trading Act 1986. NT files are sent as soon as all pre-conditions are met (including a credit check) and the withdrawal process is used if the customer changes their mind.

Switch type is selected based on information provided by the customer on application. The customer is asked whether they have been billed at the property by another retailer as part of the application process.

MERI

Commercial and industrial contracted customers usually switch between retailers on the first day after their contract term ends to avoid paying contract termination fees for switching early, or standard pricing where they remain with a retailer after their contract ends. Contract customers such as district and city councils may switch large numbers of ICPs between retailers at one time.

In some cases where a certain switch event date is required, Meridian requests a switch move instead of a transfer switch with the agreement of the losing trader. While it is possible to request a standard switch with a proposed switch event date, the losing trader may elect to use a different date. For switch moves, the losing trader should comply with the requested date, increasing the likelihood that the ICPs will switch on the correct date.

Five NT files were checked to determine whether they were sent within two business days of pre-conditions being cleared, and the correct switch type was selected:

- ICP 0004560540TCE54's NT was sent four business days after pre-conditions were cleared. The NT was sent late because the wrong property was initially requested.

- ICPs 0007173962RN394, 0122019044LC168, 1001150580CK73A and 1001300918LC300 were requested as switch moves although the customer was not moving in from the switch event date, because a certain switch date was required by the customer.

Review of the event detail report found 19,074 switch move NTs for MERI. For 15,364 switch move NTs I checked the ICP's meter category recorded on the meter event detail report, and found one where the metering category was 3. Non-compliance is recorded in **section 4.1** for ICP 0000010351EA96E which had a category 3 meter and TR was incorrectly applied; HH should have been used. The switch was later withdrawn and reprocessed as MI.

MERX

Review of the event detail report found 271 switch move NTs for MERX; all had meter category 1 or 2.

Five NT files were checked to determine whether they were sent within two business days of pre-conditions being cleared, and the correct switch type was selected:

- NTs were sent more than two business days after pre-conditions were cleared for ICPs 0007179906RN32E, 0007187575RNBE3 and 0247536180LCEA0 and I could not confirm why the NTs were issued late; and
- ICPs 0007179906RN32E and 0007187575RNBE3 were requested as switch moves although the customer was not moving in from the switch event date - MERX advised that 0007187575RNBE3 was a "live test" to confirm the switch move process was working correctly, but could not confirm why switch move was selected for 0007179906RN32E.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: Clause 4.7 With: Clause 9 Schedule 11.3 From: 13-Feb-19 To: 15-Aug-19	**MERI** • ICPs 0007173962RN394, 0122019044LC168, 1001150580CK73A and 1001300918LC300 were requested as switch moves although the customer was not moving in from the switch event date, because a certain switch date was required by the customer. • ICP 0004560540TCE54's NT was not sent within two business days of pre-conditions being cleared. **MERX** • ICPs 0007179906RN32E and 0007187575RNBE3 were requested as switch moves although the customer was not moving in from the switch event date. • NTs were sent more than two business days after pre-conditions were cleared for ICPs 0007179906RN32E, 0007187575RNBE3 and 0247536180LCEA0. Potential impact: Low Actual impact: Low Audit history: Once Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**

Low	The controls are rated as weak. Although automation ensures that the correct switch type is applied and files are on time in most cases, a high proportion of the samples checked for MERI and MERX were non-compliant. The audit risk rating is low, because there is no impact on settlement, and it helps to ensure ICPs are switched on the correct date which improves the outcome for the customer. There is some impact on market switching statistics.

Actions taken to resolve the issue	Completion date	Remedial action status
NT files have been sent in all cases.		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
The issue identified is widely used as a workaround to ensure, where required by customer contracts (or in some cases losing trader systems) NHH ICPs are switched as at a particular contracted date. It is Meridian's general practice to only use this work around where necessary to ensure customers are not unduly impacted by limitations with the TR switching process or Trader systems and we will review the ICPs identified to ensure this was the case. We understand this issue has been identified in the Switch Process Review work that is in progress. **MERX** We will review the late issuing of NT's to ensure there are no systemic issues that require additional controls. As reported, there was a valid reason for requesting a switch move for ICP 0007187575RNBE3 and further review of ICP 0007179906RN32E identified the switch type was correct.	28 Feb 2020 28 Feb 2020	

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 receiving notice of a switch move request from the registry manager—

- *10(1)(a) 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 manager:*
  - *confirmation of the switch event date; and*
  - *a valid switch response code; and*
  - *final information as required under clause 11; 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 to the registry manager and determine a different event date that—*
  - *is not earlier than the gaining trader's proposed event date, and*
  - *is no later than 10 business days after the date the losing trader receives notice; or*

- *10(1)(c) request that the switch be withdrawn in accordance with clause 17.*

Audit observation

Event detail reports for 01/01/19 to 12/09/19 were reviewed to:

- identify AN files issued by Meridian during the audit period;
- assess compliance with the requirement to meet the setting of event dates requirement; and
- review a sample of two ANs per trader code and response code to determine whether the codes had been correctly applied.

The process to manage the sending of the CS file within five business days was examined. The switch breach report was examined for the audit period to identify any late AN and CS files.

Audit commentary

MERI

The check of the AN codes found all were correct. AN code selection is managed by Meridian using business rules that are set within Velocity.

The event detail report was reviewed for all 18,796 switch move ANs to assess compliance with the setting of event dates requirements:

- 18,795 (99.99%) had proposed event dates within ten business days of NT receipt;
- one AN had an event date more than ten business days after the NT receipt date, and the AN proposed event date matched the gaining trader's NT proposed event date;
- two ANs had proposed event dates were before the gaining trader's proposed event date:
    - for ICP 0000404696MP91D, the NT proposed event date was 11/09/19 and the AN proposed event date was 06/09/19, the early AN date was selected because Meridian responded to an earlier NT request for 06/09/19 which had been withdrawn, due to a timing issue; and
    - for 0208099496LC406, the NT proposed event date was 16/02/19 and the AN proposed event date was 05/02/19 but I was unable to determine why the incorrect date was applied - the switch was later withdrawn and reprocessed from 16/02/19.

Velocity's work queues manage the switching process, and most switches are processed automatically. The work queues are prioritised as follows, and the priority increases if issues are not resolved as the due date nears:

- **Priority 1** includes switch acknowledgement errors where there is a difference between the registry and Velocity data, AN files not sent, and CS files not sent;
- **Priority 2** includes files not sent because Velocity is waiting for information, but the switch is not close to the due date; and
- **Priority 3** includes sites gained with export meters (where Meridian needs to check and update profiles), and withdrawals requiring responses.

In addition, the switching team runs the switch breach report twice daily to identify any switches which have not been sent within two business days. A report to show failed switch acknowledgement codes relating to metering issues is run if there are delays in processing work queues, to ensure that issues are identified and resolved promptly.

The switch breach report recorded one late switch move AN file and four late switch move CS files.

- The AN for ICP 0000027328WE348 was sent one business day late. The switch was complicated by a withdrawal process for an earlier switch attempt, which delayed the AN.
- The CS files were not genuinely late, all were delayed by withdrawal attempts prior to switch completion.

MERX

AN files are generated by Flux. Flux automatically applies the AN response code unless more than one option is applicable. In these cases the AN is directed to a work queue where the user manually selects the code. All AN codes reviewed were correctly applied.

Proposed event dates are populated by Flux. If the last billed date + one day does not match the requested date, the AN is directed to a work queue for resolution by the switching team. The validation screen states "you may select a date to use for the expected switch date and effective transfer date which is on or after <proposed date>" and allows the user to enter any date they choose.

The event detail report was reviewed for all 365 switch move ANs to assess compliance with the setting of event dates requirements:

- all had proposed event dates within ten business days of NT receipt; and
- the AN for 0005781574RNE73 had a proposed event date before the gaining trader's proposed event date (the AN proposed event date was 10/06/19 and the NT proposed event date was 13/06/19), the AN had been directed to the work queue, but the user had manually applied an invalid date.

The switch breach report recorded one late switch move AN file and one late switch move CS file:

- the AN file for 0000125771TR8A5 was due between Christmas and New Year but the file was delayed because the staff member processing ANs was on leave; and
- the CS file was not genuinely late, because a compliant new event date was proposed by MERX, and the switch was completed in accordance with Clause 10(2) Schedule 11.3.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.8 With: Clause 10(1) Schedule 11.3 From: 03-Jan-19 To: 11-Sep-19	**MERI** The AN file for 0000027328WE348 was one business day late. The ANs for 0000404696MP91D and 0208099496LC406 had a proposed event date before the gaining trader's proposed event date. **MERX** The AN file for 0000125771TR8A5 was one business day late. The AN for 0005781574RNE73 had a proposed event date before the gaining trader's proposed event date. Potential impact: Low Actual impact: Low Audit history: Three times Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**

Non-compliance	Description
Low	The controls over AN responses are strong. They are automated and sufficient to ensure that the correct response code will be applied most of the time. The impact is assessed as low. Both late files were one business day late, and switches for ICPs with early proposed event dates were completed or withdrawn and reprocessed as required.

Actions taken to resolve the issue	Completion date	Remedial action status
All issues were resolved at the time		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will continue with existing controls	Ongoing	

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

Code reference

Clause 10(2) Schedule 11.3

Code related audit information

If the losing trader determines a different date, then within 10 business days of receiving notice the losing trader must also complete the switch by providing to the registry manager 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

Event detail reports for 01/01/19 to 12/09/19 were reviewed to identify AN files issued by Meridian during the audit period, and assess compliance with the requirement to meet the setting of event dates requirement.

Audit commentary

MERI

Analysis found all switch move ANs had a valid switch response code. Switches were completed as required by this clause.

Two ANs had proposed event dates before the gaining trader's proposed event date, and the switches were completed or withdrawn within ten business days of receipt of the NT.

MERX

Analysis found all switch move ANs had a valid switch response code. Switches were completed as required by this clause.

The AN for 0005781574RNE73 had a proposed event date before the gaining trader's proposed event date, and the switch was completed as required by this clause within ten business days of receipt of the NT.

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

The losing trader must provide final information to the registry manager for the purposes of clause 10(1)(a)(ii), including—

- *the event date (clause 11(a)); and*
- *a switch event meter reading as at the event date for each meter or data storage device that is recorded in the registry with an accumulator type of C and a settlement indicator of Y (clause 11(b)); and*
- *if the switch event meter reading is not a validated meter reading, the date of the last meter reading of the meter or storage device (clause (11(c)).*

Audit observation

Event detail reports for 01/01/19 to 12/09/19 were reviewed to reviewed to identify CS files issued by Meridian during the audit period. The accuracy of the content of CS files was confirmed by checking a sample of ten records per code. The content checked included:

- correct identification of meter readings and correct date of last meter reading;
- accuracy of meter readings; and
- accuracy of average daily consumption.

CS files with average daily kWh that was negative, zero, or over 200 kWh were identified. A sample of 20 of these CS files were checked to determine whether the average daily consumption was correct.

Audit commentary

MERI

As recorded in **section 4.3**, The registry functional specification requires estimated daily kWh to be based on the average daily consumption for the last read to read period for meters with flow direction X.

Velocity's estimated daily kWh calculation has not changed during the audit period. In some cases, the calculation does match the daily average consumption between the last two actual readings, but the following issues are present:

- estimated readings are included in the calculation;
- where the last two readings occur on the same day, the divisor is zero and the calculation produces unexpected results;
- where a meter has flow direction I, the average consumption is calculated as a negative value, instead of being excluded from the calculation; and
- where a CS file fails to be generated, Velocity re-creates the file, and when this occurs Velocity reapplies the switch event read and the difference between this and the previous read is zero.

Meridian does not intend to make any changes to the estimated daily consumption calculation until the Authority's switching review is complete.

Analysis of the estimated daily kWh on the event detail report identified:

Estimated daily kWh	Count of switch move CS files	Findings
Negative	54	A sample of five ICPs were checked, and found to be incorrect: • four were based on the difference between actual and estimated reads, the estimated reads should have been excluded from the calculation; and • one had negative consumption calculated on an I flow meter.
Zero	3,289	A sample of five ICPs were checked, and two were found to be incorrect. Velocity reattempted to create the CS file using the same reading, and calculated the difference between the current CS attempt read and previous reading as zero in error.
More than 200 kWh	143	A sample of five ICPs were checked, and all were found to be correct.

Processes for switch readings were changed during the audit period. Velocity now applies the last actual reading recorded against the ICP's customer account (including unbilled readings), instead of the last billed reading. From October 2019, Meridian has attempted to obtain AMI readings from the smart read portal where a recent actual reading is not available against the ICP's customer account.

I checked the content of ten switch move CS files, focusing on CS files where the last actual read date was inconsistent with the switch read type, and found the following issues:

ICP	Event date	Issue
0000014323EAA36	01/06/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 01/06/19 was applied as the agreed switch reading, no read was available on 31/05/19 and the previous actual reading was on 28/05/19. 217138119/1 CS applied read: 68546 A Correct read: estimate E 217138119/2 CS applied read: 174862 A Correct read: estimate E
0000040868CPC09	01/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 01/08/19 was applied as the agreed switch reading, no read was available on 31/07/19 and the previous actual reading was on 26/07/19. CS applied read: 7873 A Correct read: estimate E
0000140914TR969	07/06/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 07/06/19 was applied as the agreed switch reading, but an actual reading was available on 06/06/19. CS applied read: 18007 A Correct read: 17996 A
0000041014DED7B	01/07/19	The read did not relate to the last day of supply. An actual read from 23/06/19 was applied as the agreed switch reading. No later actual readings were recorded in Velocity but BI contained a read of 27740 on 30/06/19.

ICP	Event date	Issue
		CS applied read: 27729 A Correct read: 27740 A
0000041173HR6E0	14/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 03/08/19 was applied as the agreed switch reading. An actual read on 13/08/19 of 9372 was received after the CS was issued, so an estimate would have been expected at the time of the CS. CS applied read: 9344 A Correct read: between 9344 and 9372 E
0000041293NT37B	16/07/19	The read did not relate to the last day of supply. An actual read from 05/07/19 was applied as the agreed switch reading. No later actual readings were recorded in Velocity but BI contained a read of 28645 on 15/07/19. CS applied read: 28644 A Correct read: 28645 A
0000041417UNFB5	27/08/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 06/07/19 was applied as the agreed switch reading, no later reads were received. The ICP was vacant from 31/05/19. CS applied read: 27312 A Correct read: (27312 + estimate) E
0000041579TR002	14/06/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 06/03/19 was applied as the agreed switch reading, no later reads were received. The ICP was vacant from 11/05/19. CS applied read: 41584 A Correct read: (41584 + estimate) E
0000042028WE533	11/05/19	The read type was incorrect, and the read did not relate to the last day of supply. An actual read from 07/04/19 was applied as the agreed switch reading. No later actual readings were recorded in Velocity but BI contained a read of 16101 on 10/05/19. CS applied read: 16061 A Correct read: 16101 A

MERX

The registry functional specification requires estimated daily kWh to be based on the average daily consumption for the last read to read period. Flux calculates the estimated daily kWh based on the last two reads with a "verified" status. For the purpose of this calculation validated reads include validated customer and estimate readings in Flux, as well as validated actual readings. Disconnected ICPs have an estimated daily consumption of zero applied.

Analysis of the estimated daily kWh on the event detail report identified:

Estimated daily kWh	Count of switch move CS files	Findings
Negative	-	Compliant
Zero	8	A sample of five ICPs were checked and found to be correct within a fraction of a kWh.
More than 200 kWh	-	Compliant

Flux automatically generates CS files based on the information recorded against the ICP.

A switch event reading is created by Flux as at 23.59.57 on the day before the switch event date. This is expected to be based on the read recorded at the end of that day.

Flux records read dates and times for all reads. Readings which are provided as at 23.59.59 on the read date are rolled forward one second on import into Flux to be recorded against 00.00.00 the next day. This is because 23.59.59 is reserved for stop reads (including meter removals and decommissions). Other readings are imported with the date and time recorded in the read file.

Based on the Powershop audit, Flux was expected to estimate consumption between the actual reading received on the last day of supply and 23.59.57 on the last day of supply if the actual reading did not occur within five seconds of the switch event reading time. I found that Flux is not estimating consumption between actual readings received earlier on the event date and the switch event reading. Any reads recorded against the event date are consistently pulled forward to 23.59.57 to become the switch event reading. This creates an issue for reads provided at 23.59.59 which are rolled forward to be recorded against 00.00.00 the following day. When the ICP switches, the 00.00.00 read is pulled forward to become the switch event reading at 23.59.57 on the last day of supply, but it is actually from 23.59.59 on the second to last day of supply.

I checked the content of ten switch move CS files and found the following issues:

ICP	Event date	Issue
0005331510RN73F	12/08/19	Estimated daily kWh was recorded as 2, but should be 13
0005723639RN526	10/08/19	Estimated daily kWh was recorded as 2, but should be 0
0066991830LCADD	04/09/19	Estimated daily kWh was recorded as 5, but should be 3
0021972516LCF9E	30/08/19	The switch event read was recorded against 00.00.00 on 29/08/19 (taken at 23.59.59 on 28/08/19). CS applied read: 6677 Correct read: 6678
0100577296LC987	16/07/19	The switch event read was recorded against 00.00.00 on 14/07/19 (taken at 23.59.59 on 13/07/19). CS applied read: 33338 Correct read: 33381
0180115820LC440	15/06/19	The switch event read was recorded against 00.00.00 on 14/06/19 (taken at 23.59.59 on 13/06/19). CS applied read: 8673 Correct read: 8674 Estimated daily kWh was recorded as 6, but should be 1
0000393612MPBF2	10/07/19	Estimated daily kWh was recorded as 15, but should be 9
0000241625MPABD	01/08/19	The switch event read was recorded against 00.00.00 on 01/08/19 (taken at 23.59.59 on 31/07/19). The read happened to be the same as the expected switch event reading, so there was no impact. CS applied read: 4961 Correct read: 4961 Estimated daily kWh was recorded as 11, but should be 1

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.10 With: Clause 11 Schedule 11.3 From: 11-May-19 To: 30-Aug-19	**MERI** At least seven CS files had incorrect estimated daily kWh. At least five CS files contained an incorrect switch event read and read type. At least four CS file contained an incorrect switch event read. **MERX** At least six CS files had incorrect estimated daily kWh. At least four CS files did not have the correct switch event reading applied. In one case the difference between the correct reading and the reading applied was so small there was no impact. Potential impact: Low Actual impact: Low Audit history: Multiple Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak. Read and read type errors are likely to occur for MERI where the latest actual read does not occur on the last day of supply and read type errors are likely to occur for MERX where the last actual read is recorded at 00.00.00. The audit risk rating is low because the kWh differences found are generally small, the issue is present for all CS files and has an impact on other participants.

Actions taken to resolve the issue	Completion date	Remedial action status
MERI We acknowledge the audit findings regarding switch event meter reads, read types and estimated daily consumption contained in CS files. As all ICPs are being transitioned off this platform over the coming months and given the Authority's switch process review that is currently underway, changes will not be made to the Velocity system at this time. **MERX** We are investigating the audit findings in relation to the use of the switch read from the day before the switch event date to determine whether this is system or process/timing related. We note that the average daily consumption field is one of the issues included in the Authority's Switch Process Review and will await the outcome of that before any changes to Flux logic are considered.	31 Dec 2019 N/A	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

MERX We will implement a system or process change to resolve the switch event meter read issue when the cause of this is confirmed.	30 April 2020	

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 advise 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 four calendar months of the date the registry manager gives the gaining trader written notice of having received information about the switch completion, must provide to the losing trader a changed validated meter reading or a permanent estimate supported by two validated meter readings and the losing trader must either (clause 12(2)(b) and clause 12(3)):*
- *advise 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 in 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 five business days after receiving final information from the registry manager, 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

The process for the management of read change requests was examined.

Event detail reports for 01/01/19 to 12/09/19 were analysed to identify all read change requests and acknowledgements during the audit period. A sample of 20 RR files issued by Meridian, and ten AC files issued by Meridian were checked.

I also checked a sample of ten estimated CS files provided by other traders where no RR was issued to determine whether the correct readings were recorded in Velocity.

Audit commentary

RR requests are generally initiated via email between the two parties and an RR file is usually sent once agreement is reached. All RR requests are evaluated and validated against the ICP information and in the AMI read database. Validated requests are accepted.

MERI

A daily report is run from the BI Hub to find discrepancies between gain reads and the first reads received by Meridian, and these are investigated to determine whether a read renegotiation is required. ICPs which may require read renegotiation are also identified through the reading validation process and referred to the switching team for action. The switch breach report confirmed all switch move RR and AC files were sent within the required timeframe.

Meridian issued 592 RR files for switch moves. 419 were accepted and 173 were rejected. A sample of five rejected files and five accepted files were checked. In all cases there was a genuine reason for Meridian's RR, the file content was accurate and supported by two actual reads obtained by Meridian (or was as requested by the other trader), and the reads recorded in Meridian's system reflected the outcome of the RR process. For five accepted RRs (0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19) the read type was recorded as actual when the agreed switch reading was an estimate. This is because a new meter needed to be created to adjust the agreed switch reading, and Velocity does not allow estimated opening reads for new meters.

MERI issued 1,195 AC files for switch moves. 985 were accepted and 210 were rejected. Where the difference between the agreed switch reading and Meridian's reading is within ± 1 kWh, a correction is not normally processed. Where the difference is more than ± 1 kWh, the switching team normally asks the reconciliation team to adjust the switch event reading in Velocity.

A sample of five ACs were checked. The two rejections were valid and in all cases the event reading recorded in Velocity matched the agreed switch reading.

Review of five switch move CS files with estimated reads where no RR was issued confirmed that the correct readings were recorded in Velocity.

MERX

RRs are managed through tickets in Flux. A ticket is raised for the switching team where an ICP requiring a read change is identified, and the ICP is added to the replacement reads list. Readings are automatically replaced once the AC is returned. The switch breach report confirmed all transfer RR and AC files were sent within the required timeframe. The switch breach report confirmed all switch move RR and AC files were sent within the required timeframe.

MERX issued eight RR files for switch moves. Three were accepted and five were rejected. All three RRs were checked to confirm whether there was a genuine reason for MERX's RR, the file content was accurate and supported by two actual reads, and the reads recorded in Flux reflected the outcome of the RR process. One issue was identified: ICP 0007162236RN0D9 (switch event date 14/08/19) had an incorrect read type recorded in Flux. The agreed reading was actual but was recorded in Flux as an estimate.

MERX issued 22 AC files for switch moves. Eight were accepted and 14 were rejected. Review of five switch moves CS files with estimated reads where no RR was issued confirmed that the correct readings were recorded in Flux.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.11 With: Clause 12 Schedule 11.3 From: 15-Feb-19 To: 14-Aug-19	**MERI** For five accepted RRs (0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19) the read type was recorded as actual when the agreed switch reading was an estimate. **MERX** ICP 0007162236RN0D9 14/08/19 had an incorrect read type recorded in Flux. The agreed reading was actual but was recorded in Flux as an estimate. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as weak, because they are not sufficient to ensure that the agreed switch reading is consistently recorded, particularly where differences are small. No read discrepancies were found in the sample checked, but it is likely that they exist. The impact is low. The difference in read types has no impact on submission. All switch event readings are treated as actual or permanent estimate.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
MERI We will review the process with staff members to ensure it is clear when a revised switch read should be applied in the system. This is a manual process that can have impacts for customers therefore we consider were differences are negligible (i.e. +/- 1kWh) the cost of processing outweighs the benefit. **MERX** We will review the RR process in Flux with relevant staff members to ensure controls are adequate.	31 March 2020 31 March 2020	

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 when a trader has an arrangement with a customer or embedded generator to trade electricity at an ICP at which the losing trader trades electricity with the customer or embedded generator, and one of the following applies at the ICP:

- *the gaining trader will trade electricity through a half hour metering installation that is a category 3 or higher metering installation; or*
- *the gaining trader will trade electricity through a non-AMI half hour metering installation and the losing trader trades electricity through a non-AMI non half hour metering installation; or*
- *the gaining trader will trade electricity through a non-AMI non half hour metering installation and the losing trader trades electricity through anon-AMI half hour metering installation*

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 manager of the switch and expected event date no later than three business days after the arrangement comes into effect.

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

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 manager, 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 manager, if:

14(4)(a) – the proposed event date is in the same month as the date on which the gaining trader advised the registry manager; 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 manager and this date is agreed between the losing and gaining traders.

Audit observation

The switch gain process was examined to determine when Meridian deem all conditions to be met. A typical sample of five HH NTs were checked to confirm whether they were notified to the registry within three business days.

HH NTs on the event detail report were matched to the metering information on the meter event details report to confirm whether the correct switch type was selected.

Audit commentary

MERI

The HH switching process is manual. NTs are issued once the account manager provides a contract preparation form which contains all the necessary details to prepare the switch and set up the customer. All HH switches are tracked using a spreadsheet, which is checked daily.

Review of the event detail report found 314 HH switch NTs for MERI. For 290 HH switch NTs the ICP's metering category was recorded on the meter event details report. 299 had metering category three or above, and one had metering category two with the HHR flag set to yes. For all 290 ICPs checked the correct switch type was selected.

Non-compliance is recorded in **section 4.1** for ICP 0000010351EA96E which had a category three meter and TR was incorrectly applied; HH should have been used. The switch was later withdrawn and reprocessed as MI.

The five NT files checked were sent within three business days of pre-conditions being cleared.

MERX

MERX does not supply HH ICPs, and no HH switches were requested during the period reviewed.

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 manager, the losing trader must:

> *15(a) - provide to the registry manager 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

Event detail reports for 01/01/19 to 12/09/19 were analysed to:

- identify AN files issued by Meridian during the audit period;
- all AN response codes were reviewed to determine whether they had been correctly applied; and
- assess compliance with the timeliness requirements.

The switch breach report was examined.

Audit commentary

MERI

Once the NT file is received the process is managed manually, and the switching team liaises with the account manager to determine the correct AN response code. The switch breach report is run daily to identify ANs received, and Meridian endeavours to send ANs within two to three business days.

The switch breach report did not record any late AN files. The event detail report was reviewed for all 51 HH ANs to assess compliance with the timeliness requirements. 50 ANs (98%) were sent within three business days. The AN for 0099550680CNAE1 was sent within six business days but was not genuinely late because two withdrawal attempts were made within three business days of receiving the NT.

The check of the AN codes found all 51 were correct.

MERX

MERX does not supply HH ICPs, and no HH ANs were sent during the period reviewed.

Audit outcome

Compliant

4.14. Gaining trader to advise the registry manager - 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 manager of the event date.

If the ICP is being electrically disconnected, 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 electrically disconnected 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 electrically disconnected or removed, advise the losing trader of the results and metering component numbers for each data channel in the metering installation.*

Audit observation

The HH switching process was examined. The switch breach history report for the audit period was reviewed to identify late CS files.

Audit commentary

Only applies to MERI

The HH switching process is manual, and includes checks that metering is compliant. All HH switches are tracked using a spreadsheet, which is checked daily.

The content of all 306 HH CS files was reviewed and found to be correct. For 0000007032EP576, 0007147258RN25F and 0233634045LCDAA, the HH CS files contained CSMETERINSTALL, CSMETERCOMP and CSMETERCHANNEL rows as well as CSPREMISES. Meridian processes all HH CS files manually on the registry and demonstrated that for some ICPs, the registry requires the CSMETERINSTALL, CSMETERCOMP and CSMETERCHANNEL rows to be populated. All the affected ICPs had meter categories of three or higher, the HHR flag set to Y, and the AMI flag set to Y or N.

The switch breach history report did not record any late CS files for HH switches. All CS files were sent on time during the audit period.

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 manager with (clause 18(c)):*
  - *the participant identifier of the trader making the withdrawal request (clause 18(c)(i)); and*
  - *the withdrawal advisory code published by the Authority. (clause 18(c)(ii))*
- *within five business days after receiving notice from the registry manager of a switch, the trader receiving the withdrawal must advise the registry manager 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 notice from the registry manager, 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 receiving notice from the registry manager 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

Event detail reports for 01/01/19 to 12/09/19 were reviewed to:

- identify all switch withdrawal requests issued by Meridian; the content of a sample of at least two ICPs from the event detail report for each withdrawal code (or all if less than two were available) and trader code were checked using the typical sampling methodology, as well as a sample of withdrawal requests rejected by other traders;
- identify all switch withdrawal acknowledgements issued by Meridian; a sample of 16 rejections were checked; and
- confirm timeliness of switch requests, as this is not currently being identified in the switch breach report.

The switch breach reports were checked for any late switch withdrawal requests or acknowledgements.

Audit commentary

MERI

Withdrawals are processed using Velocity. Withdrawals are triggered manually and reason codes are selected manually, except for any transfer switch requests received on finalised accounts. For these Velocity automatically sends a withdrawal request for the switch type being incorrect.

The content of 14 rejected NW files was compared to Velocity details. In all cases, the withdrawal code was correct based on the information available at the time of the request.

526 (13.4%) of the 3,938 AWs issued by Meridian were rejections. I reviewed a sample of ten rejections by Meridian, and confirmed they were rejected based the information available at the time the response was issued.

152 (3.9%) of the 3,822 NWs were issued more than two calendar months after the event date. 75 of those used the code for wrong premises, and I note that this issue often does not become apparent for an extended period after a switch completes. A sample of the ten latest files were checked:

- five NWs were delayed while Meridian investigated to confirm whether a withdrawal was required; and
- five NWs were issued in error where a new customer application for an existing ICP was cancelled, Velocity should have had the new customer removed, and the ICP reinstated with the old Meridian customer but instead, a withdrawal was processed, which is automatically issued for the most recent switch in.

The switch breach report did not record any late AW files.

MERX

MERX identifies ICPs requiring withdrawals through its conversations with customers, validations and work queues. Withdrawal reason codes are selected manually.

The content of 13 NW files was checked, including six rejections. Three of the files had incorrect withdrawal reason codes applied:

ICP	Event date	Applied reason code	Correct reason code
0006037747RNA45	6/09/2019	Customer error (CE)	Wrong switch (WS)
1001147851CKFB4	7/08/2019	Customer cancellation (CX)	Date failed (DF)
0000177628TR7CC	2/09/2019	Unauthorised switch (UA)	Wrong premises (WP)

Six (5.3%) of the 113 AWs issued by MERX were rejections. I confirmed they were rejected based the information available at the time the response was issued.

None of the 126 NWs were issued more than 60 business days after the event date. The switch breach report did not record any late NW or AW files.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.15 With: Clauses 17 and 18 Schedule 11.3 From: 01-Jan-19 To: 12-Sep-19	**MERI** At least five NWs were issued in error where a new customer application for an existing Meridian ICP was cancelled. 152 NWs were issued late. **MERX** Three NWs had an incorrect withdrawal reason code applied. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to ensure that most NWs contain correct codes and are sent on time. The incorrect NW codes and invalid withdrawals were data processing errors. The impact is low, the affected NWs were rejected and resent with the correct codes where required, and a small percentage of withdrawals were issued late.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We consider that our process and controls related to switch withdrawals work well in most instances; We will clarify with relevant staff members the correct use of withdrawal reason codes. We will review in more detail the withdrawals noted as issued in error to see if further training is required.	 28 Feb 2020 28 Feb 2020	

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

The meter reading process in relation to meter reads for switching purposes was examined.

Audit commentary

Meridian's policy regarding the management of meter reading expenses is compliant. The meter readings used in the switching process are validated meter readings or permanent estimates.

MERI

The content of CS files was examined in **sections 4.3** and **4.10**. For seven transfer and nine switch move CS files, the switch event reading did not reflect the reading at the end of MERI's last day of responsibility.

The content of RR files was examined in **sections 4.4** and **4.11** and the readings were confirmed to be accurate.

MERX

The content of CS files was examined in **sections 4.3** and **4.10**. For three transfer and four switch move CS files, the switch event reading did not reflect the reading at the end of MERX's last day of responsibility. In two cases the difference between the correct reading and the reading applied was so small there was no impact.

The content of RR files was examined in **sections 4.4** and **4.11** and the readings were confirmed to be accurate.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 4.16 With: Clause 21 Schedule 11.3 From: 11-May-19 To: 30-Aug-19	**MERI** 16 CS files contained an incorrect switch event read. **MERX** Seven CS files contained an incorrect switch event read. In two cases the difference between the correct reading and the reading applied was so small there was no impact. Potential impact: Low Actual impact: Low Audit history: None Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak. Read errors are likely to occur for MERI where the latest actual read does not occur on the last day of supply, and for MERX where the last actual read is recorded at 00.00.00. The audit risk rating is low as the kWh differences found are generally small.

Actions taken to resolve the issue	Completion date	Remedial action status
MERI As all ICPs are being transitioned off this platform over the coming months and given the Authority's switch process review that is currently underway, changes will not be made to the Velocity system at this time. **MERX** We are investigating the audit findings in relation to the use of the switch read from the day before the switch event date to determine whether this is system or process/timing related.	31 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
MERX We will implement a system or process change to resolve the switch event meter read issue when the cause of this is confirmed.	30 April 2020	

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

The Electricity Registry switch save protected retailer list was examined to confirm that MERI and MERX are not save protected retailers. Win-back processes were examined to determine whether they are compliant.

I checked the event detail reports for 01/01/19 to 12/09/19 to identify all withdrawn switches with a CX code applied prior to the switch completion date in relation to any switch save protected retailers.

Audit commentary

MERI

MERI is not a switch save protected retailer. All switch protected retailers are excluded from the retention process until the switch has completed.

The event detail report was examined and found 11 withdrawal requests with reason code CX were sent prior to the event date:

- eight withdrawals were issued to traders who were not save protected;
- two withdrawals were requested to remove Meridian's period of supply; and
- one withdrawal was requested by the customer, who contacted Meridian, I reviewed the call information and confirmed that no enticements were offered.

MERX

MERX is not a switch save protected retailer. MERX does not complete win-backs or offer enticements, but does contact customers to confirm they wish to initiate a switch when an NT is received.

The event detail report was examined and found one withdrawal request was sent prior to the event date. Neither retailer was switch save protected.

Audit outcome

Compliant

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 give written notice to 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 give written notice to 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 give written notice to the registry manager 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 give written notice to 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 give written notice to the distributor of the change. The amount of electricity attributable to that ICP becomes UFE.*

Audit observation

The process to manage unmetered load was examined. The registry list files as at 16/08/19 and AC020 trader compliance report for 01/11/18 to 16/09/19 were examined to identify any ICPs where:

- unmetered load is identified by the Distributor and none is recorded by Meridian;
- Meridian's unmetered load figure does not match with the Distributor's figure (where it is possible to calculate this if the Distributor is using the recommended format) and the variance is greater than 1.0 kWh per day (1.0 kWh per day was chosen as a sample only; this does not indicate compliance is achieved if an error is found that is less than 1.0 kWh per day).

Audit commentary

MERI

ICPs that switch in with shared unmetered load are added to Velocity's work queues. Each ICP in the work queue is checked to confirm the unmetered load details are accurate as they switch in. Unmetered load is also checked regularly as described in **section 3.7**.

The analysis found that all ICPs had the correct load (within ± 1.0 kWh per day of the recalculation based on the distributor information) and the UML flag "Y".

MERX

MERX currently supplies one ICP with shared unmetered load - 0006931278RNDBB. The daily unmetered load populated in Flux is consistent with the trader and distributor registry data.

Audit outcome

Compliant

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

Examination of the Meridian list file as at 16/08/2019 found 3,953 active ICPs have unmetered load recorded excluding distributed unmetered load ICPs, which are discussed in **section 5.4**.

39 ICPs had a load of 3,000-6,000 kWh and were examined to determine whether the load was predictable and of a type approved by the authority.

Nine ICPs had annual kWh exceeding 6,000. This is recorded as non-compliance in **section 5.3**.

Audit commentary

MERI

All ICPs with daily kWh between 3,000 and 6,000 kWh were checked. 35 had an approved load type and four do not have approved load types and these are recorded as the first four records in the table below.

The 2018 audit found 14 ICPs were under investigation to determine the type of load, and whether they should be metered. They were rechecked during the audit and the findings are shown in the table below.

ICP	Load connected	Annual kWh	Supplied since	Findings
0042429066PC973	Fire siren	3,285	01/12/14	Under investigation to confirm whether wattage is correct. Present in 2018.

ICP	Load connected	Annual kWh	Supplied since	Findings
0000157855CKCA9	Multiple traffic cameras	3,095	12/03/18	Possibly DUML. Load recently increased in the registry.
1001263128LC021	KIWIRAIL LIMITED - OVERHEAD WARNING SIGN	4,380	28/04/14	Working with account manager to arrange for the ICP to be metered. Present in 2018.
1001263116LC442	KIWIRAIL LIMITED - OVERHEAD WARNING SIGN	4,380	28/04/14	Working with account manager to arrange for the ICP to be metered. Present in 2018.
0000023709EACBF	Unknown possibly rugby club lighting	3,285	17/11/06	Confirmed as metered
0000024994EAE68	Unknown possibly rugby club lighting	3,285	08/09/05	Now confirmed as 2,172 kWh per annum
0000025557EA8EB	Carpark lighting	3,285	19/09/07	Now confirmed as 712 kWh per annum
0007175565RN792	0600;18.0;Message Sign	3,942	14/07/16	Confirmed as approved load type.
0055262000WR704	Railway level crossing lights	3,139	10/11/06	Now confirmed as 2,453 kWh per annum
0055263000WR6A4	Railway level crossing lights	3,139	10/11/06	Now confirmed as 2,453 kWh per annum
0055260000WR444	Railway level crossing lights	3,212	10/11/06	Now confirmed as 2,453 kWh per annum
0065041000WR36C	Railway level crossing lights	3,212	10/11/06	Now confirmed as 2,453 kWh per annum
0065048000WRFCC	Railway level crossing lights	3,212	10/11/06	Now confirmed as 2,453 kWh per annum
0000033540CHEE9	Railway level crossing arms	4,380	16/12/15	Now confirmed as 2,540 kWh per annum
0000033541CH2AC	Railway level crossing arms	4,380	16/12/15	Now confirmed as 2,540 kWh per annum

The four unmetered ICPs that have estimated daily kWh of 3,000-6,000 kWh but have not been confirmed to have an approved load type are recorded as non-compliance.

MERX

There are no MERX ICPs with unmetered load over 3,000 kWh per annum.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.2 With: Clause 10.14 (2)(b) From: 01-Nov-18 To: 24-Oct-19	Four unmetered ICPs have estimated daily kWh of 3,000-6,000 kWh but have not been confirmed to have an approved load type. Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate. Although a small number of ICPs are affected, some have been supplied for several years. The impact is assessed to be low, because there are a small number of ICPs affected and consumption is below 6,000 kWh per annum per ICP.

Actions taken to resolve the issue	Completion date	Remedial action status
Actions are in progress as recorded in the table above.	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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:*
    - *the date the limit was calculated or estimated to have been exceeded*
    - *the details of the corrective measures that the retailer proposes to take or is taking to reduce the unmetered load.*

Audit observation

The registry list files as at 16/08/19 and AC020 trader compliance report for 01/11/18 to 16/09/19 were reviewed to identify all unmetered load over 6000 kWh per annum.

Audit commentary

MERI

The ICPs with consumption over 6,000 kWh that were identified during the current audit were examined and the findings are shown in the table below, including one ICP where the load is just under 6,000 kWh because I recommend the wattage is checked for this.

ICP	Load connected	Annual kWh	Supplied since	Findings
0007187454RN3F7	Messaging Sign	5,993	10/10/18	New connection, recommend wattage is checked to confirm accuracy.
0000025161EA29D	Hospital lighting	8,614	01/04/19	Recently switched in. under investigation.
1001263111LC988	OVER HEIGHT WARNING SIGNS	8,760	28/04/14	Under investigation. Present last year.
1001263113LC90D	0.50kW:24:2 OVER HEIGHT WARNING SIGNS	8,760	30/10/15	Under investigation. Present last year.
0000160523CK83F	Railway station lighting	13,169	01/03/19	Load for GWRC recently moved out of the Porirua CC DUML database.
0000100115UN46C	Retirement village lighting	6,023	22/09/11	Appears to be DUML. Under investigation. Present last year.
0007175618RNE97	Pedestrian Underpass lighting	6,358	06/07/16	In discussion with CCC. Expected to be added to an existing DUML database or metering installed. Present last year.

MERX

There are no MERX ICPs with unmetered load over 3,000 kWh per annum.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.3 With: 10.14 (5) From: 01-Nov-18 To: 24-Oct-19	Six standard unmetered ICP with annual consumption over 6,000 kWh. Potential impact: Low Actual impact: Low Audit history: Multiple Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate because most ICPs falling into this category are identified and resolved. This is evident with the year on year reduction of these ICPs. However, some ICPs in this category have been supplied for several years. The audit risk rating is low as only six ICPs exceed the threshold and these are in the process of being resolved.

Actions taken to resolve the issue	Completion date	Remedial action status
We will continue work to resolve these unmetered loads	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

Meridian is responsible for 17 distributed unmetered load databases. All those due before the audit regime changed were audited by Veritek during the audit period. All but three of these have been audited under the new audit regime.

Audit commentary

The table below shows the findings from the last audits. The two databases that have not been audited (highlighted in blue) were discussed and I found:

- NZTA Northland - Meridian are reconciling this DUML load using the Northpower database information, they are negotiating with Northpower to get this database audited

- NZTA Kaitoke - Meridian are working with Wellington Electricity and NZTA to determine where the lights associated with this ICP are; it is possible that these lights are duplicated with load recorded in another NZTA database.

This is recorded as non-compliance below.

			Compliance Achieved (Yes/No)								
Database	Date of last audit	DUML Audit completed 16A.26 and 17.295F	Deriving submission information 11(1) of schedule 15.3	ICP identifier 11(2)(a) of schedule 15.3	Location of items of load 11(2)(b) of schedule 15.3	Description of load 11(2)(c)&(d) of schedule 15.3	All load recorded in database 11(2A) of schedule 15.3	Tracking of load changes 11(3) of schedule 15.3	Audit trail 11(4) of schedule 15.3	Database accuracy 15.2 and 15.37B(b)	Volume information accuracy 15.2 and 15.37B(c)
NZTA - Northland	TBC	No	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Gisborne DC	01/12/18	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No
Scanpower-Community Lighting	01/03/18	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
NZTA-Scanpower	01/03/18	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
NZTA-Waipukarau	01/03/19	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No
Palmerston North CC	20/09/19	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
NZTA- Kaitoke	TBC	No	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Wellington City Council traffic lights	01/06/18	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hurunui DC	25/05/18	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes
Kaikoura DC	29/04/18	Yes	Yes	Yes	No	No	No	Yes	Yes	No	Yes
La Point Subdivision Northland	18/04/19	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No

NZTA Christchurch	25/05/18	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	No
Waterloo Park	13/04/18	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Jacks Point	10/05/18	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Gore DC	09/11/18	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No
Southland DC	01/03/19	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes
Buller DC- note will be split per database	27/11/18	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Hamilton CC	24/01/19 MERI since 01/07/19	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No
Waikato DC	19/11/18 MERI since 01/07/19	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Waipa DC	31/05/19 MERI since 01/07/19	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No
Hauraki DC	16/10/19	Yes	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Matamata Piako	07/05/18 MERI since 01/07/19	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No
South Waikato	28/05/18 MERI since 01/07/19	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Taupo DC	22/05/19	Yes	No	No	No	No	No	Yes	Yes	No	No

	MERI since 01/07/19										
Waitomo DC	25/07/17 MERI since 01/04/19	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
NZTA Hawkes bay	29/05/19	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ashburton DC	21/05/19	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No
CIAL	11/05/18 MERI since 01/04/19	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	No
Clutha DC	09/09/19	Yes	No	No	Yes	No	No	Yes	Yes	No	No

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 5.4 With: Clause 11 Schedule 15.3, Clause 15.37B & 16A.26 From: 01-Nov-18 To: 24-Oct-19	26 of 29 distributed unmetered databases not compliant. Two distributed unmetered databases not yet audited. Potential impact: High Actual impact: High Audit history: Multiple Controls: Moderate Breach risk rating: 6
Audit risk rating	**Rationale for audit risk rating**
High	The effectiveness of the controls is recorded as moderate as Meridian are working to resolve the issues found. The impact on settlement is major because the incorrect submission figures are major for some databases.

Actions taken to resolve the issue	Completion date	Remedial action status
Actions being taken to address issues with DUML databases are detailed in individual DUML audit reports We are working to establish useable DUML databases for NZTA - Kaitoke and Northland. This has been difficult due to reliance on other parties.	30 April 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 Clause 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 electrically connected 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

The registry list and meter installation details report as at 16/08/19 were examined to determine whether any ICPs with generation were supplied during the audit period. Processes for distributed generation were reviewed.

Audit commentary

MERI

Metering installations installed

Meridian's new connection process includes a check that metering is installed before electrical connection occurs, and that any unmetered load is quantified.

Exemption 245 allows Meridian to use subtraction to determine submission information for ICP 0009805800AL991. This is discussed further in **section 1.1**.

Subtraction is also used for settlement for ICP 0000100018WP6F5. It is a residual load ICP for Kiwirail and is settled by difference. OTI0111 is a local network that is reconciled by differencing. While rare, this is permitted under the Code, so an exemption is not required.

ICP 0000840407WE388 switched to Meridian on 01/01/19. Subtraction is used to derive submission information and an exemption is not in place. The previous trader had an exemption, but this was only valid for the time they were the trader.

Distributed generation

Monthly, Meridian generates reports of all ICPs with installation type B with RPS profile. The revenue assurance team checks that the ICPs have approval to generate from the network, and then arranges for generation metering to be installed with the customer. Once compliant metering is installed, the profile is updated.

No generated energy is gifted. Meridian arranges for compliant metering to be installed unless the all generated electricity is to be used within the customer's installation.

Meridian's list file was examined and 4,228 active ICPs were found with generation listed by the Distributor. Of those:

- Five have generation recorded by the distributor and have an "EG" channel in the registry, but the profile is RPS. One of the ICPs does not have import/export metering installed and the meter is running backwards when generation occurs. The switchboard needs rewiring before metering can be changed. The other four have been changed to PV1 from the time metering was installed. The situation often arises where generation is installed and connected, but the metering is not changed to import/export until a later date, which is the case for these ICPs, meaning electricity conveyed is not quantified for a period of time.
- 61 have generation recorded by the distributor but the profile is not PV1 or EG1 and import/export metering is not installed. Eight are now corrected, two have switched away, 15 do not appear to have solar and 36 confirmed as having solar but not import/export metering.

The profiles of EG1 and PV1 were checked, to determine whether they had been applied correctly based on the fuel type. 50 ICPs have "other" and one ICP has "wind" recorded with the PV1 profile. The ICP with "wind" has been changed to EG1. One was confirmed as having solar; therefore, Meridian's profile is correct. Two switched in with the PV1 profile and it's not clear what type of generation is present. The other 47 are solar with batteries connected. The Authority has not specified which profile should be used; therefore, PV1 seems the most logical.

Bridged meters

Meridian does not initiate meter bypass instructions to any MEP or contractor. If they request a remote reconnection, the MEP is expected to either conduct this, or make necessary arrangements for reconnection without bypassing. Where it is necessary to bypass a meter for safety reasons after hours, Meridian's contracts with service providers specify that they must return the following day to unbridge the meter.

Ten examples of bridged meters were identified, and corrections to record consumption during the bridged period were processed. The corrections were reviewed in **section 8.1**. The existence of bridged meters is recorded as non-compliance below.

MERX

8 ICPs with solar installed but not being quantified due to import/export metering not being installed.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.1 With: Clause 10.13, 10.24 and 15.13 From: 01-Nov-18 To: 24-Aug-19	**MERI** Electricity not quantified from the time generation is installed for 36 ICPs. While meters were bridged, energy was not metered and quantified according to the code for 10 ICPs. ICP 0000840407WE388 is calculated by subtraction without an exemption being in place. **MERX** 8 ICPs with solar installed but not being quantified due to import/export metering not being installed Potential impact: Low Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore, the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
As reported meters are bridged when necessary and this will continue to be the case.		Identified
We will review the DG ICPs identified that do not have IMP/EXP metering to confirm whether this needs to be installed (i.e. if exporting)	28 Feb 2020	
We will complete an exemption application for ICP 0000840407WE388	28 Feb 2020	
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will continue with existing controls to ensure unmetered consumption that occurs when a meter is bridged is accounted for in the settlement process.	Ongoing	

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

The NSP table was reviewed to confirm the GIPs which Meridian is responsible for, and the certification expiry date for those GIPs.

Audit commentary

An asset owner must, for each GIP that connects to the grid, ensure that there are one or more certified metering installations for the GIP. Meridian is responsible for the GIPs shown in the table below.

Responsible party	Description	NSP	MEP	Certification expiry date (NSP table)
MERI	AVIEMORE	AVI2201MERIGG	MERG	23/07/2022
MERI	BENMORE	BEN2202MERIGG	MERG	13/10/2020
MERI	MANAPOURI	MAN2201MERIGG	MERG	25/01/2021
MERI	OHAU A	OHA2201MERIGG	MERG	21/06/2021
MERI	OHAU B	OHB2201MERIGG	MERG	5/06/2022
MERI	OHAU C	OHC2201MERIGG	MERG	12/06/2022
MERI	WOODVILLE	WDV1101MERIGG	MERG	13/08/2022
MERI	WAITAKI	WTK0111MERIGG	MERG	21/02/2020
MERI	WESTWIND	WWD1102MERIGG	MERG	18/08/2020
MERI	WESTWIND	WWD1103MERIGG	MERG	18/08/2020

All metering installations have current certification. Eight of the grid connected metering installations have been recertified during the audit period and the date has been notified via the RM portal. One of the notifications was later than 10 business days, as shown in the table below.

Description	NSP	POC code	Certification expiry	Certification date	Date RM notified of change
MANAPOURI	MAN2201MERIGG	MAN2201	25/01/2021	29/01/2019	5/03/2019

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 6.2 With: Clause 10.26 (6), (7) and (8) From: 12-Feb-19 To: 05-Mar-19	One certification update made late for Manapouri. Potential impact: None Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	**Rationale for audit risk rating**		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. There is no direct impact; therefore, the audit risk rating is low.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
The certification date was notified to the RM as soon as the issue was identified.			Cleared
Preventative actions taken to ensure no further issues will occur		**Completion date**	
The late notification was an oversight by the staff member responsible not a systemic issue.		N/A	

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

I walked through the process to manage profiles and ensure meters and control devices are certified where the control device is used for reconciliation purposes. The walk though included reviewing reports used for profile management, and profile changes.

The registry list as at 16/08/19 and meter installation details report were reviewed to confirm the profiles used during the audit period and confirm the certification details for the affected ICPs.

MERI

22,418 ICPs use profiles that require AMI or HHR metering, or a certified control device to be installed.

MERX

3,357 ICPs use profiles that require AMI or HHR metering, or a certified control device to be installed

Audit commentary

MERI

Meridian uses SAS to compare Velocity meter details, registry meter details, and trader notifications, before business day 13 submissions are produced each month. SAS reports are used to identify:

- ICPs where meter certification is due to expire; these are changed back to RPS on an actual reading date;
- ICPs with a smart meter profile, and no smart meter installed; these are changed to a valid profile on an actual reading date; or
- ICPs which are eligible to be moved to a profile; these are changed to a valid profile on an actual reading date.

Where profile changes are identified a file is output from SAS and imported into Velocity. A separate file is used to update the registry. Staff ensure that the actual read date used for the change is recent. The following day a manual check is performed to confirm the registry and Velocity match and are up to date.

Meridian uses the following profiles which require control device certification if AMI metering is not installed:

Profile Code	Profile Description	Requires control device certification
E08	Night only	Yes
E11	Night with boost	Yes
E13	Night with boost	Yes
T07	Day/Night	Yes
T23	Day/Night	Yes
TOC	Day/Night	Yes
TON	Day/Night	Yes

I checked exceptions in the audit compliance report and found two ICPs did not have HHR or AMI metering installed and did not have a certified control device. In both cases, Meridian is awaiting a meter reading to ensure the profile change occurs on an actual reading.

MERX

All MERX ICPs have AMI installed.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.3 With: Clause 33 Schedule 10.7 and clause 2(2) Schedule 15.3 From: 01-Nov-18 To: 24-Oct-19	**MERI** Two ICPs had a profile requiring control device certification without a certified control device or an AMI meter installed. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong as they are sufficient to mitigate the risk most of the time. The audit risk rating is low because Meridian has robust controls in place and a very small number of ICPs were affected.

Actions taken to resolve the issue	Completion date	Remedial action status
We will manually update profiles for the two ICPs identified. Issues obtaining a reading for these ICPs was delaying correction via our automated processes.	31 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Existing controls will continue	Ongoing	

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

Processes relating to defective metering were examined.

A sample of defective meters were reviewed, to determine whether the MEP was advised, and if appropriate action was taken.

Audit commentary

Defective meters are typically identified through the meter reading validation process, or from information provided by the meter reader, the MEP, or the customer.

Upon identifying a possible defective meter, a field services job is raised to investigate and resolve the defect.

MERI

A sample of ten possible defective meters were identified. In all of the instances Meridian identified the issue and raised a fault with the MEP. Corrections were processed in all instances and are discussed further in **section 8.1**.

MERX

One ICP had a defective meter, which was identified through validation. The MEP was advised. A correction was processed, which is discussed further in **section 8.1**.

Audit outcome

Compliant

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 is does not exceed the maximum interrogation cycle in 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

The data collection and clock synchronisation processes were examined.

HHR

All HHR data is collected by EMS, and data transmission and clock synchronisation processes were reviewed as part of their agent audit.

MERI NHH and AMI

Manual NHH data has been provided by Wells via SFTP. NHH AMI data has been provided by MEPs via SFTP. I traced a sample of reads for NHH ICPs for each MEP from the source files to Velocity.

Clock synchronisation processes for agents and MEPs were reviewed as part of their agent and MEP audits. Agents advise Meridian of clock synchronisation discrepancies and adjustments.

MERX

NHH AMI data has been provided by MEPs via SFTP. I traced a sample of reads for NHH ICPs for each MEP from the source files to Flux.

Clock synchronisation processes for agents and MEPs were reviewed as part of their agent and MEP audits. Agents advise MERX of clock synchronisation discrepancies and adjustments.

Generation

Meridian collects generation information and is responsible for clock synchronisation.

I matched the generation data received by Stark to the data received from SCADA for Aviemore for September 2019. I reviewed a sample of clock synchronisation events.

Audit commentary

HHR

HHR data transmission and clock synchronisation was reviewed as part of EMS' agent audit and found to be compliant.

NHH MERI

Fulfilment of the interrogation systems requirements, and clock synchronisation was examined as part of the MEP and agent audits.

I traced a sample of reads for each MEP from the source files to Velocity. All were recorded and labelled correctly with the actual time of interrogation.

MEPs advise Meridian of clock synchronisation events by email.

Clock synchronisation events are reviewed to determine whether any Meridian action is required, and a memo is added to the affected customer account in Velocity. No action was required for the sample of clock synchronisation events reviewed.

NHH MERX

Fulfilment of the interrogation systems requirements, and clock synchronisation was examined as part of the MEP and agent audits.

I traced a sample of reads for each MEP from the source files to Flux. All were recorded and labelled correctly with the actual time of interrogation.

MEPs advise MERX of clock synchronisation events by email.

Clock synchronisation events are reviewed to determine whether any MERX action is required. No action was required for the sample of clock synchronisation events reviewed

Generation

The Stark system retrieves meter information from the generation meters every half hour, and data is also received via SCADA.

I matched the generation data received by Stark to the data received from SCADA for Aviemore for September 2019 and there was a match.

Generation metering and activity is monitored in real time by the generation team, who report any metering or data issues to the reconciliation team. As metering issues are identified and acted upon quickly, this ensures that the metering information is obtained within the maximum interrogation cycle.

Meridian synchronises Stark against an internet time source continuously during the day.

During interrogation, a comparison occurs between data logger and Stark. Clocks are corrected automatically for all differences below five seconds. If the clocks are different by more than five seconds, the clock is adjusted manually.

Stark sends an automated email to the reconciliation team where the number of seconds recorded does not match the expected number for the half hour. I reviewed the Stark Global Events reports in September 2019 and checked five examples of clock synchronisation adjustments. All were under five seconds and appropriately corrected by Stark.

Audit outcome

Compliant

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

The data collection process was examined. I traced reads for a sample of 10 manually read NHH ICPs from the source files to Velocity.

Processes to provide meter condition information were reviewed as part of Wells' agent audit. Meridian's processes to manage meter condition information were reviewed, including viewing work queues and examples of meter condition issues.

Processes for customer and photo reads were reviewed.

Audit commentary

MERI

I traced reads for a sample of 10 manually read ICPs from the source files to Velocity. All were recorded and labelled correctly.

Data validation

During manual interrogation, the meter register value is collected and entered into a hand-held device. This reading enters Meridian's systems and is labelled as a reading, which denotes that it is a meter reading collected and validated by a meter reader.

Wells monitors meter condition, as required by schedule 15.2 and provides information on meter condition along with the daily reads, and monthly summary report containing missing seal and broken seal events. The daily meter condition information is imported into Velocity. Based on the condition code, it is automatically directed to a work queue and then assigned to a team member. Work queues are cleared by each team daily.

I viewed examples of the following types of meter condition events and noted that they had been appropriately actioned, including:

- meter number mismatch, including a different meter being present or a meter number being recorded incorrectly;
- missing or broken seals;
- signs of tampering or damage; and
- potentially unsafe installations.

There were no phase failure events available to check, but phase failure is one of the issues checked by Wells during NHH meter reading.

Meter condition issues can also be identified through Meridian's meter read validation process, or by Customer Services Representatives (CSRs). CSRs raise field services jobs through Velocity. When the paperwork is returned it is automatically linked to the customer account and directed to a work queue for action.

The disconnection and reconnection reads returned via the "CJR" system are not received in a format that can be loaded into Velocity as a validated meter read. Where a disconnected ICP with consumption after the last validated reading recorded in Velocity switches out, volume is pushed to the gaining trader as discussed in **sections 4.3** and **4.10**. For ICPs that remain with Meridian, the volume is calculated as forward estimate until a validated read is entered. Once reconnected, scheduled AMI and meter reader reads will be imported and validated, and those reads will be used to calculate historic estimate. Forward estimate continues to be calculated until validated reads are entered, and this contributes to the FE volumes remaining at 14 months reported in **section 12.8**.

Disconnected ICPs with consumption after their last validated reading are reviewed on a monthly report. Reads are manually validated for volumes greater than 200 kWh by the reconciliation team, which enables them to be used by the historic estimate calculation process. Any ICPs with volumes less than this remain as unvalidated reads and are therefore ignored by the historic estimate calculation process.

This affects the accuracy of the CS files which is discussed in **sections 4.3** and **4.10**.

Customer and photo readings

Wells provide customer readings in the notes field and record a no read.

Customer readings provided directly by customers are recorded as customer reads in Velocity, and photo readings are recorded as photo reads. Customer and photo reads are only treated as actuals by the historic estimate process if they are validated. Velocity treats all previously validated reads the same regardless of their source. Therefore, a customer or photo read can be validated against another customer or photo read which was previously validated and not a set of validated actual readings from another source as required by the code. This was the case for both ICPs checked for the HE scenarios in **section 12.11**.

MERX

There are a small number of ICPs read manually by Wells. Validation is the same as described for MERI.

The meter condition notes from manual meter reading files are now uploaded into Flux.

There have not been any customer or photo reads supplied.

Disconnection reads are entered into Flux.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.6 With: Clause 5 of Schedule 15.2 From: 01-Nov-18 To: 24-Oct-19	**MERI** Customer reads are treated as actual reads when they are not validated against a set of actual meter reads from another source in some instances. Potential impact: Low Actual impact: Low Audit history: Three times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The audit risk impact is low as the volume of reads affected by this is low.

Actions taken to resolve the issue	Completion date	Remedial action status
We had implemented a small system change so customer reads and photo reads were treated as estimates rather than actual reads however found this impacted how reads appeared on a customer's bill therefore the change was revoked. The issue will be resolved when ICPs are migrated to Flux which treats customer reads as unverified unless a person manually validates them against another set of reads and applies a different status.	Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

The process of the application of meter readings was examined.

Audit commentary

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 except in the case of a switch event meter reading which applies to the end of the day prior to the event date for the losing trader and the start of the event date for the gaining trader as required by this clause.

All AMI systems have a clock synchronisation function, which ensures correct time-stamping.

MERI

Meridian imports the midnight AMI midnight readings, which are applied as at 2400hrs. Manual readings taken by Wells are provided with a read time, which is recorded in Velocity.

- I traced a sample of AMI reads to Velocity for every MEP. All were time-stamped at midnight, apart from Arc meters, which had time-stamps throughout the day.
- I traced manual NHH reads to Velocity for a sample of 10 ICPs. All were recorded correctly with their read date and time.

Application of reads was reviewed as part of the historic estimate checks in **section 12.11** and found to be compliant.

The content of CS files was examined in **sections 4.3** and **4.10**.

MERX

I traced a sample of AMI readings from source files through to Flux. In all cases the raw data was correctly time stamped as 23.59.59 the date before midnight. When the reads reach Flux, they are re-labelled as 00.00 the date after midnight. For example, a "midnight" read from 28/10/19 will be timestamped in the MEP's file as 28/10/19, 23.59.59. In Flux the same read is stamped as 29/10/19, 00.00. The labelling of readings in this manner is taken into account with the HE scenario calculations, but this is not the case with meter readings in CS files, which are incorrect by one day, as described in the example below.

Meter reading	59777
Switch date	14/08/19

Flux timestamp of read provided	13/08/19, 00.00
Raw data timestamp of read used	12/08/19, 23.59.59
Expected switch read	59803
Timestamp for expected read	14/08/19, 00.00

The impact is that every CS file where the reading has a timestamp of 23:59:59 (there were 660 files for the period January 19 to September 19, and most will have readings timestamped as 23:59:59) has a switch event meter reading from a date that is one day too early.

It was previously recorded that Flux estimated readings to the end of the day if the reading was not a "midnight" read. This estimation is no longer occurring.

Audit outcome

Non-compliant

<table>
<tr><th>Non-compliance</th><th colspan="2">Description</th></tr>
<tr><td>Audit Ref: 6.7
With: Clause 6 Schedule 15.2

From: 01-Nov-18
To: 31-Oct-19</td><td colspan="2">MERX
MERX switch event meter readings supplied for the incorrect date.
Potential impact: Medium
Actual impact: Medium
Audit history: None
Controls: Moderate
Breach risk rating: 2</td></tr>
<tr><th>Audit risk rating</th><th colspan="2">Rationale for audit risk rating</th></tr>
<tr><td>Low</td><td colspan="2">The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.
The impact on settlement and participants is minor; therefore, the audit risk rating is low.</td></tr>
<tr><th colspan="2">Actions taken to resolve the issue</th><th>Completion date</th><th>Remedial action status</th></tr>
<tr><td colspan="2">We have manually updated profiles for the seven ICPs identified. Issues obtaining a reading were delaying the correction of these.</td><td>31 Dec 2019</td><td rowspan="3">Identified</td></tr>
<tr><th colspan="2">Preventative actions taken to ensure no further issues will occur</th><th>Completion date</th></tr>
<tr><td colspan="2">We will implement a system or process change to resolve the switch event meter read issue when the cause of this is confirmed.</td><td>30 April 2020</td></tr>
</table>

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

The process to manage missed reads was examined, including review of the read attainment business rules and procedural documentation.

A sample of 10 ICPs not read during the period of supply were reviewed.

Audit commentary

MERI

A validated meter reading must be obtained in respect of every meter register for every NHH metered ICP for which the participant is responsible, at least once during the period of supply to the ICP by the reconciliation participant, unless exceptional circumstances prevent this from occurring. This may be a validated meter reading at the time the ICP is switched to, or from, the reconciliation participant.

The NHH meter reading frequency guidelines published by the Electricity Authority define "Exceptional circumstances" as meaning "circumstances in which access to the relevant meter is not achieved despite the reconciliation participant's best endeavours". "Best endeavours" is defined as:

"Where a reconciliation participant failed to interrogate an ICP as a result of access issues, the reconciliation participant had made a minimum of three attempts to contact the customer, by using at least two methods of communication".

The process for missed reads was examined.

For manually read meters, the reasons that reads cannot be obtained are recorded by Wells and provided along with the other meter readings. This information is imported into Velocity and directed to work queues for review by the billing team.

Manual reads are scheduled every two months, and the missed read process begins after the first missed read. The process is customised depending on the no read code provided by Wells and whether the meter is AMI.

Unless the missed read occurred because the meter reader was unable to complete the reading due to extreme events such as a natural disaster or severe weather, action is taken after the first missed read:

- if no read is received for an AMI meter, it is sent to the data queue to check for reads on other dates and follow up with the MEP if necessary;
- if the meter appears to have been changed or removed, it is sent to the metering and field services queue;
- if a problem with the meter or its location is preventing reading, it is sent to the billing queue;

- if the property or meter could not be found, the ICP is in the wrong reading round, the customer refused access, or stated they were supplied by another retailer, it is sent to the billing queue; and
- if health and safety issues are identified, it is directed to the Health and Safety team.

A letter to the customer is automatically generated where access is prevented due to an issue which can be resolved with the customer, such as overgrown vegetation, locked gates or doors, dogs, or a closed business. A letter is generated for the first two or three missed reads, depending on the issue, and then directed to the billing team queue for any subsequent missed reads.

There are documented procedures which explain action to be taken to resolve exceptions. I reviewed these procedures and the actions appear reasonable, and aid compliance with the best endeavours requirements.

During the previous audit, it was recorded that account managed sites were not subject to this process; unread ICPs were managed by the account managers. This process has changed and these ICPs are now managed the same way as other unread sites.

If AMI reads cannot be obtained for an ICP for 60 days, the ICP is moved to a manual meter reading route. Meridian routinely contact customers first, to determine whether they have switched their electricity supply off. AMI meter reading providers also notify Meridian where reads cannot be obtained:

- AMS and Metrix both send weekly emails containing non-communicating AMI meters, which ask Meridian to raise a field services request where necessary;
- information on non-communicating Smartco meters is passed to Meridian by AMS; and
- Arc sends details of non-communicating meters in batches, but not every week; if the communication issues cannot be resolved the Arc meter is replaced with an AMS meter.

Meridian receives no read reports from MEPs. These are reviewed and actioned appropriately. The MEPs are providing this information in a consistent format and Meridian are working with Gentrack to enable this to be imported into their systems and directed to work queues appropriately.

Billing management reports on no reads weekly. They continue to run campaigns to improve read attainment, focussing on obtaining reads for sites which have not had a reading for 12 months or longer first.

Meridian's read attainment processes meet the requirements of the code, but where the period of supply is less than 90 days the no read process will not have been completed and therefore compliance cannot be met in these instances.

A report of ICPs not read during the period of supply was provided, where the period of supply ended between January and June 2019. 62 ICPs were not read during the period of supply. Of these, 51 (82%) were supplied for less than 90 days. I reviewed ten ICPs not read during the period of supply. The actions for five ICPs did not meet the best endeavours threshold.

MERX

There were no readings not obtained at four months for MERX. Most ICPs are expected to have AMI metering. The list file contained eight ICPs without communicating AMI metering as at 12/09/19. Reporting is in place for readings not obtained within 14 days of switch in and ongoing attainment reporting identifies ICPs where a reading has not been obtained for 25 days. At this point a call is made to the customer to identify that power is on and if so, a job is raised with the MEP.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 6.8 With: Clause 7(1) and (2) Schedule 15.2 From: 01-Oct-18 To: 24-Oct-19	**MERI** Some ICPs were not read during the period of supply. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as strong because they will mitigate the risk to an acceptable level, but ICPs may remain unread and the best endeavours requirement may not be met where ICPs are supplied for a short period. The impact is assessed as low because in over half the cases reviewed, exceptional circumstances existed, and/or the best endeavours requirement had been met.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Strong controls are in place and we will continue with these.	Ongoing	

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

The meter reading process was examined. Monthly reports for April to July 2019 were provided.

A sample of ten ICPs not read in the previous 12 months were reviewed to determine whether reasonable endeavours were used to attain reads, and if exceptional circumstances existed.

Audit commentary

MERI

The monthly meter reading reports provided were reviewed.

Month	Total NSPs where ICPs were supplied > 12 months	NSPs <100% read	ICPs unread for 12 months	Overall percentage read
Apr 2019	373	132	641	99.71%
May 2019	374	129	650	99.70%
Jun 2019	376	129	623	99.71%
Jul 2019	375	132	650	99.68%

As discussed in **section 6.8**, there are processes in place to monitor read attainment, and attempt to resolve issues preventing read attainment.

Meridian provided report as at 22 August 2019, which recorded 650 ICPs where a reading had not been obtained for the previous 12 months. 101 of the 650 were vacant.

I reviewed ten ICPs not read in the previous 12 months determine whether exceptional circumstances exist, and if Meridian had used their best endeavours to obtain readings. In all cases exceptional circumstances existed and best endeavours were underway or complete to obtain readings.

The reports reviewed for April to July 2019 all met the reporting requirements and were submitted on time.

MERX

All MERX ICPs were read at 12 months.

Audit outcome

Compliant

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 four 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 metered ICPs.

A report is to be sent to the Authority 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

The meter reading process was examined. Monthly reports for April to July 2019 were provided.

A sample of ten ICPs not read in the previous four months were reviewed to determine whether best endeavours were used to attain reads, and if exceptional circumstances existed.

Audit commentary

The monthly meter reading reports provided were reviewed.

Month	Total NSPs where ICPs were supplied > 4 months	NSPs <90% read	ICPs unread for 4 months	Overall percentage read
Apr 2019	373	19	2,248	98.98%
May 2019	374	17	2,261	98.95%
Jun 2019	376	17	2,400	98.86%
Jul 2019	375	21	2,470	98.77%

As discussed in **section 6.8**, there are processes in place monitor read attainment, and attempt to resolve issues preventing read attainment.

I reviewed 10 ICPs not read in the previous four months determine whether exceptional circumstances exist, and if Meridian had used their best endeavours to obtain readings. In all cases exceptional circumstances existed and best endeavours were underway or complete to obtain readings.

MERX

All MERX ICPs were read at four months.

Audit outcome

Compliant

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

NHH data is collected by:

- Wells for manually read meters; and
- MEPs for AMI meters.

The data interrogation log requirements were reviewed as part of their MEP and agent audits.

Audit commentary

MERI and MERX

Compliance with this clause has been demonstrated by Wells and MEPs as part of their own audits.

Audit outcome

Compliant

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

HHR

HHR data is collected by EMS. The data collection requirements were reviewed as part of their agent audit.

Generation

Generation HHR data is collected by Meridian, using STARK.

Audit commentary

HHR

Compliance with this clause has been demonstrated by EMS as part of their own audit.

Generation

Meridian interrogate generation station meters using STARK. System overview information was provided to confirm this.

Audit outcome

Compliant

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

HHR

HHR data is collected by EMS. The interrogation data requirements were reviewed as part of their agent audit.

Generation

Generation HHR data is collected by Meridian, using STARK. The Stark interrogation process was confirmed with Meridian.

Audit commentary

HHR

Compliance with this clause has been demonstrated by EMS as part of their own audit.

Generation

Generation data is collected every half hour by Meridian. The following information is collected during each interrogation of HHR metering:

- the unique identifier (device ID) of the meter or data logger;
- the connection time, disconnection time and recorder time;
- the half-hour metering information for each trading period;
- event log; and
- interrogation log.

The event information is collected separately by Quasar Systems Ltd, as an agent to Meridian. This is because the Stark system has difficulty downloading event information. As described in **section 6.5**, the event information is analysed, and appropriate action is taken in accordance with the code.

Audit outcome

Compliant

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

HHR

HHR data is collected by EMS. The data interrogation log requirements were reviewed as part of their agent audit.

Generation

Generation HHR data is collected by Meridian, using STARK. The Stark interrogation process was confirmed with Meridian.

Audit commentary

HHR

Compliance with this clause has been demonstrated by EMS as part of their own audit.

Generation

An interrogation log is generated by Stark to record details of all interrogations. Appropriate action is taken where problems are apparent. The interrogation log contains the following information:

- the unique identifier of the meter or data logger;
- the time of commencement of interrogation;
- the date of interrogation;
- the operator identifier (machine id);
- the clock errors outside the range specified in clause 12;
- the method of interrogation; and
- the identifier of the reading device used for interrogation (where applicable).

Audit outcome

Compliant

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 ±0.1% (±2 seconds).

Audit observation

HHR

HHR data is collected by EMS. Trading period duration was reviewed as part of their agent audit.

Generation

Generation HHR data is collected by Meridian, using STARK. Processes to check trading period duration were reviewed.

Audit commentary

HHR

Compliance with this clause has been demonstrated by EMS as part of their own audit.

Generation

Stark sends an automated email to the reconciliation team if the number of seconds recorded does not match the expected number for the half hour. Clock synchronisation is discussed further in **section 6.5**.

Audit outcome

Compliant

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

Processes to archive and store raw meter data were reviewed. Raw meter data from at least 48 months prior was reviewed to ensure that it is retained. Meridian's agents retain a copy of the raw meter data, and their compliance with the archiving and storage requirements were reviewed as part of their agent audits.

Meridian's own audit trails were reviewed in **section 2.4**.

EMS are responsible for the archiving and storage of HHR meter data, compliance was assessed as part of their agent audit.

I traced reads for a sample of 10 NHH metered ICPs from the source files to Velocity. I matched the generation data received by Stark to the data received from SCADA for Aviemore for September 2019.

Audit commentary

HHR

Compliance with this clause has been demonstrated by EMS, as part of their own audits.

Generation

I reviewed Stark meter data from 2015, confirming that data is archived for more than 48 months as required by the code.

Access to Stark is restricted, and password protected. I matched the generation data received by Stark to the data received from SCADA for Aviemore for September 2019. The data matched.

I reviewed audit trails within Stark and confirmed that they record the required details if a meter reading is modified or replaced.

NHH MERI

Compliance with this clause has been demonstrated by Wells, and MEPs as part of their own audits.

I reviewed NHH meter read data in Velocity from 2008 during the audit. Data is archived for more than 48 months as required by the code.

Password protection is in place for Velocity to ensure unauthorised personnel cannot access raw meter data. I traced reads for a sample of 10 ICPs from the source files to Velocity for NHH meters. The readings were the same for all ICPs, confirming the security of the process

Review of audit trails in **section 2.4** confirmed that reads cannot be modified without an audit trail being created. Users are not able to edit actual meter readings, apart from changing the read status to invalidated, but it is possible to delete the invoice header to remove the associated readings from Velocity and then re-enter the reads as estimates.

NHH MERX

When this data reaches Flux, the level of security is robust, and data cannot be accessed by unauthorised personnel.

All data has been retained and will continue to be retained.

Compliance with clause 18.3 of schedule 15.2 was examined, which requires that ".....meter readings cannot be modified without an audit trail being created." Readings cannot be modified without an audit trail being created, and the original data is retained. I viewed these audit trails, and they are discussed in further detail in **section 2.4**.

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

Processes to record non-metering information were discussed, and non-metering information was viewed to determine whether the archiving requirements were met.

Streetlight on and off times are collected and archived by EMS, associated processes were reviewed as part of their agent audit.

Audit commentary

Meridian collects unmetered data in relation to streetlights, and this information is appropriately archived.

Compliance with this clause has been demonstrated by EMS as part of their own audit.

Audit outcome

Compliant

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 a reconciliation participant detects errors while validating non-half hour meter readings, the reconciliation participant must:

> *19(1)(a) - confirm the original meter reading by carrying out another meter reading*
>
> *19(1)(b) - replace the original meter reading the second meter reading (even if the second meter reading is at a different date)*
>
> *19(1A) if a reconciliation participant detects errors while validating non half hour meter readings, but the reconciliation participant cannot confirm the original meter reading or replace it with a meter reading from another interrogation, the reconciliation participant must:*

- *substitute the original meter reading with an estimated reading that is marked as an estimate; and*
- *subsequently replace the estimated reading in accordance with clause 4(2)*

Audit observation

Processes for correction of NHH meter readings were reviewed.

Audit commentary

Where errors are detected during the validation process, Meridian may request a check meter reading for manually read meters, or review AMI readings for surrounding dates. If an original meter reading cannot be confirmed by another reading, the original read is invalidated so it will not be used for billing or reconciliation. An estimated reading is used for billing and forward estimate is created for reconciliation.

I reviewed examples of corrections to determine whether they had been processed correctly and flowed through to revision submissions.

Defective meters

Where a defective meter is identified a field services job is raised, and the meter is usually replaced.

There are two main correction methods, and a combination of these two methods may be used for a single correction.

- Removal of the defective meter on an estimated closing read. Once the read is validated, it will be used in the calculation of historic estimate. An account credit may be applied if the customer is not to be billed for the full correction.
- Addition of a market settlement adjustment, where a volume is added for settlement, but is not billed to the customer. If the correction affects more than 14 months, consumption may be spread over the previous 12 months to ensure it is captured for reconciliation.

The estimated closing read or market settlement adjustment are calculated based on actual meter data if accurate data can be retrieved, or a best estimate of consumption for the affected period using historic data before the defect occurred, or data from the replacement meter. A template is available to assist staff to calculate accurate and consistent estimates using meter readings from accurate periods. Where load is seasonal, the customer is consulted when preparing the estimate.

I reviewed ten examples of defective meters. For all ten examples, corrections had been processed and flowed through to reconciliation submissions. If the correction needs to be "spread", a request is made to the reconciliation team. For two of the ten examples the correction was made in the month of the correction and it was not spread. There have only been 21 examples during 2019 where consumption was "spread". There were many more than 21 total examples during 2019 and it appears the notification process to ensure consumption is recorded in the correct months is not working as expected.

Two Category 2 ICPs with defective metering were identified during MEP audits. ICP 0000931760NV71C has a failed current transformer and is recording 18% low. Certification was cancelled on 09/08/18, but the metering has not yet been replaced. ICP 0005170923RN2E6 was reported as over recording by 32.39% from 02/03/16 until 12/03/19. The metering has been replaced but correction has not yet occurred.

Multipliers

Five examples of incorrect multipliers were identified during the audit period. Three were identified by Meridian's reporting, which compares multipliers in Velocity against those in the registry and also identifies ICPs with no multiplier where one is expected. One was notified by the MEP and one was identified at the time of a meter change.

For four of the ICPs, corrections were made within the 14-month period and the consumption was allocated to the correct months. For ICP 1926004000CH077, the correction was made in December 2018, backdated to November 2016. The consumption is allocated to the correct months, but there will be 11 months of consumption outside the 14-month revision window which will not be submitted. This is approx. 65,000 kWh. This is recorded as non-compliance in **section 12.7**.

Bridged meters

Bridged meters are identified through notifications of load side voltage from MEPs, on return of reconnection paperwork, through consumption validation processes including checks of zero consumption, and when customer queries are received.

Corrections for bridged meters are calculated and processed in the same way as corrections for defective meters; consumption is estimated based on the history available.

Ten examples of bridged meters were reviewed. In all cases, correction occurred, and metering was recertified at the time of the removal of the bridge.

For ICP 0000555986NR419, identified during the last audit, the estimated daily kWh applied for one meter was 46 kWh but was expected to be a maximum of 10 kWh. This resulted in estimated over submission of approximately 180 kWh across the five days the meter was bridged. It appears that an error was made when calculating the estimated consumption manually. This ICP switched out before a correction was made.

Inactive ICPs with consumption

Inactive ICPs with consumption are identified by the revenue assurance team, as discussed in **section 9.5**.

A report of inactive meters with consumption after the disconnection date was provided and contained 192 ICPs. A sample of ten ICPs with possible disconnected consumption were reviewed:

- four examples were in the report due to incorrect meter readings;
- one ICP had switched out and the consumption was submitted; and
- for the other five ICPs the unvalidated disconnection reads were validated and consumption was submitted; ICP 0469200405LC160 was reported as being disconnected but the remote disconnection had not worked, and the other four had consumption recorded by the ARC Innovations metering installation.

The sample of ICPs checked were not returned to "active" status for the period with inactive consumption. Reporting of consumption where an ICP is inactive for part of a period is discussed further in **section 12.11**, and the incorrect statuses are recorded as non-compliance in **section 3.9**.

DUML

Meridian's DUML audits identified some inaccurate databases being used for submission.

MERX

There was one defective meter identified, for ICP 0005758831RN460. The correction is currently all against one day and has not been "spread" over the period the meter was stopped. A "dummy" register will be required to ensure this occurs.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 8.1 With: Clause 15.2(2) and 15.12 of part 15, 19(1) of Schedule 15.2, 2(1)(b) of schedule 15.3 and 15.2(2) of part 15 From: 09-Aug-18 To: 14-Aug-18	**MERI** Corrections not apportioned to the correct months for at least two ICPs. Some of the corrected consumption for ICP 1926004000CH077 is outside the 14-month window. Metering not yet replaced, therefore correction not made for ICP 0000931760NV71C where the metering is under recording by 18%. Correction not yet made for ICP 0005170923RN2E6, which was over recording by 32.39%. Metering was replaced on 12/03/19. **MERX** The correction is not for the correct period for ICP 0005758831RN460. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate as they are sufficient to mitigate the risk of incorrect data most of the time, but there is room for improvement. The impact is moderate because some kWhs were not submitted or the apportionment was incorrect.

Actions taken to resolve the issue	Completion date	Remedial action status

Consumption for 2 ICPs identified has now been spread and will be apportioned the via wash up process. A correction has been made for ICP 0005170923RN2E6 and will be submitted via the wash up process. We will follow the MEP up re the CT replacement for ICP 0000931760NV7C	Complete Complete 31 Dec 2019	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will clarify with relevant staff members the correct process to ensure historic consumption adjustments are apportioned correctly for both MERI and MERX.	28 Feb 2020	

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 a reconciliation participant detects errors while validating half hour meter readings, the reconciliation participant must correct the meter readings as follows:

19(2)(a) - if the relevant metering installation has a check meter or data storage device, substitute the original meter reading with data from the check meter or data storage device; or

19(2)(b) - if the relevant metering installation does not have a check meter or data storage device, substitute the original meter reading with data from another period provided:

- *(i) The total of all substituted intervals matches the total consumption recorded on a meter, if available; and*
- *(ii) The reconciliation participant considers the pattern of consumption to be materially similar to the period in error*

Audit observation

Processes for correction of HHR meter readings were reviewed. A sample of two HHR corrections were reviewed.

Audit commentary

Where errors are detected during validation of HHR information, and check metering data is not available, then data from a period with a quantity and profile similar to that expected is used.

HHR

HHR corrections are processed by EMS, and compliance was recorded in their agent audit.

Generation

Meridian obtains Transpower's SCADA data, which is used as a comparison to their generation quantities and can be used as a basis for correction if necessary.

I checked the records for Benmore for 10/09/19 where the data for one trading period was estimated for the period of a meter change. Estimates of this nature are based on data from SCADA or from the Approved Test House. An appropriate audit trail was viewed.

Audit outcome

Compliant

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

A reconciliation participant may use error compensation and loss compensation as part of the process of determining accurate data. Whichever methodology is used, the reconciliation participant must document the compensation process and comply with audit trail requirements set out in the Code.

Audit observation

Error and loss compensation arrangements were discussed. The change control process was reviewed.

Audit commentary

Compensation arrangements are in place for generation stations where required, including the white Hill generation station. The loss factor is applied within the station metering, and not to the raw data after interrogation.

The loss factors are provided by Powernet annually, and Meridian have a reminder to check for these two months before the change is expected. Meridian raises a service request for their contractor to update the loss factor in the meter.

I reviewed the change control process for the loss factor update in April 2019, and noted that the change was requested, approved, and implemented as expected. I also checked the loss calculation inputs for Whitehill, Manapouri and Te Apati. I confirmed that the loss compensation functionality was "enabled" and contained the appropriate inputs of transformer losses and line losses.

Audit outcome

Compliant

8.4. Correction of HHR and NHH raw meter data (Clause 19(4) and (5) Schedule 15.2)

Code reference

Clause 19(4) and (5) 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:

19(5)(a)- the date of the correction or alteration

19(5)(b)- the time of the correction or alteration

19(5)(c)- the operator identifier for the person within the reconciliation participant who made the correction or alteration

19(5)(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

19(5)(e)- the technique used to arrive at the corrected data

19(5)(f)- the reason for the correction or alteration.

Audit observation

Corrections are discussed in **sections 8.1** and **8.2**, which confirmed that raw meter data is not overwritten as part of the correction process. Audit trails are discussed in **section 2.4**.

Audit commentary

For all NHH and generation corrections reviewed in **sections 8.1** and **8.2**, I confirmed that the raw meter data was not overwritten, and the journals created were compliant.

EMS' agent audit report recorded compliance for HHR 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

A sample of reads and volumes were traced from the source files to Meridian's systems in **section 2.3**.

Provision of estimated reads to other participants during switching was reviewed in **sections 4.3**, **4.4**, **4.10** and **4.11**.

Correct identification of estimated reads, and review of the estimation process was completed in **sections 8.1** and **8.2**.

Audit commentary

MERI

As discussed in **section 6.6**, actual reads are available but are not being validated resulting in the volumes being reconciled using forward estimates.

Photo and customer readings are not recorded as actual readings for submission purposes but as noted in **section 6.6**, they are used as validated reads for submission if they can be validated against another validated read. Velocity treats all previously validated reads the same regardless of their source. Therefore, a customer or photo read can be validated against another customer or photo read which was previously validated, instead of a set of validated actual readings from another source.

Compliance for HHR readings is recorded in EMS' agent audit report.

Some agreed switch readings did not have the correct read type recorded in Velocity. Where the agreed switch reading is an estimate, the correct read type cannot be recorded in Velocity because the correction is processed by creating a new meter. The estimated read type is not available for opening reads on new meters. The following ICPs have incorrect read types recorded for their switch event readings as discussed in **sections 4.4** and **4.11**:

- 0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19 have estimated agreed switch move readings recorded as actuals.
- 0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19 have estimated agreed transfer switch readings recorded as actuals.

Some read types were incorrectly recorded in switch event files, as discussed in **sections 4.3** and **4.10**:

- six transfer CS files contained an incorrect switch event read type, the readings were recorded as actual but should have been estimates; and
- five switch move CS files contained an incorrect switch event read and read type, the readings were recorded as actual but should have been estimates.

MERX

The following ICPs have incorrect read types recorded in Flux for their switch event readings as discussed in **sections 4.4** and **4.11**:

- 0006788017RNF2D 19/08/19 has an estimated agreed transfer switch reading recorded as actual; and
- 0007162236RN0D9 14/08/19 has an estimated agreed switch move reading recorded as actual.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 9.1 With: Clause 3(3) Schedule 15.2 From: 15-Feb-19 To: 14-Aug-19	Customer reads are treated as actual reads when not validated against a set of validated actual reads from another source in some instances. **MERI** • 0000206150CA6CB 15/02/19, 0000220358TP425 01/07/19, 0000221094MP014 01/03/19, 0000484681CEDE1 12/07/19 and 0000610961UNDDC 09/05/19 have estimated agreed switch move readings recorded as actuals. • 0002520170AJ3AB 15/07/19, 0004070580WM2EF 08/08/19, 0004983425ALA8A 15/07/19, 0007164762RN91E 24/01/19 and 1000498793PCF91 11/01/19 have estimated agreed transfer switch readings recorded as actuals. **MERX** • 0006788017RNF2D 19/08/19 has an estimated agreed transfer switch reading recorded as actual. • 0007162236RN0D9 14/08/19 has an estimated agreed switch move reading recorded as actual. Potential impact: Low Actual impact: Low Audit history: Twice Controls: Weak Breach risk rating: 3
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as weak because they do not adequately mange the risk of incorrect identification of readings. The audit risk impact is low as the volume of reads affected by this is low.

Actions taken to resolve the issue	Completion date	Remedial action status
N/A		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

MERI We acknowledge the audit findings in this section. Relatively significant system change is required to resolve these issues in Velocity. As the impact of the issue is very low and all ICPs will be transferred to Flux changes will not be made to the Velocity system at this time. **MERX** We will review the RR process in Flux to confirm that revised reads that are estimates are able to be recorded as such.	Feb 2020	

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

A sample of submission data was reviewed in **section 12**, to confirm that volume was based on readings as required.

Audit commentary

Review of submission data confirmed that it is based on readings as required by this clause.

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 to 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 volume was based on readings as required.

HHR

HHR data is collected by EMS and compliance was assessed as part of their agent audit.

NHH

I traced a sample of meter data from the source files to Meridian's systems as discussed in **section 2.3**, to confirm whether readings were rounded or truncated on import.

Generation

I matched the generation data received by Stark to the data received from SCADA for the first six half hours of a day for five generation station meters.

Audit commentary

MERI

HHR

EMS' processes were reviewed as part of their agent audit and found to be compliant.

NHH

A sample of reads and volumes were traced from the source files to Meridian's systems in **section 2.3**. Data provided by Wells, AMS (for AMS meters) and Metrix (for Metrix and Counties Power meters) is not rounded or truncated on import. Data provided by Arc and AMS (for Smartco meters) is truncated to zero decimal places. This has previously been recorded as compliant because the MEP has the unrounded raw meter data, however a recent review of the wording of this clause has led to a revised interpretation, which is that rounding should not occur until volume information is created. Rounding occurs prior to the creation of volume information, therefore non-compliance exists.

Generation

I matched the generation data received by Stark to the data received from SCADA for one station for the entire month. The data matched and was recorded to eight decimal places.

MERX

Manual meter readings do not record decimal places and are not rounded or truncated on import into Flux. AMI data is rounded at the time submission files are prepared.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 9.3 With: Clause 3(5) Schedule 15.2 From: 01-Oct-18 To: 24-Oct-19	Raw meter data is truncated upon receipt and not when volume information is created. Potential impact: None Actual impact: None Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. There is very little impact because no metered consumption information is "missing", and the unmetered differences are very small, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
The issue will be resolved when all NHH ICPs are transitioned to Flux.	Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As above		

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

The HHR and generation data estimate processes were examined.

Audit commentary

Where HHR data must be estimated, and check metering data is not available, then data from a period with a quantity and profile similar to that expected is used.

HHR

HHR estimation is completed by EMS, and compliance was confirmed as part of their agent audit.

Generation

Correction processes for generation are described in **section 8.2**. The same process would be used in the unlikely event that estimation was conducted. No estimations were conducted during the audit period.

Audit outcome

Compliant

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

I reviewed and observed the NHH data validation process, including checking a sample of data validations. I reviewed file manager transactions and validations document, and billing validations document, and viewed the work queues.

Audit commentary

MERI

NHH data is validated by several processes.

Meter reader validation

For non-AMI reads collected by Wells, the handheld data input devices perform a localised validation to ensure that the reading is within expected high-low parameters. Readings outside these parameters must be re-entered and acknowledged by the data collector. A meter cannot be skipped without reading unless a reason is entered. Wells is required to identify issues which may affect metering information accuracy, such as stopped or damaged meters, and report this information to Meridian. This is discussed further in **section 6.6**.

Read import validation

The second level of validation occurs when the data reaches Meridian. I reviewed Meridian's Velocity validation list, and work queues within Velocity.

File manager validations are completed on read import, and check for file format errors, file corruption, read dates outside of expected parameters, and invalid metering information. These errors are sent to a billing team exception queue and the file is normally returned to the meter reading contractor for resolution.

Billing validation

Once imported, billing validations are completed, and exceptions are reviewed by the billing team. These identify:

- meter reads inconsistent with metering information, including a different number of digits or decimals to what is expected;
- a reading with a no read code provided;
- no reading without a no read code provided;
- invalid read type code;
- negative consumption;
- unexpected consumption including daily average consumption exceeding expected limits for the customer price plan, consumption on removed registers, high or low charges, consumption on vacant ICPs, and meter readings provided on an unmetered sequence;
- unexpected read dates including reads before scheduled date, billing cycle too long or too short, and reads after contract expiry; and
- multiple readings on the same day.

Reads for ICPs with a non-billable status (such as disconnected or vacant) are loaded into the Velocity consumption history but are not billed to the customer. They are validated if they are more than 200 kWh as described in **section 6.6**.

Warnings are created where there is no consumption to bill, no reading, the customer is to be finalled or an out of cycle read is booked.

Zero consumption

Zero consumption is monitored for ARC meters, because there are known problems with controllers. Arc send through lists of ICPs not recording consumption.

Meridian have deployed additional reporting that identifies all sites with zero consumption. Further refinement of this report has been developed but is not yet implemented. The refinements are expected to exclude the large number of ICPs with seasonal or zero consumption including irrigators, holiday homes and earthquake affected sites. This will then provide Meridian with good visibility of unexpected long term zero consumption sites. Therefore, whilst reporting is in place, full compliance is not considered achieved until the refinements have been implemented. This is recorded as non-compliance below. Drops in consumption are detected at the time they occur, through the billing validations.

Vacant ICPs with consumption

All vacant ICPs go through the vacant disconnection process, described in **section 3.9**. Letters are sent to the property, and vacant sites are not disconnected unless Meridian can confirm that electricity consumption is very low or zero.

Inactive ICPs with consumption

Disconnected ICPs with consumption are not identified through the billing validations, ICPs with a disconnected status are not billed.

The revenue assurance generates a daily report of inactive ICPs with consumption. The report shows the date the ICP became inactive and compares the first reading on or after the inactive date to the latest reading received. The revenue assurance team work through the report prioritising the ICPs with the highest consumption while inactive first. Checks are completed to determine whether the consumption is genuine, or relates to meter reading issues, a meter fault, or a reconnection performed by a new gaining retailer.

If the consumption appears to be genuine, the ICP is put through the vacant process and then disconnected. The status is not normally corrected, and the reads are not validated unless a customer signs up and the reads can be recorded against their account.

The reconciliation team also review this report and validate readings where consumption is present, so that the reads will be used by the historic estimate calculations.

Bridged meters

Meridian does not initiate meter bypass instructions to any MEP or contractor. If they request a remote reconnection, the MEP is expected to either conduct this, or will make necessary arrangements for reconnection without bypassing. Where it is necessary to bypass a meter for safety reasons, Meridian's contracts with service providers specify that they must return within one to two business days to unbridge the meter. Corrections for bridged consumption are discussed in **section 8.1**.

Reconciliation submissions

Processes to review reconciliation submission information are discussed in **section 12.2.**

MERX

There are several steps to validation of NHH data. At source, the handheld data input devices perform a localised validation to ensure that the reading is within expected high-low parameters. Readings outside

these parameters have to be re-entered and acknowledged by the data collector. A meter cannot be skipped without reading unless a reason is entered.

A further validation occurs within Flux, this validation checks the following:

- meter and register number match;
- missing readings;
- invalid dates and times;
- consumption more than 500% of that expected;
- readings lower than the previous reading; and
- transposed reads.

Billing validation is also conducted; this includes:

- long billing period;
- short billing period;
- high consumption; and
- low consumption.

Reporting is in place for zero consumption as it occurs.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 9.5 With: Clause 16 Schedule 15.2 From: 01-Oct-18 To: 24-Oct-19	Zero consumption not monitored for all ICPs. Potential impact: Low Actual impact: Low Audit history: Once previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate as they will mitigate risk most of the time but not in all cases of zero consumption occurring. The impact is low as drops in consumption will identify most instances.

Actions taken to resolve the issue	Completion date	Remedial action status
We will continue with implementation of refinements to existing zero consumption reporting for ICPs in Velocity.	Ongoing	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Reporting to monitor zero consumption will continue as all ICPs are migrated to Flux	Ongoing	

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

I reviewed the generation, HHR, and AMI data validation processes, including meter event logs and validation checks.

Audit commentary

MERI

HHR

EMS interrogates meters regularly during the month, so there is little risk that data will be overwritten.

EMS' validates HHR meter readings and refers any issues to Meridian, so that the Meridian account managers can check the consumption with their customers and confirm whether it appears correct.

Billing validations may identify changes in volumes that are outside excepted limit, which are then referred to EMS.

EMS' agent audit found their validation processes were compliant. During the previous audit it was found that EMS was not monitoring phase failure events for one meter type because of a configuration issue for that meter type in EMS' event notification system. This matter is now resolved.

AMI

Meridian demonstrated their validation processes for AMI installations. These ICPs are billed and reconciled as NHH sites so validation is based on end of day reads and not the half hour interval data. Validation checks are the same as for non-AMI meters, and include:

- missing data;
- invalid dates and times;
- zero data; and
- comparison with previous or expected flow patterns.

NHH AMI data is provided by MEPs via SFTP. Meter event information is provided and reviewed as follows:

MEP	Provided by	Meter event information provided and reviewed
ARC	ARC	Arc review their meter events, and provide load side voltage events and meter communication issues to Meridian.
AMS Smartco	AMS	Full event information is provided via SFTP. AMS have agreed to review the event information and provide any events that require action by Meridian via email.
Metrix Counties Power	Metrix	Full event information is provided via SFTP. Metrix have agreed to review the event information and provide any events that require action by Meridian via email.
FCLM	FCLM	Full event information is provided via SFTP. The data is reviewed by Meridian and field services jobs are raised to investigate and resolve issues as required.
WEL Networks	WEL Networks	Full event information via SFTP, which is reviewed by Meridian. The data is reviewed by Meridian and field services jobs are raised to investigate and resolve issues as required.

I reviewed examples of meter event information provided by MEPs. A sample of events were checked and found that they had been actioned appropriately.

Generation

Stark interrogation occurs every half hour, so there is little risk that data will be overwritten.

Meridian validates data against Transpower SCADA data, and aggregation meters are compared to the sum of the individual meters. The SCADA data is not derived from the revenue metering, so it provides a sound basis for validation.

I reviewed evidence of validity checks for generation metering data, including:

- checks for missing data; the sum of the Stark data is compared to the Transpower SCADA data to ensure data is not missing and there is also a separate check for missing data each business day;
- checks for invalid dates and times; Stark will only collect data if the date and time of the logger matches that to the system to within five seconds;
- checks of unexpected zero values; sometimes zeros are present and are correct and the comparison with SCADA data ensures unexpected zeros are identified;
- comparison with expected flow patterns; generation data does not have an expected flow pattern, so consumption is graphed against SCADA data to ensure unexpected zeros and anomalies are identified, a comparison is also completed against the capacity for the meter; and
- a review of meter and data logger event list; any event that could have affected the integrity of metering is investigated.

MERX

The checks described in **section 9.5** achieve compliance with points “a” to “d” above. MEPs conduct “sum-check” validation to achieve compliance with point “e”. MEPs provide event information which is appropriately managed.

Audit outcome

Compliant

10. PROVISION OF METERING INFORMATION TO THE GRID OWNER 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 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

Meridian confirmed that no information is required to be provided in accordance with this clause because there are no embedded generators subject to dispatch instructions.

Audit commentary

Meridian confirmed that no information is required to be provided in accordance with this clause because there are no embedded generators subject to dispatch instructions.

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 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 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

EMS provides unoffered and intermittent generation metering information as Meridian's agent, and compliance was assessed as part of their audit.

Audit commentary

EMS' agent report confirmed compliance.

Audit outcome

Compliant

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

This is conducted by EMS as Meridian's agent. The EMS report confirms compliance.

Audit commentary

This is conducted by EMS as Meridian's agent. The EMS report confirms compliance.

Audit outcome

Compliant

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 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

This is conducted by EMS as Meridian's agent. The EMS report confirms compliance.

Audit commentary

This is conducted by EMS as Meridian's agent. The EMS report confirms compliance.

Audit outcome

Compliant

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 give notice to 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

A registry list for 01/01/19 to 12/09/19 was reviewed for the audit period to confirm the profiles used. Processes to create buying and selling notifications were reviewed.

Audit commentary

Trading notifications are no longer required for the HHR, RPS, UML, EG1 or PV1 profiles. Meridian have trading notifications in place for all other profiles, and there have not been any breach notifications regarding late trading notifications.

Meridian currently has open trading notifications for most NSPs. There is no facility to enter new profiles against an existing NSP on the reconciliation manager portal. The registry list was reviewed to identify the start and end dates for non-standard profiles at each NSP during the audit period. The table below shows those NSPs where non-standard profiles started during the audit period. I've recorded this as a technical non-compliance, and I accept that Meridian cannot take any action to resolve this matter.

NSP	Profile	Start date
MMT0111	RPS E11	05/06/19
MMP0111	RPS E08	06/05/19
OAK0111	DST	01/07/19
WPV0061	DST	01/04/19
TKU0331	DST	01/07/19
TKU0331	T07 T23	16/01/19
TKL0011	PTM	01/09/19

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 11.1 With: Clause 15.3 From: 01-Oct-18 To: 24-Oct-19	No trading notification was provided for some profiles. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1		
Audit risk rating	**Rationale for audit risk rating**		
Low	There is no impact, Meridian Energy confirmed that the reconciliation manager's system recorded the profile correctly, because the allocation data received from the reconciliation manager included this profile.		
Actions taken to resolve the issue		**Completion date**	**Remedial action status**
N/A – as reported no action can be taken to resolve and no impact			Cleared
Preventative actions taken to ensure no further issues will occur		**Completion date**	

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 examined by checking 14 NSPs with a small number of ICPs to confirm the AV110 ICP days calculation was correct.

I reviewed variances for 18 months of GR100 reports and investigated any large discrepancies.

Audit commentary

MERI

The process for the calculation of ICP days was examined by checking ten HHR NSPs and four NHH NSPs with discrepancies between the registry ICP days and Meridian's ICP days.

Breach information provided by the Electricity Authority did not identify any late ICP days submissions.

The following table shows the ICP days difference between Meridian files and the RM return file (GR100) for 10 months. The discrepancies are very small and mostly don't show to two decimal places.

Month	R1	R3	R7
Oct-18			0.00%
Nov-18			0.00%
Dec-18			0.00%
Jan-19			0.00%
Feb-19		0.00%	
Mar-19		0.00%	
Apr-19		0.00%	
May-19		0.00%	
Jun-19	0.01%		
Jul-19	0.01%		

I reviewed ICP days differences at NSP level for 14 NSPs and found the following:

- ICP0000055167TRB54 was inactive from 01/11/18 and there was no HHR data but ICP days were incorrectly submitted up until 13/12/18;
- ICP 0003144060WFFFB was upgraded from NHH to HHR on 09/04/19 (it was HHR all day on 09/04/19 in the registry) and Meridian submitted NHH ICP days up to and including the 9th and submitted one less HHR ICP day;
- ICP 0000413540WPE3E was changed from NHH to HHR on 07/06/19, but NHH ICP days were provided up until 12/06/19 and HHR ICP days started on 13/06/19;
- ICP 0000479275CEF41 was changed from NHH to HHR on 13/03/19, but NHH ICP days were provided up until 17/06/19 and HHR ICP days started on 13/03/19, therefore there was an overlap;
- ICP 0005003620CN758 was changed from HHR to NHH on 09/06/19, there should be 9 HHR ICP days and 21 NHH ICP days but the NHH ICP days only start on 11/06/19 and are therefore one day light;

- ICP 0000959392TU0A5 was changed from HHR to NHH on 25/07/19, there should be 25 HHR ICP days and 6 NHH ICP days but the NHH ICP days only start on 27/07/19 and are therefore one day light;
- two further HHR to NHH changes are one day light; and
- all other examples were backdated switching, status or other registry events.

Where ICP status is recorded incorrectly, ICP days may be reported incorrectly. ICPs with incorrect statuses or status dates are recorded in **sections 3.8** and **3.9**. This is recorded as non-compliance in **section 2.1** and **12.7.**

Decommissioning service orders can only be raised for ICPs with an active status. To allow a service order to be processed, the status is returned to active status temporarily from the last status update date. Once the service order is created, the redundant active status record can be removed. In some cases, the step to remove the active record is missed. Four of the late status updates related to these redundant active records, which had not been removed for ICPs 0006802300CAE74 (01/03/10), 0000166990TR124 (04/05/10), 0006300260RN627 (04/05/15) and 0005706661RN1D7 (07/01/19). This does not impact on volume submissions; if there is no movement in reads during the active period no consumption will be submitted. It does impact on ICP days submissions, because ICPs are calculated based on the time periods where the ICP is recorded as active.

MERX

The process for the calculation of ICP days was examined by checking ten HHR NSPs and four NHH NSPs with discrepancies between the registry ICP days and MERX's ICP days.

Breach information provided by the Electricity Authority did not identify any late ICP days submissions.

The following table shows the ICP days difference between MERX files and the RM return file (GR100) for 10 months. The discrepancies are very small and mostly don't show to two decimal places. Discrepancies were examined for two NSPs and they related to backdated registry events.

Month	R1	R3	R7
Oct-18			0.00%
Nov-18			0.00%
Dec-18			0.00%
Jan-19			0.00%
Feb-19		0.00%	
Mar-19		0.00%	
Apr-19		0.00%	
May-19	0.00%		

Month	R1	R3	R7
Jun-19	0.01%		
Jul-19	0.00%		

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 11.2 With: Clause 15.6 of part 15 From: 01-Nov-18 To: 09-Apr-19	**MERI** Incorrect ICP days for one inactive ICP. Incorrect ICP days for upgrades and downgrades. Where ICP statuses or status dates are recorded incorrectly, incorrect ICP days may be reported. Potential impact: Low Actual impact: None Audit history: Twice previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact is rated as low because overall the number of ICP days affected is low.

Actions taken to resolve the issue	Completion date	Remedial action status
ICP days discrepancies caused by inaccurate status should be resolved when status corrections are processed (where this is possible).		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Discrepancies related to the NHH – HH upgrade process are largely process related and will be addressed with the relevant staff members to limit recurrence. Discrepancies related to the HH-NHH downgrade process are caused by system limitations and will be considered when this process is developed in Flux.	31 Jan 2020 Dec 2020	

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 process for the calculation of "as billed" volumes was examined by checking five NSPs with a small number of ICPs to confirm the AV120 calculation was correct.

GR130 reports for January 2015 to July 2019 were reviewed to confirm whether the relationship between billed and submitted data appears reasonable.

Audit commentary

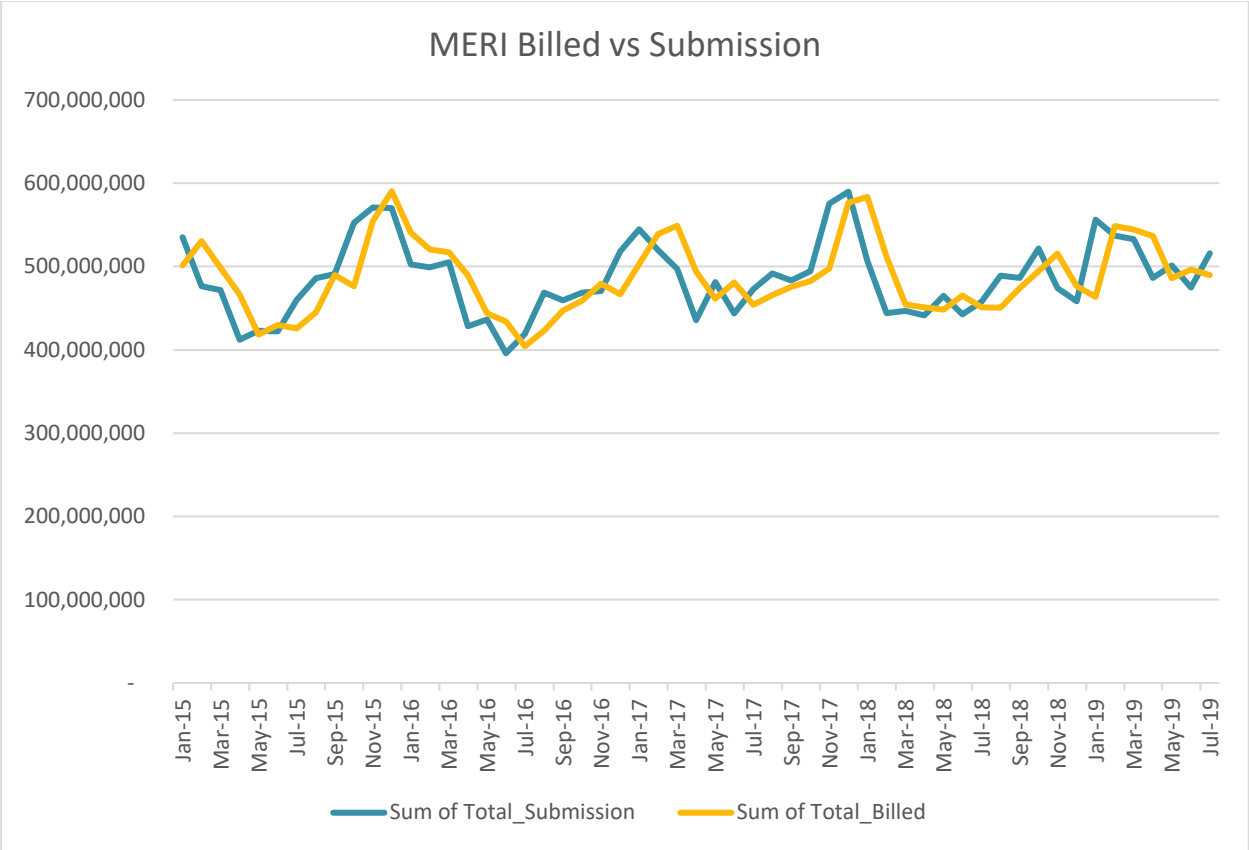
MERI

The process for calculating and submitting electricity supplied information was reviewed.

The process for the calculation of as billed volumes was examined by checking five NSPs with a small number of ICPs against invoice information. The AV120 billed consumption calculation was confirmed to be correct for the NSPs checked. "As billed" submissions for prepay ICPs are based on readings and included in the AV120 based on the read date.

I also checked the difference between submission and electricity supplied information from January 2015 to July 2019. There is a difference of 0.23% (billed higher than submission). I also checked the invoiced totals for six NSPs against the AV120 totals and there was a match.

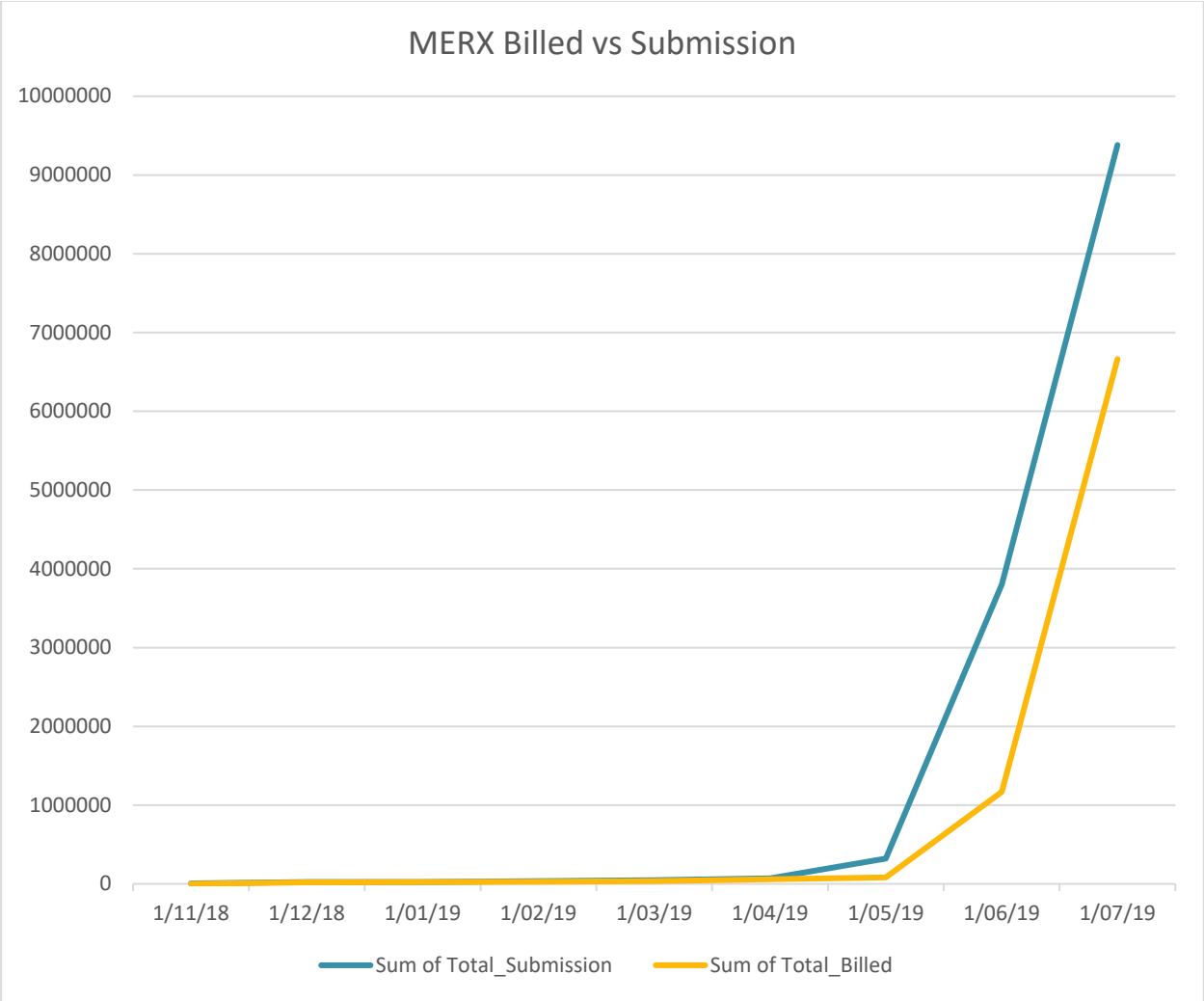
Monthly, Meridian reviews the GR130 results for the previous 16 months to check for reasonableness and identify any anomalies. I saw evidence of these reviews.



MERX

The process for the calculation of as billed volumes was examined by checking three NSPs with a small number of ICPs against invoice information. The AV120 billed consumption calculation was confirmed to be correct for the NSPs checked.

I also checked the difference between submission and electricity supplied information from November 2018 to July 2019. There is a difference of 69.8% (billed lower than submission). This appears to be due to rapid growth and the fact that the submission window is different to the electricity supplied window. This can be checked further during the next audit.



Audit outcome

Compliant

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

EMS creates HHR aggregates and volumes information, and compliance was assessed as part of their audit.

EMS provides two aggregate reports to the reconciliation manager, a HHRAGGS file containing all X flow rows, and a HHRAGGI file containing all I flow rows. ICPs with generation only do not appear in either of the HHRAGGS files, and the Electricity Authority confirmed this was acceptable during EMS' 2017 audit.

I confirmed that the process for the calculation and aggregation of HHR data is correct, by matching HHR aggregates information with the HHR volumes data for 10 submissions.

The GR090 ICP Missing files were examined for October 2018 to July 2019. An extreme case sample of ICPs missing from four or more revisions were checked.

Audit commentary

EMS' processes for provision of HHR aggregates information were assessed during their agent audit. Non-compliance was found because the HHR aggregates report contains submission information, not electricity supplied information as specified under clause 15.8. Although the reports EMS' produces are consistent with the Reconciliation Manager Functional Specification, this is recorded as technical non-compliance below.

I checked the process for aggregation of HHR data is correct, by matching HHR aggregates information to the volumes, and found that the difference related to generation only ICPs. Compliance was confirmed.

The GR090 ICP Missing files were examined for all revisions for October 2018 to July 2019. I checked an extreme case sample of 12 ICPs missing for four or more revisions and found they related to:

- generation only ICPs, which are excluded from the aggregates files; the Code does not specifically state whether this information is required or not, but the file format has a field for flow direction, however the Electricity Authority has confirmed that generation quantities are not required in the file;
- backdated switches and switch withdrawals;
- updates to the trader for new connections; and
- backdated updates to submission type.

Late switching files and updates to the registry are discussed in **sections 3** and **4**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 11.4 With: Clause 15.8 From: 01-Oct-18 To: 24-Oct-19	HHR aggregates file does not contain electricity supplied information. Potential impact: None Actual impact: None Audit history: Multiple times previously Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The issue relating to content of the aggregates file is an error in the code, Meridian is providing submission information as expected.

Actions taken to resolve the issue	Completion date	Remedial action status
Meridian will not be taking any action in relation to this technical non compliance. We understand a Code change is progressing.		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

HHR

All HHR data is collected by EMS, and daylight savings adjustments were reviewed as part of their agent audit.

Generation

I checked files for changes to and from daylight saving.

Audit commentary

HHR

Daylight savings adjustments were reviewed as part of EMS' agent audit and found to be compliant. EMS uses the trading period run on technique.

Generation

Stark automatically adjusts for daylight savings, using the trading period run on technique. I checked sample files covering the start and end of daylight savings to ensure daylight savings adjustments were correct.

Audit outcome

Compliant

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

A list of breaches was obtained from the Electricity Authority. There were no breaches for late provision of submission information.

- HHR submissions are created by EMS, and their processes were reviewed as part of their agent audit. Submissions were checked in **section 11.4.**
- MERI NHH submissions are created using Velocity and MERX submissions are created using Flux. A sample of NHH ICPs were checked to make sure they are handled correctly, including unmetered load, distributed generation, and vacant ICPs with consumption. Further information on calculation of historic estimate is recorded in **section 12.11**.
- A sample of corrections were reviewed to ensure that they flowed through to revision submissions in **sections 8.1** and **8.2**.
- NSP volumes submissions are discussed in **section 12.6**.

Audit commentary

HHR

Submission of HHR information was reviewed as part of EMS' agent audit and found to be compliant.

NHH MERI

Meridian prepares NHH submissions using reconciliation consumption generated in Velocity.

I reviewed submissions for a sample of:

- ten ICPs with injection/export registers and confirmed that generation consumption is correctly submitted;
- ten ICPs with vacant consumption and confirmed that vacant consumption was reported for all;
- ten ICPs with unmetered volumes were reviewed, including standard and shared unmetered; I confirmed that the correct consumption was reported.

NHH metered and unmetered volumes are reviewed prior to submission. I walked through the process to review submissions which included a match against trader notifications and investigation of differences of over 100,000kWh and 15% between revisions. Zeroing occurs automatically as part of the comparison to the trader notification table in Velocity and is discussed further in **section 12.3**.

No breaches had been recorded for late provision of submission information.

NHH MERX

MERX submission files are created in Flux. I checked submissions for:

- ten ICPs with injection/export registers and confirmed that generation consumption is correctly submitted; and
- ten ICPs with vacant consumption and confirmed that vacant consumption was reported for all.

The pre-submission checks include a comparison between revisions and a check against the previous month. The capability exists to drill down to ICP level if any anomalies are found.

Generation

Meridian submits AV130 generation volumes files. Data for a sample of five NSPs for the first six trading periods of one day was matched from the AV130 submission files to the raw SCADA data; all values matched.

I walked through the process to review submissions and validate generation data in **section 9.6**.

No breaches had been recorded for late provision of submission information.

Audit outcome

Compliant

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 in 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

Submission of HHR information was reviewed as part of EMS' agent audit and found to be compliant.

Processes to ensure that information used to aggregate the reconciliation reports is consistent with the registry were reviewed in **section 2.1**.

The process to ensure that AV080 submissions are accurate was discussed. The process for aggregating the AV080 was examined by checking five NSPs with a small number of ICPs.

The GR170 to AV080 files for eight months were compared, to confirm zeroing occurs.

Audit commentary

HHR

Submission of HHR information was reviewed as part of EMS' agent audit and found to be compliant.

Meridian validates the submissions produced by EMS prior to their submission on business day four and 13. Lavastorm is used to generate reports comparing registry data, aggregates files, volumes files, ICP days files and EIEP3 files (which are outside the scope of this audit). The data is compared, and any anomalies are reported.

I reviewed a sample of these validations and noted that Meridian staff had reviewed anomalies and added comments. Where issues or concerns are identified, these are communicated to EMS for action. If EMS updates any data, it is sent back to Meridian for rechecking using Lavastorm.

NHH MERI

The process for the calculation of NHH volumes was examined by checking five NSPs with a small number of ICPs. NHH volume calculation was confirmed to be correct.

NHH data is validated prior to submission. Fields used for reconciliation submission aggregation are reconciled to the registry prior to the initial and wash up submissions being created. Any ICPs with consumption that is negative or over 100,000 kWh are checked.

Zeroing occurs automatically as part of the comparison to the trader notification table in Velocity. If an open trading notification is present but no submission data has been generated, Velocity automatically inserts a zero line.

GR170 and AV080 files for eight months were compared, and no issues were identified.

NHH MERX

The process for the calculation of NHH volumes was examined by checking four NSPs with a small number of ICPs. NHH volume calculation was confirmed to be correct.

The pre-submission checks include a comparison between revisions and a check against the previous month. The capability exists to drill down to ICP level if any anomalies are found.

In **section 2.1**, a recommendation is made regarding he management of aggregation factors, which are relevant to the accuracy of submission information.

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

Review of the NSP table confirmed that Meridian is not a grid owner.

Audit commentary

Review of the NSP table confirmed that Meridian 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

A registry list was reviewed to confirm Meridian does not own any local or embedded networks.

Audit commentary

Meridian is not required to provide NSP submission information.

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

The process to create AV130 (NSP volume information) was reviewed.

Data for a sample of five NSPs for the first six trading periods of one day was matched from the AV130 submission files to the raw SCADA data.

Alleged breaches during the audit period were reviewed to determine whether any reconciliation submissions were late.

Audit commentary

Meridian creates AV130 submissions for grid connected generation.

Data for Aviemore for all of September 2019 was matched from the AV130 submission files to the raw SCADA data; all values matched.

No breaches had been recorded for late provision of submission information.

Audit outcome

Compliant

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

Alleged breaches during the audit period were reviewed to determine whether any reconciliation submissions were late.

Corrections were reviewed in **sections 8.1** and **8.2**.

Audit commentary

A review of alleged breaches confirmed that no reconciliation submissions were made late.

MERI

The following issues which impacted on the accuracy of volume information submitted to the reconciliation manager were identified.

- Forward estimate remained right up until R14 because ICPs had switched out on estimated readings, and these readings were not treated as permanent estimates by the historic estimate calculation.
- Disconnection and reconnection reads are not routinely entered in Velocity, as discussed in **sections 3.8**, **3.9** and **6.6**. This can result in consumption being attributed to incorrect dates. Consumption may not be reported if it falls after disconnection in certain circumstances.
- For ICP 1926004000CH077, the correction was made in December 2018, backdated to November 2016. The consumption is allocated to the correct months, but there will be 11 months of consumption outside the 14-month revision window which will not be submitted. This is approx. 65,000 kWh.
- I reviewed ten examples of defective meters. For all ten examples, corrections had been processed and flowed through to reconciliation submissions. If the correction needs to be "spread", a request is made to the reconciliation team. For two of the ten examples the correction was made in the month of the correction and it was not spread. There have only been 21 examples during 2019 where consumption was "spread". There were many more than 21 total examples during 2019 and it appears the notification process to ensure consumption is recorded in the correct months is not working as expected.
- For ICP 0000555986NR419, identified during the last audit, the estimated daily kWh applied for one meter was 46 kWh but was expected to be a maximum of 10 kWh. This resulted in estimated over submission of approximately 180 kWh across the five days the meter was bridged. It appears that an error was made when calculating the estimated consumption manually. This ICP switched out before a correction was made.
- Two Category 2 ICPs with defective metering were identified during MEP audits. ICP 0000931760NV71C has a failed current transformer and is recording 18% low. Certification was cancelled on 09/08/18, but the metering has not yet been replaced. ICP 0005170923RN2E6 was reported as over recording by 32.39% from 02/03/16 until 12/03/19. The metering has been replaced but correction has not yet occurred.
- Decommissioning service orders can only be raised for ICPs with an active status. To allow a service order to be processed, the status is returned to active status temporarily from the last status update date. Once the service order is created, the redundant active status record can be removed. In some cases, the step to remove the active record is missed. Four of the late status updates related to these redundant active records, which had not been removed for ICPs 0006802300CAE74 (01/03/10), 0000166990TR124 (04/05/10), 0006300260RN627 (04/05/15) and 0005706661RN1D7 (07/01/19). This does not impact on volume submissions; if there is no movement in reads during the active period no consumption will be submitted. It does impact on ICP days submissions, because ICPs are calculated based on the time periods where the ICP is recorded as active.

As discussed in **section 4.4**, for three transfer switches, the read recorded in Velocity did not match the agreed switch reading:

ICP	Event No	Event date	Meter serial	Meter channel	Agreed read	Applied read	Difference
0000008456TEC2E	RR-110021	22/01/2019	TPL1505806	1	6026	6025	-1
0000029677CH179	RR-123348	29/07/2019	70C06J011466	1	55633	55632	-1
0005940982RNCE1	RR-122370	18/07/2019	60B07G010609	1	50828	50818	-10

MERX

Flux is not compliant for two specific scenarios resulting in HE being incorrectly labelled as FE. One scenario is where meter removal readings are available, but the consumption is labelled as FSE. The other scenario is where shape files are not available. The consumption is correctly calculated but is labelled as FE instead of HE. No specific examples were identified during this audit, but the system functionality still needs to be changed to achieve compliance.

There was one defective meter identified, for ICP 0005758831RN460. The correction is currently all against one day and has not been "spread" over the period the meter was stopped. A "dummy" register will be required to ensure this occurs.

As discussed in **section 4.4**, for 0006002854RN52B (switch event 01/07/19) the read in Flux on the event date did not reflect the outcome of the RR process for one meter register. Meter 208210212/1 showed 49303 estimate in Flux, and the agreed reading was 49304 actual.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 12.7 With: Clause 15.12 From: 01-Oct-18 To: 24-Oct-19	Some submission information was inaccurate. Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls over accuracy of submission information are moderate, as there are controls in place to validate submission information and identify and correct errors. The impact is rated as low, most of the issues identified affected low volumes or ICP days and a small number of ICPs.

Actions taken to resolve the issue	Completion date	Remedial action status
We have commented on specific issues raised in the relevant sections of this report.	Various	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
As above		

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).

The relevant reconciliation participant must, at the earliest opportunity, and no later than the month 14 revision cycle, replace volume information created using estimated readings with volume information created using validated meter readings.

If, despite having used reasonable endeavours for at least 12 months, a reconciliation participant has been unable to obtain a validated meter reading, the reconciliation participant must replace volume information created using an estimated reading with volume information created using a permanent estimate in place of a validated meter reading.

Audit observation

NHH volumes 14-month revisions were reviewed for January to June 2018 to identify any forward estimate still existing.

Audit commentary

MERI

Review of the 14-month revisions for January to June 2018 showed that not all estimated meter readings had been replaced with validated meter readings as required by the Electricity Authority. This is recorded as non-compliance below.

Month	Forward estimate
Jan-18	2,737,345
Feb-18	2,221,722
Mar-18	2,712,850
Apr-18	5,263,670
May-18	3,534,680

Month	Forward estimate
Jun-18	3,192,924

I examined six NSPs at ICP level where forward estimate still existed at 14 months. As reported in the last audit, the forward estimate remained because an ICP or ICPs had switched out on estimated readings, and these readings were not treated as permanent estimates by the historic estimate calculation.

In addition to this as discussed in **section 6.6**, disconnection reads are not always being validated in Velocity resulting in forward estimates being used when an actual read is available.

MERX

Flux does not have the capability to deal with "permanent estimates". There have not yet been any 14-month revisions sent. The 7-month revision for November 2018 has 100% HE and it is unlikely there will be many ICPs unread at 14 months because nearly all have AMI.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 12.8 With: Clause 4 of Schedule 15.2 From: 01-Oct-18 To: 24-Oct-19	**MERI** Some estimates not replaced at R14. Potential impact: Medium Actual impact: Medium Audit history: Multiple times previously Controls: Moderate Breach risk rating: 4
Audit risk rating	**Rationale for audit risk rating**
Medium	Controls are rated as moderate as they are sufficient to ensure estimates are replaced by revision 14 most of the time, but there is room for improvement. Total forward estimate quantity for the 6-month period evaluated was just under 20GWh, which is higher than in previous years.

Actions taken to resolve the issue	Completion date	Remedial action status
The issues contributing to FE remaining at 14 months will be resolved when all ICPs are transitioned to Flux.	Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Flux capability to treat estimates as permanent where long term unread ICPs exist is an issue that is identified as a gap within the project and will be assessed for a solution.	Dec 2020	

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 for each ICP must comprise the following:

- *half hour volume information for the total metered quantity of electricity 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) any half hour volume information for the ICP; or*
  - *b) any 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 in 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

Processes to ensure that information used to aggregate the reconciliation reports is consistent with the registry were reviewed **in section 2.1**.

Aggregation and content of reconciliation submissions was reviewed, and the registry list as at 16/08/19 was reviewed.

Audit commentary

MERI

Compliance with this clause was assessed.

- HHR submission preparation was reviewed as part of EMS' agent audit and found to be compliant. HHR volume is reported for all ICPs with a meter category 3 or higher.
- Unmetered load submissions were checked in **section 12.2** and found to be correct.
- Certification of control devices was reviewed in **section 6.3**. Controls were strong, but a small number of non-compliances were identified.
- Loss and compensation arrangements were reviewed in **section 8.3** and found to be compliant.
- Aggregation of the AV080 and AV110 submissions are covered in **sections 13.2** and **11.2** respectively.

MERX

- Aggregation of the AV080 and AV110 submissions are covered in **sections 13.2** and **11.2** respectively.
- Compensation factors are correctly applied.
- Flux does not include consumption information from inactive ICPs in submission files. The status needs to be changed to "Active" to enable submission to occur. There were no examples of consumption on inactive ICPs.

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

Review of nine AV080 submissions to confirm that historic estimates are included and identified.

Permanence of meter readings is reviewed in **section 12.8**. The methodology to create forward estimates is reviewed in **section 12.12**.

Audit commentary

MERI

Most labelling is correct, except for the scenario where an ICP switches out on an estimate. This estimate should be considered a permanent estimate and the consumption should be HE, but it is considered FE and is labelled as FE.

MERX

Flux is not compliant for two specific scenarios resulting in the HE being incorrectly labelled as FE. One scenario is where meter removal readings are available, but the consumption is labelled as FSE. The other scenario is where shape files are not available. The consumption is correctly calculated but is labelled as FE instead of HE.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 12.10 With: Clause 3 of schedule 15.3 From: 01-Nov-18 To: 24-Oct-19	Incorrect labelling of HE as FE. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. There is no impact on settlement, therefore the audit risk rating is low.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will investigate system treatment of meter removal reads to determine why these were not treated as actual reads when calculating submission information. If a systemic issue exists this will be resolved. We understand the incorrect labelling of calculated volumes as FE rather than HE where no shape file exists has no impact on the volumes or the market. The issue has been included as a capability gap within the project and will be assessed for a solution.	28 Feb 2020	

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

To assist with determining compliance of the Historical Estimate (HE) processes, Meridian were supplied with a list of scenarios, and for some individual ICPs a manual HE calculation was conducted and compared to the result from Velocity for MERI and Flux for MERX.

Audit commentary

MERI

The table below shows that all scenarios are calculating as expected and correct SASV are applied.

For scenarios B and C, where an ICP is inactive for part of a month, disconnection and reconnection reads are not entered. The SASV applied for the read period exclude the days during the read period where the ICP was inactive. The exclusion of the SASV for the inactive days ensures that all consumption is reported against active dates. Where there is a final reading, consumption is apportioned to the period between the final reading and previous actual reading even if that period is inactive (viewed for ICP 0007112281RN518 decom 25/7/19 but inactive since 14/11/05).

The process for managing shape files was examined. SASV are downloaded from the reconciliation manager portal along with the other reconciliation reports. Following download, they are imported manually into Velocity using the interface file manager.

Test	Scenario	Test expectation	Result
a	ICP becomes Active part way through a month	Consumption is only calculated for the Active portion of the month.	Compliant
b	ICP becomes Inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Compliant
c	ICP become Inactive then Active again within a month.	Consumption is only calculated for the Active portion of the month.	Compliant
d	ICP switches in part way through a month on an estimated switch reading	Consumption is calculated to include the 1st day of responsibility.	Compliant
e	ICP switches out part way through a month on an estimated switch reading	Consumption is calculated to include the last day of responsibility.	Compliant
f	ICP switches out then back in within a month	Consumption is calculated for each day of responsibility.	Compliant
g	Continuous ICP with a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Compliant
h	Continuous ICP without a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Compliant
i	Rollover Reads	Consumption is calculated correctly in the instance of meter rollovers.	Compliant
j	Unmetered load for a full month	Consumption is calculating based on daily unmetered kWh for full month.	Compliant

Test	Scenario	Test expectation	Result
k	Unmetered load for a part month	Consumption is calculating based on daily unmetered kWh for active days of the month.	Compliant
l	Network/GXP/Connection (POC) alters partway through a month.	Consumption is separated and calculated for the separate portions of where it is to be reconciled to.	Compliant
m	ICP with a customer read during the month	Customer reads are not used to calculate historic estimate, unless they have been validated against a set of validated readings from another source	Compliant
n	ICP with a photo read during the month	Photo reads are not used to calculate historic estimate, unless they have been validated against a set of validated readings from another source	Compliant
o	ICP has a meter with a multiplier greater than 1	The multiplier is applied correctly	Compliant

The HE calculations were correct in all scenarios checked, but the non-validation of reads is resulting in volume not being submitted or misallocated. The treatment of estimated switch reads when calculating historic estimate is recorded as non-compliance in **sections 12.7** and **12.8.** The validation of customer and photo reads is recorded as non-compliance in **sections 6.6** and **9.1**.

MERX

MERX provided examples of historic estimate calculations, which were reviewed. Compliance is recorded in this section because where the scenarios had occurred, I found that historic estimate calculations were correct, and the correct SASV (seasonal adjusted shape values) were applied.

SASV are retrieved from the RM portal and loaded into Flux using an automated process. Flux monitors these automated upload processes and notifies MERX if they fail to run

Test	Scenario	Test expectation	Result
a	ICP becomes Active part way through a month	Consumption is only calculated for the Active portion of the month.	Compliant
b	ICP becomes Inactive part way through a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
c	ICP become Inactive then Active again within a month.	Consumption is only calculated for the Active portion of the month.	Has not occurred
d	ICP switches in part way through a month on an estimated switch reading	Consumption is calculated to include the 1st day of responsibility.	Has not occurred
e	ICP switches out part way through a month on an estimated switch reading	Consumption is calculated to include the last day of responsibility.	Has not occurred

Test	Scenario	Test expectation	Result
f	ICP switches out then back in within a month	Consumption is calculated for each day of responsibility.	Has not occurred
g	Continuous ICP with a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Compliant
h	Continuous ICP without a read during the month	Consumption is calculated assuming the readings are valid until the end of the day	Has not occurred
i	Rollover Reads	Consumption is calculated correctly in the instance of meter rollovers.	Has not occurred
j	Unmetered load for a full month	Consumption is calculating based on daily unmetered kWh for full month.	Has not occurred
k	Unmetered load for a part month	Consumption is calculating based on daily unmetered kWh for active days of the month.	Has not occurred
l	Network/GXP/Connection (POC) alters partway through a month.	Consumption is separated and calculated for the separate portions of where it is to be reconciled to.	Compliant
m	ICP with a customer read during the month	Customer reads are not used to calculate historic estimate, unless they have been validated against a set of validated readings from another source	Has not occurred
n	ICP with a photo read during the month	Photo reads are not used to calculate historic estimate, unless they have been validated against a set of validated readings from another source	Has not occurred
o	ICP has a meter with a multiplier greater than 1	The multiplier is applied correctly	Compliant

Audit outcome

Compliant

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

The process to create forward estimates was reviewed.

Forward estimates were checked for accuracy by analysing the GR170 file for variances between revisions over the audit period.

Audit commentary

MERI

Meridian's forward estimate methodology is sound and is based on historic consumption where it is available. If historic consumption is not available, forward estimate of zero is entered. Meridian staff can override the zero estimate by entering a default value if necessary.

The accuracy of the initial submission, in comparison to each subsequent revision is required to be within 15% and within 100,000kWh. The table below shows the number of balancing areas where this target was not met.

Quantity of balancing areas with differences over 15% and 100,000 kWh

Month	Revision 1	Revision 3	Revision 7	Revision 14	Total Balancing Areas
Mar 2018	5	6	7	6	295
Apr 2018	0	1	2	2	299
May 2018	0	0	1	1	301
Jun 2018	0	0	0	0	303
Jul 2018	0	0	0	-	298
Aug 2018	0	0	0	-	301
Sep 2018	0	2	2	-	300
Oct 2018	1	7	7	-	304
Nov 2018	0	0	0	-	304
Dec 2018	2	1	0	-	308
Jan 2019	2	8	9	-	310

Month	Revision 1	Revision 3	Revision 7	Revision 14	Total Balancing Areas
Feb 2019	2	7	-	-	311
Mar 2019	2	1	-	-	312
Apr 2019	3	4	-	-	312

The total variation between revisions at an aggregate level is shown below.

Month	Revision 1	Revision 3	Revision 7	Revision 14
Mar 2018	2.32%	4.37%	4.66%	4.55%
Apr 2018	-4.65%	-5.13%	-4.91%	-5.08%
May 2018	-1.41%	-2.40%	-2.36%	-2.35%
Jun 2018	-3.43%	-4.84%	-5.28%	-5.22%
Jul 2018	-0.06%	-1.01%	-1.29%	-
Aug 2018	-2.19%	-3.66%	-4.15%	-
Sep 2018	-0.22%	-2.47%	-2.68%	-
Oct 2018	-2.64%	-5.76%	-5.84%	-
Nov 2018	0.73%	-0.64%	-0.88%	-
Dec 2018	-2.86%	-2.00%	-1.56%	-
Jan 2019	-1.46%	-8.53%	-8.26%	-
Feb 2019	-2.82%	-6.36%	-	-
Mar 2019	2.24%	1.07%	-	-
Apr 2019	-5.11%	-5.12%	-	-

I reviewed 17 balancing area differences where the variation between revisions was more than ± 15% and ± 100,000 kWh. 11 were due to irrigation loads starting and estimates were based on the previous month

when irrigation was not running. Four were due to actual reads replacing estimates. One was due to missing meter change records for one ICP. When this ICP was added the consumption increased. Balancing area TPS0011AMPCE had a zero shape file for R1 and R3 but values in the R7.

MERX

Flux's forward estimate process is based on a "straight line" forward standard estimate methodology, and where no historical information is available a "forward default' estimate of 25 units per day is used.

The forward standard methodology is based on the following:

- daily consumption from the "admin" field (based on previous validated meter readings);
- daily consumption from the switch in CS file; or
- daily consumption from the customer at the time of registration.

No balancing areas had differences greater than 15% and 100,000 kWh.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 12.12 With: Clause 6 of Schedule 15.3 From: 01-Oct-18 To: 24-Oct-19	**MERI** The accuracy threshold was not met for some months and revisions. Potential impact: Low Actual impact: Low Audit history: Multiple times previously Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to ensure data is within the accuracy threshold most of the time. Initial data is replaced with revised data and washed up.

Actions taken to resolve the issue	Completion date	Remedial action status
		Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
We will continue with our current controls in this area.	Ongoing	

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

The event detail report for 1/1/19 to 12/9/19 was examined to identify ICPs which had a profile change during the report period.

A diverse sample of 10 ICPs with profile changes were reviewed, including upgrades and downgrades, generation profiles, and non-standard profiles, to confirm that there was an actual or permanent estimate reading on the day of the profile change.

Audit commentary

MERI

In the event of a profile change, Meridian uses a validated meter reading on the day that the change is effective. Profile changes normally have an associated meter change and these readings are used.

A sample of 10 profile changes were checked and found an actual read was gained on the day of the profile change.

MERX

I checked three examples of profile changes and they all occurred on a meter change with a reading.

Audit outcome

Compliant

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

For each category 3 of higher metering installation, a reconciliation participant must provide half hour submission information to the reconciliation manager.

For each category 1 or category 2 metering installation, a reconciliation participant must provide to the reconciliation manager:

- *Half hour submission information; or*
- *Non half hour submission information; or*
- *A combination of half hour submission information and non half hour submission information*

However, a reconciliation participant may instead use a profile if:

- *The reconciliation participant is using a profile approved in accordance with clause Schedule 15.5; and*
- *The approved profile allows the reconciliation participant to provide half hour submission information from a non half hour metering installation; and*
- *The reconciliation participant provides submission information that complies with the requirements set out in the approved profile.*

Half hour submission information provided to the reconciliation manager must be aggregated to the following levels:

- *NSP code*
- *reconciliation type*
- *profile*
- *loss category code*
- *flow direction*
- *dedicated NSP*
- *trading period*

The non half hour submission information that a reconciliation participant submits must be aggregated to the following levels:

- *NSP code*
- *reconciliation type*
- *profile*
- *loss category code*
- *flow direction*
- *dedicated NSP*
- *consumption period or day*

Audit observation

Processes to ensure that information used to aggregate the reconciliation reports is consistent with the registry were reviewed in **section 2.1**.

Aggregation of NHH volumes is discussed in **section 12.3**, aggregation of HHR volumes is discussed in **section 11.4** and NSP volumes are discussed in **section 12.6**.

Audit commentary

Submission information is provided to the reconciliation manager in the appropriate format and is aggregated to the following level:

- NSP code;
- reconciliation type;
- profile;
- loss category code;
- flow direction;
- dedicated NSP; and
- consumption period.

The submitted data was also compared to billed data in **section 11.3** and appeared reasonable.

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 2 decimal places.

If the unrounded digit to the right of the second decimal place is greater than or equal to 5, the second digit is rounded up, and

If the digit to the right of the second decimal place is less than 5, the second digit is unchanged.

Audit observation

I reviewed the rounding of data on the AV090, AV140 and AV080 reports as part of the aggregation checks. AV130 submissions were reviewed in **section 12.6**.

Audit commentary

Submission information is appropriately rounded to no more than two decimal places.

Audit outcome

Compliant

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 timeliness of submissions of historic estimate was reviewed in **section 12.2**.

I reviewed nine months of AV080 reports to determine whether historic estimate requirements were met.

Audit commentary

The quantity of historical estimates is contained in the submission file and is not a separate report. The proportion of HE in the revision files was checked for nine separate months, and the table below shows that compliance has not been achieved in all instances. This proportion of HE at an aggregate level, as shown in the "proportion of HE at an aggregate level" table is high.

MERI

Quantity of NSPs where revision targets were met

Month	Revision 3 80% Met	Revision 7 90% Met	Revision 14 100% Met	Total
Jan 2018	-	-	184	385
Feb 2018	-	-	181	390
Mar 2018	-	-	185	390
Sep 2018	-	356	-	390
Oct 2018	-	359	-	398
Nov 2018	-	365	-	376
Feb 2019	364	-	-	383
Mar 2019	368	-	-	383
Apr 2019	338	-	-	388

The table below shows that the percentage HE at a summary level for all NSPs is well above the required targets for the 3 and 7-month revisions, and below the target for the 14-month revisions.

Month	Revision 3 80% Target	Revision 7 90% Target	Revision 14 100% Target
Jan 2018	-	-	99.61%
Feb 2018	-	-	99.59%

Mar 2018	-	-	99.49%
Sep 2018	-	98.87%	-
Oct 2018	-	99.01%	-
Nov 2018	-	99.24%	-
Feb 2019	98.47%	-	-
Mar 2019	98.39%	-	-
Apr 2019	98.16%	-	-

As detailed in **sections 6.6, 12.7** & **12.8**, HE targets are not being achieved due to FE not being replaced for ICPs that have switched out on estimated readings, and these readings were not treated as permanent estimates and disconnection reads that are not always being validated in Velocity resulting in forward estimates being used when an actual read is available.

MERX

MERX has not submitted any 14-month revisions yet. All targets were met for the 3 and 7-month revisions.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 13.3 With: Clause 10 of Schedule 15.3 From: 01-Oct-18 To: 24-Oct-19	**MERI** Historic estimate thresholds were not met for some revisions. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk of not meeting the threshold most of the time, but there is room for improvement. The audit risk rating is low, as Meridian were reasonably close to the target in all cases.

Actions taken to resolve the issue	Completion date	Remedial action status

The issues contributing to FE remaining at 14 months will be resolved when all ICPs are transitioned to Flux.	Dec 2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

Meridian has implemented a new system (Flux) and has gradually transferred NHH ICPs from Velocity to Flux since November 2018. A material change audit for the implementation of Flux was completed in October 2018.

The MERX trader code is applied for ICPs managed in Flux, and the MERI trader code is applied for all other Meridian ICPs. Unless otherwise specified, the processes and non-compliances described in the report apply to all codes.

The activities completed by MERX are restricted while processes are being finalised and refined. ICPs are required to meet certain criteria, including having a communicating AMI meter, before switching to MERX. New connections are not completed, and only one ICP with unmetered load is supplied. Most non-compliances for MERX have occurred soon after the affected processes were implemented, and improvements have been made over time.

Meridian continue to make good progress in improving their level of compliance for registry and read information management, and the timeliness of registry updates has generally improved.

Overall, switching processes are very well managed with almost all files sent on time. There were some issues with the content of CS files for MERI and MERX, specifically the accuracy of switch event meter readings, which Meridian intends to investigate.

Submission related processes are generally operating well with an experienced team overseeing this area. The main issues requiring attention are:

- consumption is not quantified or submitted for some distributed generation ICPs;
- NHH corrections are not always apportioned to the correct months and some are outside the 14-month revision period;
- correction has not yet been made for two Category 2 ICPs with defective metering; and
- some historic estimates are labelled as forward estimates.

This audit of Meridian's systems and processes found 42 (35 last time) non-compliances and makes four (two last time) recommendations. No issues are raised. The increase in non-compliances and the increase in the score from 68 to 88 is largely attributed to the addition of the Flux system, which has some issues yet to be resolved.

PARTICIPANT RESPONSE

As reported, Meridian is in the process of upgrading all its retail customers from Velocity to Flux. As such where non-compliance has been identified in this report, resources will be primarily focussed on improving the Flux system and controls rather than Velocity.

Processes and controls related to reconciliation participant activities carried out in Flux are in their infancy and will develop over time as ICP numbers increase and new processes are introduced (e.g. New Connections, Unmetered Load etc).

We will be utilising the AC-020 report to monitor compliance on an ongoing basis and identify any emergent process or systemic issues that require additional controls.

The issue related to the switch event meter read used by Flux that is recorded in sections 4.3, 4.10, 4.16 and 6.7 is being investigated and a system or process change will be made to resolve this as soon as practicable.