ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

NEW PLYMOUTH DISTRICT COUNCIL AND CONTACT ENERGY LIMITED

NZBN: 9429038549977

Prepared by: Tara Gannon

Date audit commenced: 8 October 2022

Date audit report completed: 16 November 2022

Audit report due date: 1 December 2022

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EXECUTIVE SUMMARY

This audit of the **New Plymouth District Council (NPDC)** DUML database and processes was conducted at the request of **Contact Energy Limited (Contact)** 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. HDC is supplied under Contact's CTCS participant code, and **Simply Energy** manages registry, switching, and submission data for CTCS as Contact's agent.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1. The scope of the audit encompasses the collection, security, and accuracy of the data, including the preparation of submission information.

Streetlight load is determined by wattages held within NPDC's RAMM database.

New connection, fault, maintenance, and upgrade work is completed by NPE Tech. Staff update the database from the field using Pocket RAMM, and NPE Tech administrative staff complete some data entry and validation. Power Solutions downloads the database information monthly, and validates the database for completeness and reasonableness including checks that lamp wattages, gear wattages and ICP numbers are populated. Power Solutions prepares a monthly summary report for Simply Energy which includes the quantity of items of load, lamp wattage, gear wattage and total wattage for each ICP. The summary report specifies whether festive lights are connected, and the festive light wattage if applicable.

Simply Energy reconciles the DUML load using the DST profile as Contact's agent, and calculates the submission volumes based on the monthly reports from Power Solutions and data logger on and off times.

A field audit was conducted of a statistical sample of 375 items of load and results were analysed using the "database auditing tool". The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.3% lower and 2.8% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than ±5.0%.

Analysis of the whole database found that lamp and gear wattages were consistent with expected values for the lamp models listed, and only one lamp had a missing gear wattage (which was expected to be zero).

The future risk rating of 15 indicates that the next audit be completed in 12 months, and I agree with this recommendation.

The matters raised are detailed 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	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One item of load had a blank gear wattage, when zero was expected. Five lights were assigned to incorrect NSPs and corrected during the audit. Submission was overstated for ICPs 1000542569PC16D and 1000542572PC514 due to a calculation error in the wattage reports provided by Power Solutions for February 2022 to August 2022. Festive lights were included after they were disconnected totalling 2200 W (estimated over submission of 4,698.1 kWh over six months based on 4,271 hours per annum) and revised submission information will be washed up. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	One item of load had a blank gear wattage, when zero was expected. The gear wattage was updated to zero during the audit.	Strong	Low	1	Cleared
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three 21W LEDs in Tauranga Place connected to pole numbers H224, H225 and H226 were not recorded in the database.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One blank gear wattage which should have been populated with zero. Five lights were assigned to incorrect NSPs and corrected during the audit.	Moderate	Medium	4	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One item of load had a blank gear wattage, when zero was expected. Five lights were assigned to incorrect NSPs and corrected during the audit. Submission was overstated for ICPs 1000542569PC16D and 1000542572PC514 due to a calculation error in the wattage reports provided by Power Solutions for February 2022 to August 2022. Festive lights were included after they were disconnected totalling 2200 W (estimated over submission of 4,698.1 kWh over six months based on 4,271 hours per annum) and revised submission information will be washed up. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Moderate	Medium	4	Identified
Future Risk Rating						15	

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	3.1	Confirm the correct lamp and gear wattages for light model ITALO 2 STAN1 4.5-7M and update the database as necessary.

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

There are no exemptions in place relevant to the scope of this audit.

1.2. Persons involved in this audit

Auditor:

Tara Gannon

Veritek Limited

Electricity Authority Approved Auditor

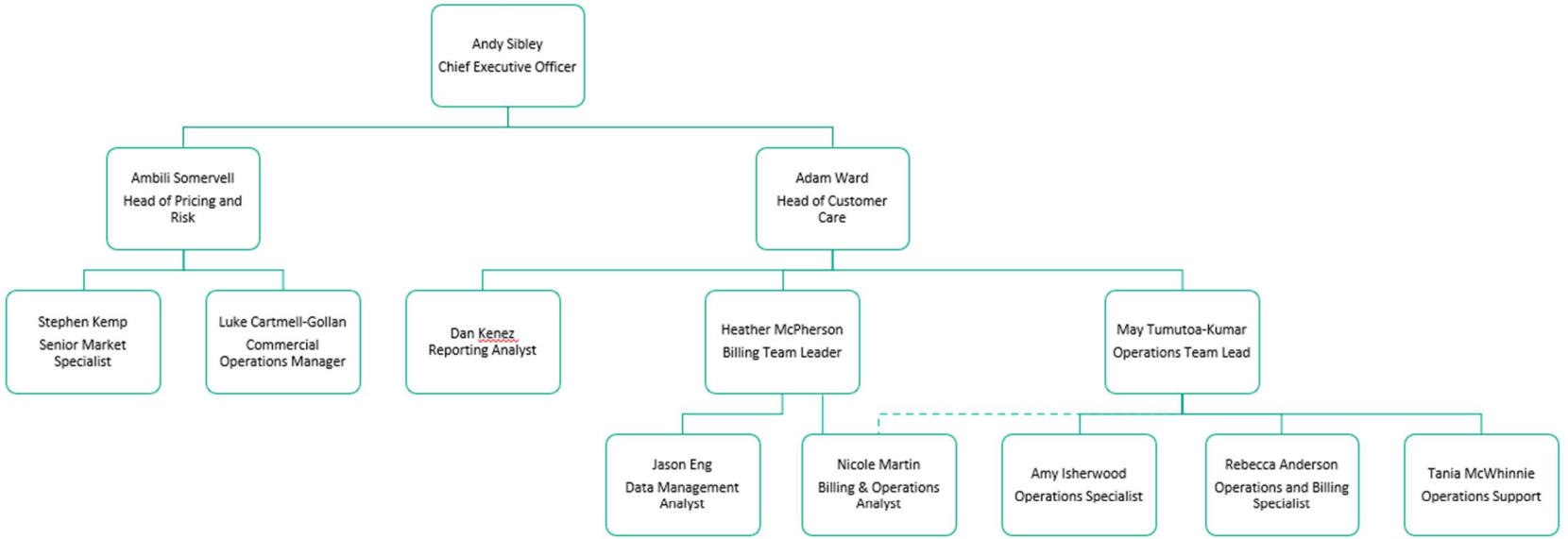
Other personnel assisting in this audit were:

Name	Title	Company
Dallas Tui	White Label Account Specialist	Simply Energy
Luke Cartmell-Gollan	Commercial Operations Manager	Simply Energy
Edwin de Beun	Projects Engineer Electrical Inspector	Power Solutions Ltd
Kevin Munisamy	Senior Contracts Manager Transportation	New Plymouth District Council

1.3. Structure of Organisation

Simply Energy
Compliance Organization Chart

1 Oct 2022



Simply Energy
powered by contact.

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

All load is recorded against an ICP in the NPDC RAMM database.

ICP Number	Description	ICP status	NSP	Profile	Number of items of load	Database wattage (watts)
0008807417WMB53	STREETLIGHTS NEW PLYMOUTH DISTRICT COUNCIL TONGAPORUTU	2,0	HTI0331	DST	6	126
1000542569PC16D	NPDC ROADING SL - TARAHUA ROAD	2,0	CST0331	DST	6,836	230,101.3
1000542572PC514	NPDC ROADING SL - WAITARA ROAD	2,0	HUI0331	DST	2,003	59,642
1000542575PC8DE	NPDC ROADING SL - EAST ROAD	2,0	SFD0331	DST	3	63
Total					**8,848**	**289,554.3**

1.7. Authorisation Received

All information was provided directly by Simply Energy, Power Solutions, or NPDC.

1.8. Scope of Audit

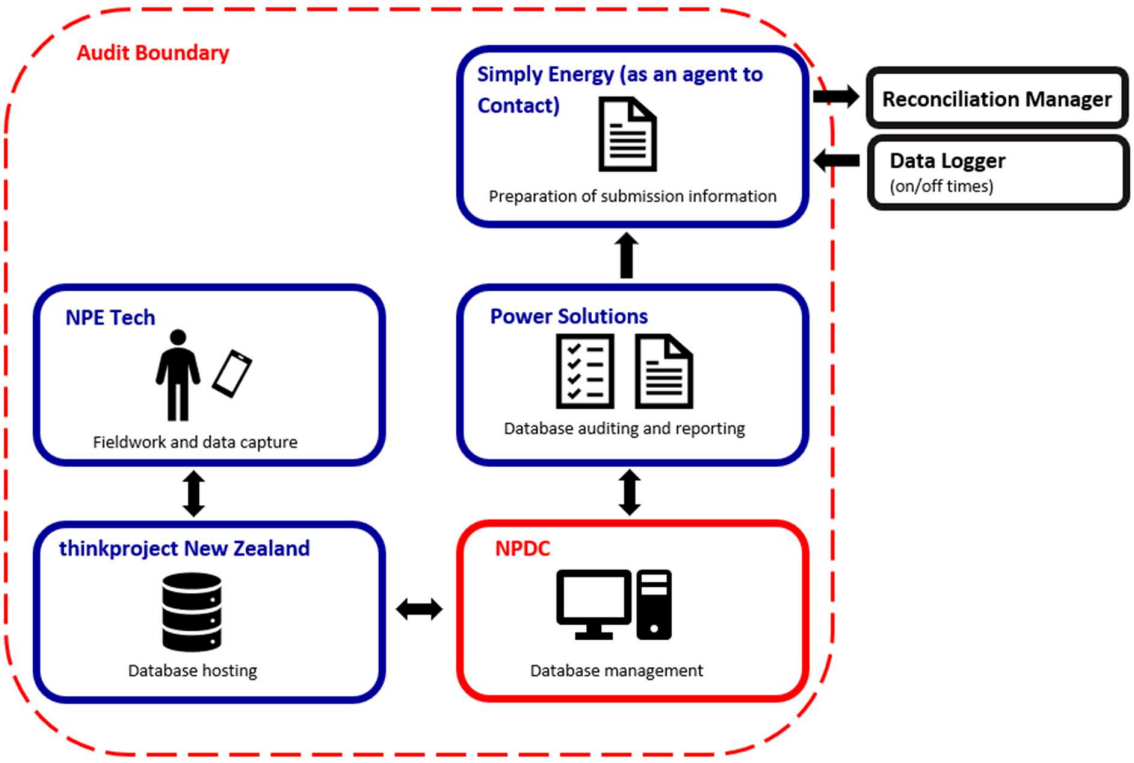
This audit of the NPDC DUML database and processes was conducted at the request of Contact in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied. The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1.

Streetlight load is determined by wattages held within NPDC's RAMM database. New connection, fault, maintenance, and upgrade work is completed by NPE Tech. Staff update the database from the field using Pocket RAMM, and NPE Tech administrative staff complete some data entry and validation.

Power Solutions downloads the database information monthly, and validates the database for completeness and reasonableness including checks that lamp wattages, gear wattages and ICP numbers are populated. Power Solutions prepares a monthly summary report for Simply Energy which includes the quantity of items of load, lamp wattage, gear wattage and total wattage for each ICP. The summary report specifies whether festive lights are connected, and the festive light wattage if applicable.

Simply Energy reconciles the DUML load using the DST profile as Contact's agent, and calculates the submission volumes based on the monthly reports from Power Solutions and data logger on and off times.

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



The field audit was undertaken of a statistical sample of 375 items of load on 8 and 14 October 2022.

1.9. Summary of previous audit

The previous audit of this database was undertaken by Steve Woods in November 2021. The summary table below shows the statuses of the non-compliances, recommendation and issue 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	The field audit found that in absolute terms, total annual consumption is estimated to be 20,800 kWh lower than the DUML database indicates. Three lights recorded against the incorrect NSP. Nine incorrect gear wattages. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing
All load recorded in database	2.5	11(2A) of Schedule 15.3	For the sample of lights checked, there were eight additional lights found in the field.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	The field audit found that in absolute terms, total annual consumption is estimated to be 20,800 kWh lower than the DUML database indicates. Nine incorrect gear wattages. Three lights recorded against the incorrect ICP.	Still existing
Volume information accuracy	3.2	15.2 and 15.37B(c)	The field audit found that in absolute terms, total annual consumption is estimated to be 20,800 kWh lower than the DUML database indicates. Three lights recorded against the incorrect NSP. Nine incorrect gear wattages. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot.	Still existing

Table of Recommendations

Subject	Section	Recommendation	Status
Database accuracy	3.1	Confirm the correct lamp and gear wattages for the potential discrepancies described in **section 3.1**.	Adopted

Table of Issues

Subject	Section	Recommendation	Status
Private lights	3.1	62 private lights are not included in submission calculations. It is not clear who is responsible and how this matter should be resolved. The under submission is approx. 16,000 kWh per annum.	No response received from the Authority

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

Contact 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 within the required timeframe.

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

Simply Energy reconciles this DUML load using the DST profile.

- Monthly wattage reports are provided by Power Solutions. The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%.
- Data logger information and on and off times are derived from data logger information.

I compared the submission information for August 2022 to the monthly wattage report and data logger on hours and confirmed the calculation was correct. There was an error in the submission information for ICPs 1000542569PC16D (771.22 kWh over submitted) and 1000542572PC514 (176.75 kWh over submitted) due to a calculation error in the wattage report provided by Power Solutions for August 2022. Power Solutions' monthly wattage report contains lamp, gear, and total wattage by ICP and owner in one table, and total wattage by ICP in a separate table (labelled "data to Simply Energy"). It is intended that the total wattage by ICP will include the festive light wattages where they are connected, and this is the value used to calculate submissions. Unfortunately there was an incorrect cell reference in the monthly wattage report spreadsheet causing festive lights to be added to the loads for ICPs 1000542569PC16D (1,790 W) and 1000542572PC514 (410 W) after they were disconnected in January 2022. The error in the spreadsheet was corrected as soon as it was discovered during the audit, and overstated consumption will be corrected through the revision process for February 2022 to August 2022.

Examination of the database found:

Issue	Estimated volume information impact (annual kWh)
One item of load had a blank gear wattage, when zero was expected.	No impact on submission
Five lights were assigned to incorrect NSPs and corrected during the audit. The affected NSPs are all within one balancing area.	No impact on submission

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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.

As reported in the last audit, 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. Simply Energy completes revision submissions where corrections are required. Simply Energy is not receiving daily capacity values to enable compliance to be achieved with the requirement outlined in the Authority's memo.

The RAMM database records an installation date, which typically records the livening date for the light. There is no separate livening date. Change dates are automatically generated by RAMM when records change. Where a change is entered using Pocket RAMM at the time of the change, this date will reflect the correct date on which the change occurred, however if a change or correction is processed by NPE Tech administration staff at a later date, the change date may be incorrect.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Feb-22 To: 31-Aug-22	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One item of load had a blank gear wattage, when zero was expected. Five lights were assigned to incorrect NSPs and corrected during the audit. Submission was overstated for ICPs 1000542569PC16D and 1000542572PC514 due to a calculation error in the wattage reports provided by Power Solutions for February 2022 to August 2022. Festive lights were included after they were disconnected totalling 2200 W (estimated over submission of 4,698.1 kWh over six months based on 4,271 hours per annum) and revised submission information will be washed up. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Multiple times 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 most of the time but there is room for improvement. The cell reference in the monthly report has been corrected. Due to the low precision for the field audit sample I have estimated the impact of the non-compliance to be medium: • in absolute terms, total annual consumption is estimated to be 1,400 kWh higher than the DUML database indicates, and • there is a 95% level of confidence that the annual consumption is between 77,300 kWh lower and 34,800 kWh p.a. higher than the database indicates.

Actions taken to resolve the issue	Completion date	Remedial action status
NPDC database corrected for 5 lights	11.11.2022	Identified
Revised data for festive lights has been sent	23.11.2022	
Please note NPDC are reviewing how they can adjust their reporting methodology that will allow a daily capacity value to be reported/reconciled	30.11.2023	
NPDC are reviewing spec sheets from suppliers & will communicate directly with Veritek or update their database	18.11.2022	
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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

The analysis found that all items of load had valid ICP numbers recorded against them, except:

ICP group	Count of items	Total wattage	Comment
NZTA ICP	1,106	171,278.5	These lights are the responsibility of NZTA, and the energy is reconciled and billed under another agreement and captured in an NZTA database. They are listed in the database for completeness.
Private-Carringt	66	4,318.6	These lights are privately owned and not the responsibility of NPDC. They are recorded in the database for completeness so that if a fault is logged for a private light the caller can be advised that the end user needs to arrange the repair. It is expected that private lights will be metered through the customer's installation, or the network should create standard or shared unmetered load as appropriate. No new private lights have been identified during the audit period. Where a new private light is identified, NPE Tech has been instructed to advise Simply Energy who will in turn advise
Private-Huirangi	10	466	

ICP group	Count of items	Total wattage	Comment
			the network so that they can create standard unmetered load and liaise with the retailer for the ICP that the unmetered load is attached to. Once responsibility for the unmetered load is transferred, Simply Energy will provide permission for the existing ICP number to be updated to Private-Carringt or Private-Huirangi in the database as appropriate.
Under-Veranda	754	43,791.5	These lights are all on metered circuits and are recorded in the database for completeness.

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 DUML database must contain the location of each DUML 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 road names, house numbers, pole numbers and GPS coordinates.

8,663 (97.9%) of the 8,847 lamps connected to settled ICPs have valid GPS coordinates recorded. The other 185 lamps have street addresses and pole numbers recorded allowing them to be located.

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 DUML 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 for lamp make and model, lamp wattage and gear wattage.

All items of load connected to settled ICPs have a valid lamp model and a non-zero lamp wattage recorded. One item of load connected to a settled ICP had a blank gear wattage which was corrected to zero during the audit.

ICP group	Lamp model	Pole ID	Quantity	Recorded gear wattage	Expected gear wattage	Wattage difference
1000542572PC514	13W LED	8773	1	Blank	0	0

The accuracy of the recorded wattages is discussed in **section 3.1**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 20-Sep-22 To: 20-Sep-22	One item of load had a blank gear wattage, when zero was expected. The gear wattage was updated to zero during the audit. Potential impact: None Actual impact: None Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are rated as strong and the impact as low because most lamp models had a gear wattage populated. There was no impact on total wattage or submission as the missing values were expected to be zero.

Actions taken to resolve the issue	Completion date	Remedial action status
NPDC database updated to zero wattage	18.11.2022	Cleared
Preventative actions taken to ensure no further issues will occur	**Completion date**	
NPDC to ensure gear wattage is correct		

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 375 items of load on 8 and 14 October 2022. The sample was selected from four strata, as follows:

1. road names A-Daw,
2. road names De-Leo,
3. road names Les-Pit, and
4. road names Ple-Z.

Audit commentary

The field audit discrepancies are summarised in the table below.

Street	Field count	Database count	Light count difference	Wattage recorded incorrectly	Comments
Road names De-Leo					
DOMETT STREET (SOUTH)	11	11	-	4	Four L76 LEDs (pole IDs 5831, 5832, 5833 and 11108) are recorded in the database as ITALO 1 STW 4.5-4M 75W.
LAWRY STREET	10	10	-	1	One L57 LED (pole ID 1464) is recorded in the database as I-Tron 19.5W.
Road names Les-Pit					
MARGARET PLACE	3	3	-	1	One L88 LED (pole ID 8217) is recorded in the database as ITALO 2 STAN1 4.5-7M 94W.
Road names Ple-Z					
TAURANGA PLACE	8	5	+3	-	Three 21W LEDs connected to pole numbers H224, H225 and H226 were not recorded in the database.
TE NGAERE PLACE	4	3	-1	-	Pole ID 2248 70W HPS (SON-I) was not located on the street.
TIVERTRON CRESCENT	12	11	-1	-	Pole ID 4099 had one 21W LED connected but was recorded with two 21W LEDs in the database.
WHITAKER STREET (EAST)	7	7	-	4	Four L76 LEDs were recorded as one ITALO 2 STAN1 4.5-6M 80W LED (pole ID 9345) and three ITALO 1 STAN1 4.7-4M 69.5W LEDs (pole IDs 11108 and 5210).
Total	**376**	**375**	**5(+3 -2)**	**10**	

Three lights were located in the field which were not recorded in the database at Tauranga Place. Database accuracy 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: 20-Sep-22 To: 14-Oct-22	Three 21W LEDs in Tauranga Place connected to pole numbers H224, H225 and H226 were not recorded in the database. 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	Controls are rated as moderate, the process in place has sufficient controls to ensure that all items of load are recorded in the database most of the time, but improvements are required to the new connection processes. The audit risk rating is assessed to be low because the impact on submission is 63W or 269 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Lights have been added to the database	18.11.2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	

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 DUML 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 change management process and the compliance of the database reporting provided to Simply Energy is detailed in **sections 3.1** and **3.2**.

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 DUML 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

The database has a complete audit trail.

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

Simply Energy's submissions are based on a monthly extract from the RAMM database. A RAMM database extract was provided for September 2022, 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	New Plymouth District Council streetlights
Strata	The database contains the NPDC items of load for the DUML ICPs in the New Plymouth Region. The processes for the management of all NPDC items of load are the same, but I decided to place the items of load into four strata: 5. Road names A-Daw, 6. Road names De-Leo, 7. Road names Les-Pit, and 8. Road names Ple-Z.
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 43 sub-units.
Total items of load	375 items of load were checked, making up 3% of the total database wattage.

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 375 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	100.1	Wattage from survey is higher than the database wattage by 0.1%
R_L	93.7	With a 95% level of confidence, it can be concluded that the error could be between -6.3% and +2.8%
R_H	102.8	

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

The conclusion from Scenario C is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.3% lower and 2.8% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than ±5.0%.

- In absolute terms the installed capacity is estimated to be 0 kW higher the database indicates.
- There is a 95% level of confidence that the installed capacity is between 18 kW lower to 8 kW higher than the database.
- In absolute terms, total annual consumption is estimated to be 1,400 kWh higher than the DUML database indicates.
- There is a 95% level of confidence that the annual consumption is between 77,300 kWh p.a. lower and 34,800 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

Lamp and gear 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 for items of load connected to DUML ICPs.

One item of load connected to a settled ICP had a blank gear wattage which was corrected to zero during the audit.

ICP group	Lamp model	Pole ID	Quantity	Recorded gear wattage	Expected gear wattage	Wattage difference
1000542572PC514	13W LED	8773	1	Blank	0	0

No incorrect lamp wattages were identified. The following lamp wattage was unable to be confirmed and I recommend that this are checked against specifications provided at the time the lamps were purchased, or updated to the current values for the lamp.

ICP group	Lamp model	Quantity	Recorded lamp wattage	April 2022 lamp wattage per Italo 2 specifications	Wattage difference
1000542572PC514	ITALO 2 STAN1 4.5-7M	130	94	84	1,300

Recommendation	Description	Audited party comment	Remedial action
Database Accuracy	Confirm the correct lamp and gear wattages for light model ITALO 2 STAN1 4.5-7M and update the database as necessary.	NPCD currently reviewing spec sheets from supplier & will update Veritek directly or update their database	Identified

ICP number accuracy

As discussed in **section 2.2** all items of load had valid ICP numbers recorded against them, except:

ICP group	Count of items	Total wattage	Comment
NZTA ICP	1,106	171,278.5	These lights are the responsibility of NZTA, and the energy is reconciled and billed under another agreement and captured in an NZTA database. They are listed in the database for completeness.

ICP group	Count of items	Total wattage	Comment
Private-Carringt	66	4,318.6	These lights are privately owned and not the responsibility of NPDC. They are recorded in the database for completeness so that if a fault is logged for a private light the caller can be advised that the end user needs to arrange the repair. It is expected that private lights will be metered through the customer's installation, or the network should create standard or shared unmetered load as appropriate. No new private lights have been identified during the audit period. Where a new private light is identified, NPE Tech has been instructed to advise Simply Energy who will in turn advise
Private-Huirangi	10	466	

ICP group	Count of items	Total wattage	Comment
			the network so that they can create standard unmetered load and liaise with the retailer for the ICP that the unmetered load is attached to. Once responsibility for the unmetered load is transferred, Simply Energy will provide permission for the existing ICP number to be updated to Private-Carringt or Private-Huirangi in the database as appropriate.
Under-Veranda	754	43,791.5	These lights are all on metered circuits and are recorded in the database for completeness.

I checked for streets with items of load connected to more than one settled ICP and NSP. For the following streets at least 50% of the lights were connected to one NSP, with the remaining lights connected to another NSP. There is no impact on submission because the NSPs belong to the same balancing area.

Street	CST0331	HUI0331	SFD0331	Total	Comment
HENWOOD ROAD	9	1		10	HUI0331 Pole ID 11039 updated to CST0331 during the audit.
NELSON STREET	1	21		22	CST0331 Pole ID 5722 updated to HUI0331 during the audit.
TARATA ROAD		2	2	4	Correct, as the lights are at opposite ends of a rural road.
WEST QUAY	2	51		53	CST0331 Pole ID 9373 x2 updated to HUI0331 during the audit.
WHAKAPAKI STREET	1	11		12	CST0331 Pole ID 10188 updated to HUI0331 during the audit.

Festive lights

Festive lights have been added to the RAMM database under ICPs 1000542569PC16D and 1000542572PC514, and are included in the database extract provided to Simply Energy when they are connected. Unfortunately there was an incorrect cell reference in the monthly wattage report spreadsheet causing festive lights to be added to the loads for ICPs 1000542569PC16D (1,790 W) and 1000542572PC514 (410 W) after they were disconnected in January 2022. The error in the spreadsheet was corrected as soon as it was discovered during the audit, and overstated consumption will be corrected through the revision process for February 2022 to August 2022.

Change management process findings

New connection, fault, maintenance, and upgrade work is completed by NPE Tech. Staff update the database from the field using Pocket RAMM, and NPE Tech administrative staff complete some data entry and validation. Power Solutions downloads the database information monthly, and validates the database for completeness and reasonableness including checks that lamp wattages, gear wattages and ICP numbers are populated.

The process for new connections remains unchanged. NPDC is only responsible once the subdivision is "vested" in council. As soon as the electrical certificate is provided and the subdivision is complete, NPDC's development engineers check the lights and then advise NPE Tech to update the database. Development engineers regularly check new developments to monitor compliance and progress, which

can help them to identify when streetlights are connected. In some cases, there may be a small delay between lights being connected and added to the database. NPDC notes that most subdivisions have less than 12 lights, and larger subdivisions are completed in stages, so the impact of any delays is minimal.

LED upgrades for NPDC lights have been completed.

Night outage patrols are conducted fortnightly for main roads, state highways and some local roads. Reliance is placed on the faults process to identify issues with other lights.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 20-Sep-22 To: 14-Oct-22	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One blank gear wattage which should have been populated with zero. Five lights were assigned to incorrect NSPs and corrected during the audit. Potential impact: Medium Actual impact: Medium Audit history: Multiple times 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 most of the time but there is room for improvement. Due to the low precision for the field audit sample I have estimated the impact of the non-compliance to be medium: • in absolute terms, total annual consumption is estimated to be 1,400 kWh higher than the DUML database indicates, and • there is a 95% level of confidence that the annual consumption is between 77,300 kWh lower and 34,800 kWh p.a. higher than the database indicates.

Actions taken to resolve the issue	Completion date	Remedial action status
Revised data for festive lights has been sent	23.11.2022	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	Comments on the other parts of the non-compliance are recorded in **section 2.1**.

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

Simply Energy reconciles this DUML load using the DST profile. The correct profile and submission type is recorded on the registry.

- Monthly wattage reports are provided by Power Solutions to Simply Energy. The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%.
- Data logger information and on and off times are derived from data logger information.

I compared the submission information for August 2022 to the monthly wattage report and data logger on hours and confirmed the calculation was correct. There was an error in the submission information for ICPs 1000542569PC16D (771.22 kWh over submitted) and 1000542572PC514 (176.75 kWh over submitted) due to a calculation error in the wattage report provided by Power Solutions for August 2022. Power Solutions' monthly wattage report contains lamp, gear, and total wattage by ICP and owner in one table, and total wattage by ICP in a separate table (labelled "data to Simply Energy"). It is intended that the total wattage by ICP will include the festive light wattages where they are connected, and this is the value used to calculate submissions. Unfortunately there was an incorrect cell reference in the monthly wattage report spreadsheet causing festive lights to be added to the loads for ICPs 1000542569PC16D (1,790 W) and 1000542572PC514 (410 W) after they were disconnected in January 2022. The error in the spreadsheet was corrected as soon as it was discovered during the audit, and overstated consumption will be corrected through the revision process for February 2022 to August 2022.

Examination of the database found:

Issue	Estimated volume information impact (annual kWh)
One item of load had a blank gear wattage, when zero was expected.	No impact on submission
Five lights were assigned to incorrect NSPs and corrected during the audit. The affected NSPs are all within one balancing area.	No impact on submission

On 18 June 2019, the Electricity Authority issued a memo clarifying the memo of 2012 that stated that a monthly snapshot was sufficient to calculate submission from, and confirmed 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.

As reported in the last audit, 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. Simply Energy completes revision submissions where corrections are required. Simply Energy is not receiving daily capacity values to enable compliance to be achieved with the requirement outlined in the Authority's memo.

The RAMM database records an installation date, which typically records the livening date for the light. There is no separate livening date. Change dates are automatically generated by RAMM when records change; but cannot be selected by the user. Where a change is entered using Pocket RAMM at the time of the change, this date will reflect the correct date on which the change occurred, however if a change or correction is processed by NPE Tech administration staff at a later date, the change date may be incorrect.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Feb-22 To: 31-Aug-22	The field audit found that the best available estimate is not precise enough to conclude that the database is accurate within ±5%. One item of load had a blank gear wattage, when zero was expected. Five lights were assigned to incorrect NSPs and corrected during the audit. Submission was overstated for ICPs 1000542569PC16D and 1000542572PC514 due to a calculation error in the wattage reports provided by Power Solutions for February 2022 to August 2022. Festive lights were included after they were disconnected totalling 2200 W (estimated over submission of 4,698.1 kWh over six months based on 4,271 hours per annum) and revised submission information will be washed up. The monthly database extract provided does not track changes at a daily basis and is provided as a snapshot. Potential impact: Medium Actual impact: Medium Audit history: Multiple times 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 most of the time but there is room for improvement. Due to the low precision for the field audit sample I have estimated the impact of the non-compliance to be medium: • in absolute terms, total annual consumption is estimated to be 1,400 kWh higher than the DUML database indicates, and • there is a 95% level of confidence that the annual consumption is between 77,300 kWh lower and 34,800 kWh p.a. higher than the database indicates.

Actions taken to resolve the issue	Completion date	Remedial action status
Revised data for festive lights has been sent	23.11.2022	Identified Comments on the other parts of the non-compliance are recorded in **section 2.1**.
Preventative actions taken to ensure no further issues will occur	**Completion date**	

CONCLUSION

Simply Energy reconciles the DUML load using the DST profile as Contact's agent, and calculates the submission volumes based on the monthly reports from Power Solutions and data logger on and off times.

A field audit was conducted of a statistical sample of 375 items of load and results were analysed using the "database auditing tool". The variability of the sample results across the strata means that the true wattage (installed in the field) could be between 6.3% lower and 2.8% higher than the wattage recorded in the DUML database. Non-compliance is recorded because the potential error is greater than ±5.0%.

Analysis of the whole database found that lamp and gear wattages were consistent with expected values for the lamp models listed, and only one lamp had a missing gear wattage (which was expected to be zero).

The future risk rating of 15 indicates that the next audit be completed in 12 months, and I agree with this recommendation.

PARTICIPANT RESPONSE

Simply Energy have reviewed the report and their comments are contained within its body.