

ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT



For

TARARUA DISTRICT COUNCIL
AND MERCURY ENERGY LIMITED
NZBN: 9429037706609

Prepared by: Bernie Cross

Date audit commenced: 1 February 2023

Date audit report completed: 23 February 2023

Audit report due date: 1 March 2023

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EXECUTIVE SUMMARY

This audit of the **Tararua District Council (TDC)** DUML database and processes was conducted at the request of **Mercury Energy Limited (Mercury)** in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Streetlight load is determined by wattages held within TDC's RAMM database, which is managed by Tararua Alliance and TDC. New connection, fault, maintenance, and upgrade work is completed by Scanpower, Centralines and Powerco (directly and also via subcontractor CJ Contracting).

Mercury became the trader responsible for this DUML database from October 2022 and reconciles the TDC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from the monthly database extracts provided by Tararua Alliance, and on and off times are derived from data logger information.

Prior to December 2022 NZTA lights were recorded in the database and were being maintained by TDC and these were included in the monthly trader report to Mercury. These NZTA lights were also recorded in the NZTA Lower North Island database resulting in the duplicate reconciliation and submission of this load. The NZTA lights were removed from this database in December 2022 and revisions of the October and November 2022 database extracts were provided to Mercury to enable wash up revisions of this load to occur. These revisions have been scheduled by Mercury based on this updated information.

The field audit was undertaken of a statistical sample of 166 items of load on 2nd February 2023 and confirmed that the database accuracy is not within the allowable +/-5% threshold. Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	105.2	Wattage from survey is higher than the database wattage by 2.9%
R _L	94	With a 95% level of confidence, it can be concluded that the error could be between -3.3% and +14.2%
R _H	120.7	

In absolute terms, total annual consumption is estimated to be 9,700 kWh higher than the DUML database indicates.

The audit found four non-compliances and makes four recommendations. The future risk rating of 7 indicates that the next audit be completed in eighteen months. I have considered this in conjunction with Mercury Energy's responses and agree with this recommendation.

The matters raised are detailed in the table below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	<p>Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum.</p> <p>Festive lighting in Woodville and Dannevirke not recorded in the database.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p>	Moderate	Low	2	
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional lights in the field of the 166 items of load sampled.	Strong	Low	1	
Database accuracy	3.1	15.2 and 15.37B(b)	<p>Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum.</p> <p>Festive lighting in Woodville and Dannevirke are not recorded in the database.</p>	Moderate	Low	2	
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum.</p> <p>Festive lighting in Woodville, Eketahuna and Dannevirke not recorded in the database.</p> <p>The monthly database extract provided does not track changes at a daily</p>	Moderate	Low	2	

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
			basis and is provided as a snapshot.				
Future Risk Rating						7	

Future risk rating	0	1-4	5-8	9-15	16-18	19+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Recommendation
Database Accuracy	1.6	<p>ICP 7012020000CH14D is invalidly treated as standard unmetered load. Either:</p> <ul style="list-style-type: none"> create a separate ICP for each point of connection, and then settle each ICP as standard unmetered load, or switch the ICP to MEEN and settle the load as DUML. <p>Mercury to work with Meridian to resolve</p>
Improve ability to accurately identify all light types, attributes and input wattages.	2.4	Improve the level of detail captured as part of the lamp model description to ensure the input wattages can accurately be determined and ensure all light specification sheets are held centrally and easily available for reference for all lights within the TDC database.
Database Accuracy	3.1	<p>Review the process to update the database one field work is completed is reviewed to consider electronic data capture on site that includes photos to support the information provided</p> <p>Investigate and determine if the festive lights in Eketahuna that are attached to the NZTA poles are in use, and if so when are they used.</p>

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

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

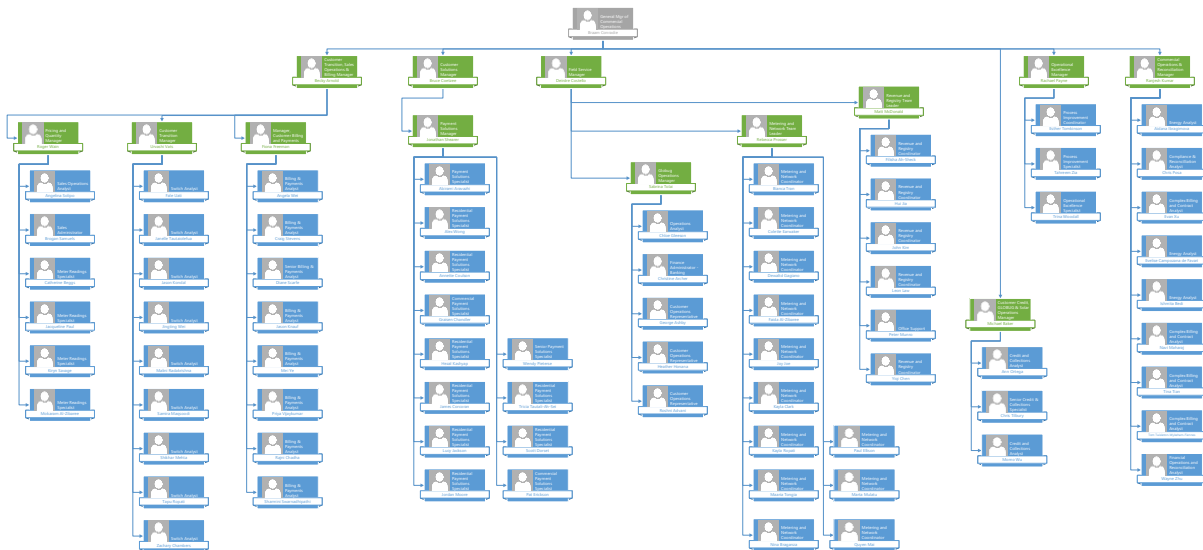
The Electricity Authority’s website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

Mercury has been granted exemption No. 233. This allows them to provide half-hour (“HHR”) submission information instead of non-half-hour (“NHH”) submission information for distributed unmetered load (“DUML”). This exemption expires on 31 October 2023.

1.2. Structure of Organisation

Mercury Energy provided a copy of their organisational structure:



1.3. Persons involved in this audit

Auditor:

Bernie Cross

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Chris Posa	Compliance Reconciliation Analyst	Mercury Energy
Nicky Campbell	Asset Information Technician	Tararua Alliance
Allie Dunn	Manager Democracy Services	Tararua District Council

1.4. Hardware and Software

The SQL database used for the management of DUML is remotely hosted by thinkproject New Zealand Limited. The database is commonly known as “RAMM” which stands for “Road Assessment and Maintenance Management”. The specific data used for DUML is held in the Streetlight tables. thinkproject New Zealand Limited backs up the database and assists with disaster recovery as part of their hosting service.

Access to the database is secure by way of password protection.

Systems used by the trader to calculate submissions are assessed as part of their reconciliation participant audits.

1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
000910000CADDCC	Dannevirke Street Lighting - Dannevirke Borough	DVK0111	HHR	697	22,461
0009101000CAC7C	Street Lighting - Rural Streetlighting	DVK0111	HHR	84	2,943
0009102000CAE9C	Street Lighting - Woodville Borough	WDV0111	HHR	210	5,939
1000554957PC423	TDC Master stlight - cnr Mangamaire & Tutaekara Road	MGM0331	HHR	374	12,185
Total				1,365	43,528

As reported in the previous audits, ICP 7012020000CH14D (WPW0331 GN CHBP) is also included in the database, but is outside the scope of the audit. The ICP is supplied by Meridian and is settled as standard unmetered load. Tararua Alliance confirmed that the six lights connected do not all have the same point of connection.

Light ID	Road	ICP Group	Lamp model
1523	052-0063	7012020000CH14D	Betacom 27w led (Field audit confirmed is 40W LED)
2564	SEAVIEW RD	7012020000CH14D	40W LED
2565	SEAVIEW RD	7012020000CH14D	40W LED
2540	SEAVIEW RD	7012020000CH14D	40W LED
2541	SEAVIEW RD	7012020000CH14D	40W LED
2542	SEAVIEW RD	7012020000CH14D	40W LED

Only loads below the unmetered load threshold with a single point of connection may be settled as standard unmetered load. The recommendation from the last four audits is repeated. Separate ICPs should be created for each point of connection so they can continue to be treated as standard unmetered load, or the ICPs should be treated as DUML. This was also raised in the Meridian Reconciliation Participant audit.

I repeat the previous recommendation.

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	<p>ICP 7012020000CH14D is invalidly treated as standard unmetered load. Either:</p> <ul style="list-style-type: none"> create a separate ICP for each point of connection, and then settle each ICP as standard unmetered load, or switch the ICP to MEEN and settle the load as DUML. <p>Mercury to work with Meridian to resolve.</p>	We will liaise with Meridian and Tararua DC to decide on the best option to resolve this.	Identified

1.7. Authorisation Received

All information was provided directly by Mercury or TDC.

1.8. Scope of Audit

This audit of the TDC DUML database and processes was conducted at the request of Mercury in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

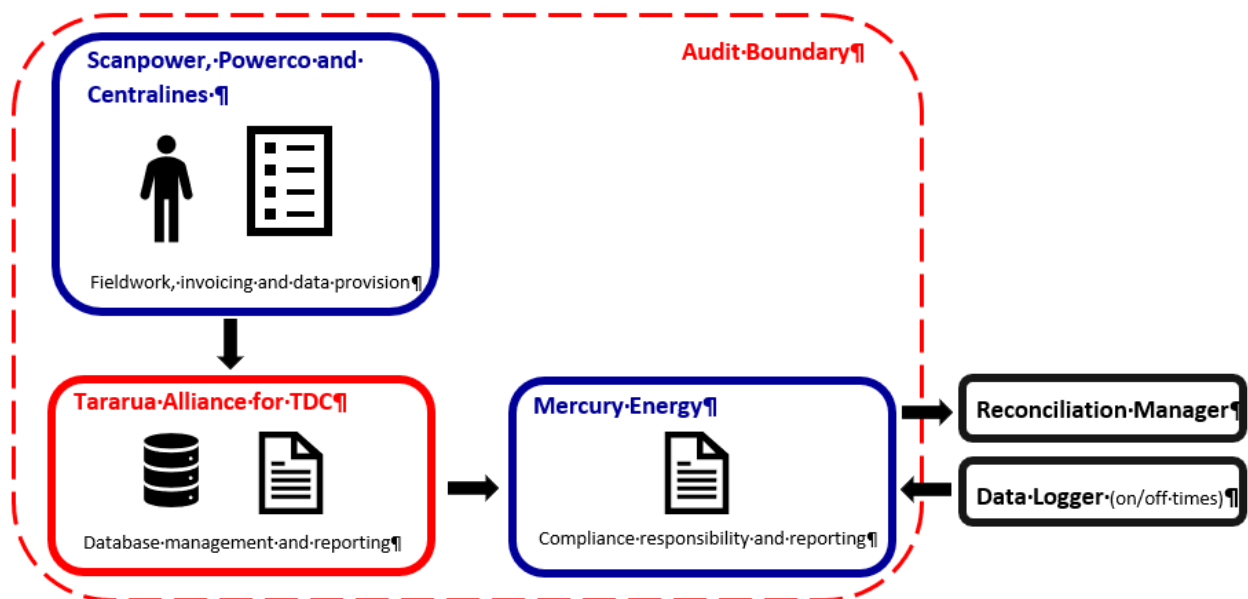
The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Streetlight load is determined by wattages held within TDC's RAMM database. New connection, fault, maintenance, and upgrade work is completed by Scanpower, Centralines and Powerco (directly and also via subcontractor CJ Contracting).

Mercury became the trader responsible for this DUML database from October 2022 and reconciles the TDC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from the monthly database extracts provided by Tararua Alliance, and on and off times are derived from data logger information.

Prior to December 2022 NZTA lights were recorded in the database and were being maintained by TDC and these were included in the monthly trader report to Mercury. These NZTA lights were also recorded in the NZTA Lower North Island database resulting in the duplicate reconciliation and submission of this load. The NZTA lights were removed from this database in December 2022 and revisions of the October and November 2022 database extracts were provided to Mercury to enable wash up revisions of this load to occur. These revisions have been scheduled by Mercury based on this updated information.

The scope of the audit encompasses the collection, security, and accuracy of the data, including the preparation of submission information based on the monthly reporting. The diagram below shows the flow of information and the audit boundary for clarity.



The field audit was undertaken of a statistical sample of 166 items of load on 2nd February 2023.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Bernie Cross of Veritek Limited in September 2022. The summary table below shows the statuses of the non-compliances and recommendations raised in the previous audit. Further comment is made in the relevant sections of this report.

Table of Non-compliance

Subject	Section	Clause	Non-compliance	Status
Deriving submission information	2.1	11(1) of Schedule 15.3	Under submission of 46 kWh for August 2022 due to the incorrect calculation of volume for submission.	Cleared
			Database assessed as having poor precision therefore the potential error is greater than 5.0% resulting in an estimated under submission of 11,300 kWh per annum.	Still existing
			NZTA lighting is recorded in two databases and therefore submitted twice resulting in an estimated over submission of approximately 206,653 kWh per annum.	Cleared
			Three items of load that have either missing or blank lamp model, lamp wattage or, gear wattage resulting in an estimated under submission of 1,806 kWh per annum.	Cleared
			29 items of load had gear wattages that did not match the expected values resulting an estimated under submission of 2,674 kWh per annum.	Cleared
			Festive lighting in Woodville, Eketahuna and Dannevirke not recorded in the database.	Still existing
The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing			
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Three items of load have either unknown or blank lamp model, lamp wattage or, gear wattage.	Cleared
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional lights in the field of the 259 items of load sampled.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	Database assessed as having poor precision therefore the potential error is greater than 5.0% resulting in an estimated under submission of 11,300 kWh per annum.	Still existing
			NZTA lighting is recorded in two databases and therefore submitted twice resulting in an estimated over submission of approximately 206,653 kWh per annum.	Cleared
			Three items of load that have either missing or blank lamp model, lamp wattage or, gear wattage resulting in an estimated under submission of 1,806 kWh per annum.	Cleared

Subject	Section	Clause	Non-compliance	Status
			<p>29 items of load had gear wattages that did not match the expected values resulting an estimated under submission of 2,674 kWh per annum.</p> <p>Festive lighting in Woodville, Eketahuna and Dannevirke not recorded in the database.</p>	<p>Cleared</p> <p>Still existing</p>
Volume information accuracy	3.2	15.2 and 15.37B(c)	<p>Under submission of 46 kWh for August 2022 due to the incorrect calculation of volume for submission.</p> <p>Database assessed as having poor precision therefore the potential error is greater than 5.0% resulting in an estimated under submission of 11,300 kWh per annum.</p> <p>NZTA lighting is recorded in two databases and therefore submitted twice resulting in an estimated over submission of approximately 206,653 kWh per annum.</p> <p>Three items of load that have either missing or blank lamp model, lamp wattage or, gear wattage resulting in an estimated under submission of 1,806 kWh per annum.</p> <p>29 items of load had gear wattages that did not match the expected values resulting an estimated under submission of 2,674 kWh per annum.</p> <p>Festive lighting in Woodville, Eketahuna and Dannevirke not recorded in the database.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p>	<p>Cleared</p> <p>Still existing</p> <p>Cleared</p> <p>Cleared</p> <p>Cleared</p> <p>Still existing</p> <p>Still existing</p>

Table of Recommendations

Subject	Section	Recommendation	Status
ICP data	1.6	<p>ICP 7012020000CH14D is invalidly treated as standard unmetered load. Either:</p> <ul style="list-style-type: none"> • create a separate ICP for each point of connection, and then settle each ICP as standard unmetered load, or • switch the ICP to GENE and settle the load as DUML. <p>Genesis to work with Meridian to resolve.</p>	Still existing
Database Accuracy	3.1	<p>Investigate and determine if the festive lights in Eketahuna that are attached to the NZTA poles are in use, and if so when are they used.</p>	Still existing

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

- 1. by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
- 2. within three months of submission to the reconciliation manager (for new DUML)*
- 3. within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Mercury have requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database.

Audit outcome

Compliant

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from an extract provided each month by Tararua Alliance. On and off times are derived from a data logger.

I recalculated the submissions for December 2022 for the four ICPs associated with the database using the data logger and database information and found the calculation was correct.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence resulting in an estimated under submission of 9,700 kWh per annum. This is detailed in **section 3.1**.

Lamp and gear wattages were compared to the expected values and no exceptions were identified.

As reported in the previous audit and detailed in **section 3.1**, there is festive lighting used in Woodville and Dannevirke. This is put up by the Community boards around Christmas, and TDC instruct Tararua Alliance to temporarily install these lights in December and to remove these lights in January each year. TDC were able to confirm that the lights were fitted on 14 and 15 December 2022 and then removed on 24 and 25 January 2023. The festive lights are not recorded in the database and there is no process to notify Mercury when these festive lights are operating. The absence of a process to record these festive lights within the database and also notify Mercury of these temporary lights is recorded as non-compliance below and in **sections 3.1** and **3.2**.

There are also festive lights in Eketahuna that are on the NZTA poles, these are to be investigated to determine if they are in use and when they are in use. A recommendation is recorded in **section 3.1** regarding the need to investigate the operation of the Eketahuna festive lights.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

Mercury completes revision submissions where corrections are required and has not yet updated their processes to be compliant with the Authority's memo.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Sep-22 To: 31-Dec-22	Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum. Festive lighting in Woodville and Dannevirke not recorded in the database. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2	
Audit risk rating	Rationale for audit risk rating	
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact is assessed to be low based on small volume impact to submission.	
Actions taken to resolve the issue	Completion date	Remedial action status
We will advise Tararua DC of the required fixes identified in the audit and follow up to get updates on progress.	March 2023	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Tararua DC are aware of the need to maintain database accuracy and the positive outcomes for both billing and compliance.	Ongoing.	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*
- *the items of load associated with the ICP identifier.*

Audit observation

The database was checked to confirm an ICP was recorded against each item of load.

Audit commentary

All items of load have an ICP recorded against them.

Audit outcome

Compliant

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUMML database must contain the location of each DUMML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains fields for the road name, location number, side, and GPS coordinates.

All items of load are locatable. 1,332 (97.58%) of the 1,365 items of load have GPS coordinates.

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUMML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that:

- it contained a field for light type and wattage capacity,
- wattage capacities include any ballast or gear wattage, and
- each item of load has a light type, light wattage, and gear wattage recorded.

Audit commentary

The database contains fields to record the lamp and gear model, lamp and gear wattage and total wattage. Analysis of the database found no errors.

I was unable to confirm the wattage of four models of LED lamps due to incomplete lamp model descriptions being populated or the light specifications being unable to be reviewed before the audit is due. I recommend that TDC amend their lamp model descriptions to include the full lamp make and model descriptions to enable accurate determination of lamp wattages.

Recommendation	Description	Audited party comment	Remedial action
Improve ability to accurately identify all light types, attributes and input wattages.	Improve the level of detail captured as part of the lamp model description to ensure the input wattages can accurately be determined and ensure all light specification sheets are held centrally and easily available for reference for all lights within the TDC database.	We accept this as a good recommendation and will liaise with Tararua DC on this.	Identified

Audit outcome

Compliant

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of a statistical sample of 166 items of load on 2nd February 2023. The sample was selected from three strata, as follows:

- Dannevirke,
- Woodville, Rural, Herbertville, and
- Pahiatua.

Audit commentary

The field audit discrepancies are detailed in the table below:

Street	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
Road 052-0063	1	1	0	1	1 x 27W LED recorded in the database but 1 x 40W LED located in the field.
Road 052-0093	8	8	0	1	1 x 27W LED recorded in the database but 1 x 40W LED located in the field.
ALLARDICE ST	19	19	0	1	1 x 150W HPS recorded in the database but 1 x 23W LED located in the field.
BRIDGE ST	11	10	-1	0	1 x 27W LED recorded in the database but not located in the field.
CADMAN	8	10	+2	2	2 X GL600 250W recorded in database but 100W incandescent belusha beacons on same poles not recorded in the database.
CENTRE ST	3	3	0	1	1 x 40W LED recorded in the database but 1 x 107W LED located in the field.
ORMOND ST	14	14	0	1	1 x 27W LED recorded in the database but estimated 1 x 80W LED located in the field.
PINFOLD RD	1	1	0	1	1 x 27W LED recorded in the database but 1 x 70W HPS located in the field.

Street	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
SEPTIMUS STREET	4	4	0	4	4 x 27W LED recorded in the database but 4 x 22W LED located in the field.
SIMPSON ST	3	3	0	3	3 x 27W LED recorded in the database but 3 x 22W LED located in the field.
SOWRY RD	13	11	-1	0	2 x 27W LED recorded in the database but not located in the field.
STATION RD	1	0	-1	0	1 x 27W LED recorded in the database but not located in the field.
STATION ST (W)	5	6	+1	0	1 x 27W LED located in the field but not recorded in the database.
Grand Total	166	166	6 (+3, -3)	15	

The audit found three additional lights in the field of the 166 items of load sampled. This is recorded a non-compliance.

As reported in the previous audits, Tararua Alliance believed some under verandah lights in Pahiatua were unmetered but not recorded in the database, and a recommendation was raised to check the lights and update the database as necessary. Work is currently underway to confirm if the Under Verandah lights are required by each shop, and if they are not required, they will be disconnected. If lights are required, they will be replaced by new Under Verandah lights to be installed and recorded in the database.

The accuracy of the database is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description	
Audit Ref: 2.5 With: Clause 11(2A) of Schedule 15.3 From: 01-Sep-22 To: 31-Dec-22	Three additional lights in the field of the 166 items of load sampled. 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 are rated as strong as the processes in place will ensure that the data is recorded correctly most of the time. The impact is assessed to be low due to the small number of additional lights found.	
Actions taken to resolve the issue		Completion date
We will advise Tararua DC to update the database for the three lights. We will follow up with Tararua DC to confirm how the investigation into the under-verandah lights is progressing.		March 2023
		Remedial action status
		Identified

Preventative actions taken to ensure no further issues will occur	Completion date	
Tararua DC are aware of the need to maintain database accuracy and the positive outcomes for both billing and compliance.	Ongoing.	

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUMML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

The RAMM database functionality achieves compliance with the code.

Audit outcome

Compliant

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUMML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database.*

Audit observation

The database was checked for audit trails.

Audit commentary

RAMM records audit trail information of changes made.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

A database extract was provided, and I assessed the accuracy of this by using the DUML Statistical Sampling Guideline. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Tararua District Council streetlights
Strata	The database contains the TDC items of load for DUML ICPs in the Tararua region. The processes for the management of all TDC items of load are the same, but I decided to place the items of load into three strata: <ul style="list-style-type: none"> • Dannevirke, • Woodville, Rural, Herbertville, and • Paihiatua.
Area units	I created a pivot table of the roads, and I used a random number generator in a spreadsheet to select a total of 31 sub-units.
Total items of load	166 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database or in the case of LED lights against the LED light specification.

The change management process and timeliness of database updates was evaluated.

Audit commentary

Field audit findings

A field audit was conducted of a statistical sample of 166 items of load. The “database auditing tool” was used to analyse the results, which are shown in the table below.

Result	Percentage	Comments
The point estimate of R	105.2	Wattage from survey is higher than the database wattage by 5.2%
R _L	94	With a 95% level of confidence, it can be concluded that the error could be between -6.0% and +20.7%
R _H	120.7	

These results were categorised in accordance with the “Distributed Unmetered Load Statistical Sampling Audit Guideline”, effective from 1 February 2019 and the table below shows that Scenario B (detailed below) applies.

The conclusion from Scenario B is that the database has poor accuracy demonstrated with statistical significance. The true wattage (installed in the field) could be between 6.0% lower and 20.7% higher than the wattage recorded in the DUMML database. Non-compliance is recorded because the potential error is greater than 5.0%.

- In absolute terms the installed capacity is estimated to be 2 kW higher than the database indicates.
- There is a 95% level of confidence that the installed capacity is between 3 kW lower and 9 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 9,700 kWh higher than the DUMML database indicates.

There is a 95% level of confidence that the annual consumption is between 11,300 kWh lower and 38,600 kWh p.a. higher than the database indicates

Scenario	Description
A - Good accuracy, good precision	This scenario applies if: (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 The conclusion from this scenario is that: (a) the best available estimate indicates that the database is accurate within +/- 5 %; and (b) this is the best outcome.
B - Poor accuracy, demonstrated with statistical significance	This scenario applies if: (a) the point estimate of R is less than 0.95 or greater than 1.05 (b) as a result, either R_L is less than 0.95 or R_H is greater than 1.05. There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level
C - Poor precision	This scenario applies if: (a) the point estimate of R is between 0.95 and 1.05 (b) R_L is less than 0.95 and/or R_H is greater than 1.05 The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %

Light description and capacity accuracy

All items of load have a lamp model, lamp wattage or gear wattage recorded to describe the load present.

I was unable to confirm the wattage of four models of LED lamps due to incomplete lamp model descriptions being populated or the light specifications being unable to be reviewed before the audit is due. A recommendation is recorded in **section 2.4** for TDC to amend their lamp model descriptions to include the full lamp make and model descriptions to enable accurate determination of lamp wattages.

The remaining lamp and gear wattages were compared to the expected values, and I found all items of load that had gear wattages did match the expected values.

Change management process finding.

New connection, fault, maintenance, and upgrade work is completed by Scanpower, Centralines and Powerco (directly and also via subcontractor CJ Contracting). For maintenance work a CRM is received from the council, it is assigned to the supervisor at Tararua Alliance who allocates the work to appropriate contractor, field work is completed, and the ‘as built’ form is returned to the assets team to update in RAMM manually. There are only a small number of jobs annually. There have not been any new subdivisions in the area in recent years.

The RAMM database records an installation date. The date of installation recorded on the ‘as built’ form is used as the liven date.

However a number of the exceptions identified during the field audit were for works completed within the last 12 months indicating the process to update the database using the ‘as built’ form returned from the field is not consistent. I recommend that the process to update the database one field work is completed is reviewed to consider electronic data capture on site that includes photos to support the information provided.

Database Accuracy	Review the process to update the database one field work is completed is reviewed to consider electronic data capture on site that includes photos to support the information provided.	We will highly recommend to Tararua DC that they implement this recommendation.	Identified
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Prior to December 2022 NZTA lights were recorded in the database and were being maintained by TDC and these were included in the monthly trader report to Mercury. These NZTA lights were also recorded in the NZTA Lower North Island database resulting in the duplicate reconciliation and submission of this load. The NZTA lights were removed from this database in December 2022 and revisions of the October and November 2022 database extracts were provided to Mercury to enable wash up revisions of this load to occur. These revisions have been scheduled by Mercury based on this updated information.

Outage patrols are not completed; any issues are identified reactively through the TDC or Scanpower, and there is not a lot of activity in this area. The majority of lights are now LED, with only 39 sodium lights remaining in the database.

Festive lights

As reported in the previous audit and detailed in **section 3.1**, there is festive lighting used in Woodville and Dannevirke. This is put up by the Community boards around Christmas, and TDC instruct Tararua Alliance to temporarily install these lights in December and to remove these lights in January each year. TDC were able to confirm that the lights were fitted on 14 and 15 December 2022 and then removed on 24 and 25 January 2023. The festive lights are not recorded in the database and there is no process to notify Mercury when these festive lights are operating. The absence of a process to record these festive lights within the database and also notify Mercury of these temporary lights is recorded as non-compliance below and in **sections 2.1** and **3.2**.

There are also festive lights in Eketahuna that are on the NZTA poles, these are to be investigated to determine if they are in use and when they are in use. A recommendation is repeated in below regarding the need to investigate the operation of the Eketahuna festive lights.

Recommendation	Description	Audited party comment	Remedial Action
Database Accuracy	Investigate and determine if the festive lights in Eketahuna that are attached to the NZTA poles are in use, and if so when are they used.	We will liaise with Tararua DC on this.	Identified

Private lights

Tararua Alliance is not aware of any private unmetered lights.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Sep-22 To: 31-Dec-22	Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum. Festive lighting in Woodville and Dannevirke are not recorded in the database. Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement. The impact is assessed to be low based on small volume impact to submission.		
Actions taken to resolve the issue		Completion date	Remedial action status
We will advise Tararua DC of the required fixes identified in the audit and follow up to get updates on progress.		March 2023	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Tararua DC are aware of the need to maintain database accuracy and the positive outcomes for both billing and compliance.		Ongoing	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- volume information for the DUML is being calculated accurately
- profiles for DUML have been correctly applied.

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag, and
- checking the database extract combined with the on hours against the submitted figure to confirm accuracy.

Audit commentary

Mercury reconciles this DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from an extract provided each month by Tararua Alliance. On and off times are derived from a data logger.

I recalculated the submissions for December 2022 for the four ICPs associated with the database using the data logger and database information and found the calculation was correct.

The field audit against the database was assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum. This is detailed in **section 3.1**.

As reported in the previous audit and detailed in **section 3.1**, there is festive lighting used in Woodville and Dannevirke. This is put up by the Community boards around Christmas, and TDC instruct Tararua Alliance to temporarily install these lights in December and to remove these lights in January each year. TDC were able to confirm that the lights were fitted on 14 & 15 December 2022 and then removed on 24 & 25 January 2023. The festive lights are not recorded in the database and there is no process to notify Mercury when these festive lights are operating. The absence of a process to record these festive lights within the database and also notify Mercury of these temporary lights is recorded as non-compliance below and in **sections 2.1 and 3.1**.

There are also festive lights in Eketahuna that are on the NZTA poles, these are to be investigated to determine if they are in use and when they are in use. A recommendation is recorded in **section 3.1** regarding the need to investigate the operation of the Eketahuna festive lights.

Prior to December 2022 NZTA lights were recorded in the database and were being maintained by TDC and these were included in the monthly trader report to Mercury. These NZTA lights were also recorded in the NZTA Lower North Island database resulting in the duplicate reconciliation and submission of this load. The NZTA lights were removed from this database in December 2022 and revisions of the October and November 2022 database extracts were provided to Mercury to enable wash up revisions of this load to occur. These revisions have been scheduled by Mercury based on this updated information.

On 18 June 2019, the Electricity Authority issued a memo confirming that the code requirement to calculate the correct monthly load must:

- take into account when each item of load was physically installed or removed, and
- wash up volumes must take into account where historical corrections have been made to the DUML load and volumes.

The current monthly report is provided as a snapshot and this practice is non-compliant. When a wattage is changed in the database due to a physical change or a correction, only the record present at the time the report is run is recorded, not the historical information showing dates of changes.

Mercury completes revision submissions where corrections are required and has not yet updated their processes to be compliant with the Authority's memo.

Audit outcome

Non-compliant

Non-compliance	Description	
<p>Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c)</p> <p>From: 01-Sep-22 To: 31-Dec-22</p>	<p>Database assessed as having poor accuracy therefore the potential error is greater than 5.0% resulting in an estimated under submission of 9,700 kWh per annum.</p> <p>Festive lighting in Woodville, Eketahuna and Dannevirke not recorded in the database.</p> <p>The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.</p> <p>Potential impact: Low Actual impact: Low Audit history: Multiple times Controls: Moderate Breach risk rating: 2</p>	
Audit risk rating	Rationale for audit risk rating	
Low	<p>The controls are recorded as moderate because they mitigate risk most of the time but there is room for improvement.</p> <p>The impact is assessed to be low based on small volume impact to submission.</p>	
Actions taken to resolve the issue	Completion date	Remedial action status
We will advise Tararua DC of the required fixes identified in the audit and follow up to get updates on progress.	March 2023	Identified
Preventative actions taken to ensure no further issues will occur	Completion date	
Tararua DC are aware of the need to maintain database accuracy and the positive outcomes for both billing and compliance.	Ongoing	

CONCLUSION

Streetlight load is determined by wattages held within TDC's RAMM database, which is managed by Tararua Alliance and TDC. New connection, fault, maintenance, and upgrade work is completed by Scanpower, CJ Contracting, Centralines and Powerco.

Mercury became the trader responsible for this DUML database from October 2022 and reconciles the TDC DUML load using the HHR profile in accordance with exemption 233. Wattages are derived from the monthly database extracts provided by Tararua Alliance, and on and off times are derived from data logger information.

Prior to December 2022 NZTA lights were recorded in the database and were being maintained by TDC and these were included in the monthly trader report to Mercury. These NZTA lights were also recorded in the NZTA Lower North Island database resulting in the duplicate reconciliation and submission of this load. The NZTA lights were removed from this database in December 2022 and revisions of the October and November 2022 database extracts were provided to Mercury to enable wash up revisions of this load to occur. These revisions have been scheduled by Mercury based on this updated information.

The field audit was undertaken of a statistical sample of 166 items of load on 2nd February 2023 and confirmed that the database accuracy is not within the allowable +/-5% threshold. Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	105.2	Wattage from survey is higher than the database wattage by 2.9%
R _L	94	With a 95% level of confidence, it can be concluded that the error could be between -3.3% and +14.2%
R _H	120.7	

In absolute terms, total annual consumption is estimated to be 9,700 kWh higher than the DUML database indicates.

The audit found four non-compliances and makes four recommendations. The future risk rating of 7 indicates that the next audit be completed in eighteen months. I have considered this in conjunction with Mercury Energy's responses and agree with this recommendation.

PARTICIPANT RESPONSE