ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

For

NZTA NORTHLAND DISTRIBUTED UNMETERED LOAD

GENESIS ENERGY

Prepared by: Rebecca Elliot

Date audit commenced: 3 December 2018

Date audit report completed: 13 September 2019

Audit report due date: 15 September 2019

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EXECUTIVE SUMMARY

This audit of the NZTA Northland Streetlight DUML database and processes was conducted at the request of **Genesis Energy Limited (Genesis)** 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.

The Northland NZTA DUML ICPs are managed in excel spreadsheets by Top Energy and a report is sent to Genesis in spreadsheet form each month. The data in the excel spreadsheets is incomplete and therefore Genesis use data received historically to calculate submission. NZTA have a RAMM database but this is not being used for submission purposes as the data needs to be updated. They have committed to undertaking a 100% field audit of the RAMM database so that Genesis can use this for submission going forward.

The field audit was undertaken of a statistical sample of 103 items of load from the database on 10th September 2019. The field audit found that the database is not confirmed as accurate with a 95% level of confidence. Contributing to this will be the 164 lights with no input wattage being recorded indicating a potential under submission of 117,675 kWh per annum if the current database were used for submission.

Comparison of the database extract and the volumes submitted by Genesis indicate potential under submission of 82,043.55 kWh per annum. This combined with the high level of inaccuracy found in the field indicate that potentially the volumes for this database are likely to be double the volume being submitted.

The future risk rating of 36 indicates that the next audit be completed in three months, but I recommend that the next audit period be in six months to allow NZTA to complete the 100% field audit so that RAMM can be used for submission. This audit found four non-compliances and makes no recommendations. 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	Database not used for submission resulting in a potential under submission of 82,043.55 kWh per annum. 164 items of load have the no recorded wattage recorded in the DUML database which would result in under submission of 117,675 kWh per annum if used for submission. 422 items of load have the incorrect ballast recorded in the DUML database which would result in under submission of 7,218 kWh per annum if used for submission. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	High	9	Identified
Description and capacity of load	2.4	11(2A) and (d) of Schedule 15.3	164 lights with no input wattage being recorded resulting in under submission of an estimated 117,675 kWh if the database were used for submission.	Weak	High	9	Identified

Subject	Section	Clause	Non-Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Database accuracy	3.1	15.2 and 15.37B(b)	Database is not confirmed as accurate with a 95% level of confidence. 422 items of permanent load have the incorrect ballast applied indicating over submission of 7,218 kWh per annum if it were used for submission. 164 lights with no input wattage being recorded resulting in under submission of an estimated 117,675 kWh if the database were used for submission.	Weak	High	9	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)	Database not used for submission resulting in a potential under submission of 82,043.55 kWh per annum. 164 items of load have the no recorded wattage recorded in the DUML database which would result in under submission of 117,675 kWh per annum if used for submission. 422 items of load have the incorrect ballast recorded in the DUML database which would result in under submission of 7,218 kWh per annum if used for submission. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Weak	High	9	Identified
Future Risk Rating						36	

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	Description	Recommendation
		Nil	

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

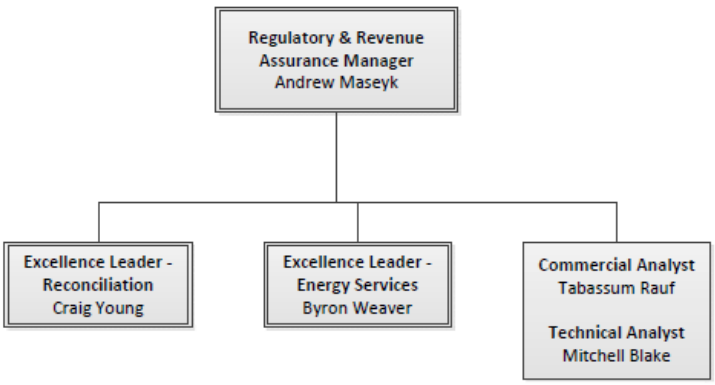
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Genesis provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Rebecca Elliot

Veritek Limited

Electricity Authority Approved Auditor

Supporting Auditor:

Brett Piskulic

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader - Reconciliation	Genesis Energy
Grace Hawken	Technical Specialist - Reconciliations Team	Genesis Energy
Esther Delamain	Business Analyst	Top Energy

1.4. Hardware and Software

The streetlight data is held in excel spreadsheets by Top Energy. These are backed up in accordance with standard industry procedures. Access to the spreadsheets is restricted by way of user log-in to the computer drive.

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)
0000912700TEF16	TRANSIT UNMETERED STREETLIGHTS	KOE1101	NST	2	344
0000004228TE76E	STREETLIGHT	KOE1101	NST	12	1,246
0000911600TE4F2	STREETLIGHT	KOE1101	NST	2	344
0000913800TE1B9	UNMETERED STREETLIGHTS	KOE1101	NST	432	51,986
0000913600TE7B2	STREETLIGHTS ON TE POLES	KOE1101	NST	142	19,660

The ballast values are included in the wattage totals.

1.7. Authorisation Received

All information was provided directly by Genesis and Top Energy.

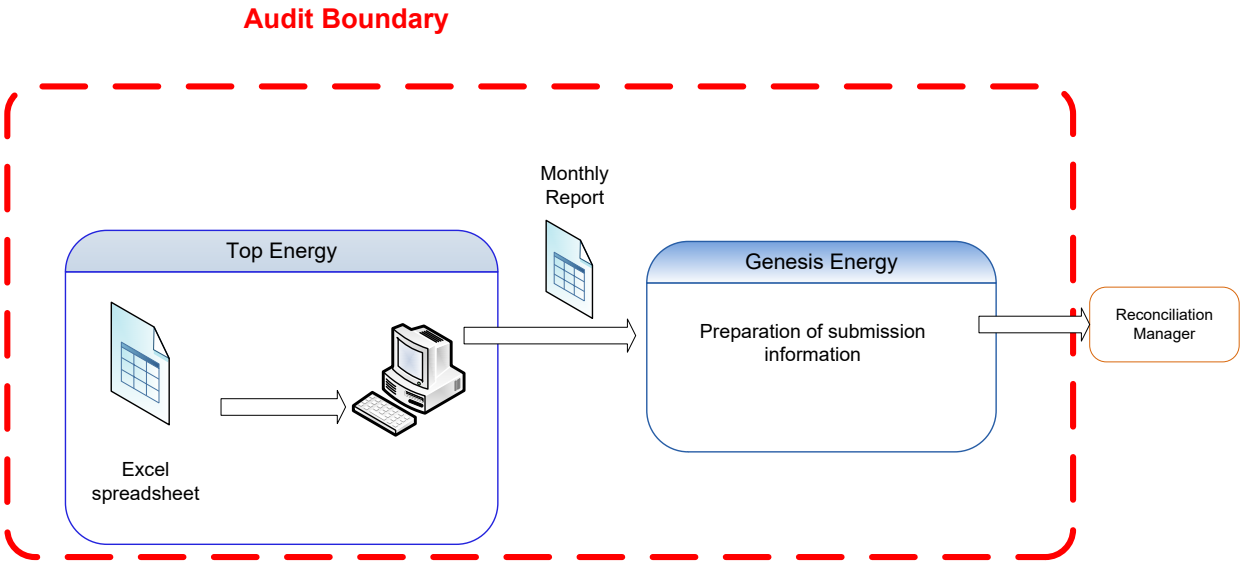
1.8. Scope of Audit

This audit of the NZTA Northland area DUML database and processes was conducted at the request of Genesis Energy (Genesis), 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.

The ICPs are each managed in an excel spreadsheet held by Top Energy and a copy of the spreadsheet is sent to Genesis in spreadsheet form each month.

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 103 items of load on 10th September 2019.

1.9. Summary of previous audit

The previous audit was completed in July 2018 by Rebecca Elliot of Veritek Limited. The current status of that audit's findings is detailed below:

Table of Non-Compliance

Subject	Section	Clause	Non-compliance	Status
DUML Audit	1.10	17.295F of part 17	Audit not completed within 12 month of Part 16A coming into effect.	Cleared
Deriving submission information	2.1	11(1) of Schedule 15.3	Net estimated under submission of 164,688 kWh per annum.	Still existing
Description and capacity of load	2.4	Clause 11(2)(c) and (d) of Schedule 15.3	164 lights with no input wattage being recorded resulting in under submission of an estimated 100,219 kWh.	Still existing
Database accuracy	3.1	15.2 and 15.37B(b)	413 items of load with incorrect ballasts being applied resulting in over submission of an estimated 7,120 kWh per annum. The field data was 99.4% of the database data indicating over submission of 1,849 kWh per annum.	Still existing
Volume information accuracy	3.2	15.2 and 15.37(c)	Net estimated under submission of 164,688 kWh per annum.	Still existing

Table of Recommendations

Subject	Section	Recommendation for Improvement	Status
		Nil	

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

Genesis 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.

Audit commentary

Genesis reconciles this DUML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on historic data recorded received some years ago. Top Energy do send a monthly report but the data is not complete (as detailed below and in the following sections of this report) and therefore this data is not used. NZTA have a RAMM database but this is not being used for submission purposes as the data needs to be updated. They have committed to undertaking a 100% field audit of the RAMM database so that Genesis can use this for submission going forward.

I checked the August 2019 extract provided by Top Energy against the submission totals supplied by Genesis and found the following variances:

ICP	Fittings number from GENE registry details for July submission	Fittings number from database extract	Differences	kWh value submitted	Calculated kWh value from database	Differences
0000912700TEF16	6	2	-4	413.33	150.04	-263.29
0000004228TE76E	3	12	9	377.17	543.46	166.29
0000911600TE4F2	3	2	-1	224.23	150.04	-74.19
0000913800TE1B9	220	432	212	16,238.83	22,674.21	6,435.38
0000913600TE7B2	113	142	29	8,002.13	8,574.91	572.78
				Total kWh variance		6,836.96

The incorrect submission calculations will be resulting in an estimated annual under submission of 82,043.55 kWh per annum.

The database extract is provided by Top Energy and is not used for submission. Specific issues are:

- 164 lights in the database with no input wattage recorded which would equate to an estimated under submission at 117,675 kWh per annum if the database were being used for submission; and
- 422 lamps had a lamp ballast discrepancy when compared to the standardised wattage table which would equate to an estimated over submission of 7,218 kWh per annum (based on an estimated annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if the database were being used for submission.

The database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**.

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 data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 15-Dec-18 To: 30-Aug-19	Database not used for submission resulting in a potential under submission of 82,043.55 kWh per annum. 164 items of load have the no recorded wattage recorded in the DUML database which would result in under submission of 117,675 kWh per annum if used for submission. 422 items of load have the incorrect ballast recorded in the DUML database which would result in under submission of 7,218 kWh per annum if used for submission. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: High Audit history: Twice Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as weak as the database has a high level of inaccuracy indicating controls are weak, and it is not used for submission purposes. The impact is assessed to be high due to the kWh volumes.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis have reviewed a NZTA RAMM dataset and have identified key issues. NZTA Northland have committed to complete a 100% field audit by 31/12/2019. Genesis will be changing to NZTA data.	01/02/2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been working with NZTA Northland and will continue building the relationship and reviewing their dataset for exception identification.	01/02/2020	

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 the correct ICP was recorded against each item of load.

Audit commentary

All items of load had an ICP recorded but the database is not used for submission purposes.

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 has the nearest street address for all items of load.

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 lamp type and wattage capacity and included any ballast or gear wattage.

Audit commentary

The database contains the manufacturers rated wattage and the ballast wattage. There are 164 lights in the database with no input wattage recorded, this would result in under submission at 117,675 kWh, assuming these were all 150W HPS lights, if the database were used for submission.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 15-Dec-18 To: 30-Aug-19	164 lights with no input wattage being recorded resulting in under submission of an estimated 117,675 kWh if the database were used for submission. Potential impact: High Actual impact: High Audit history: Twice Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as weak as the database has not been updated to reflect the field information. The risk is high due to the impact on submission.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis have reviewed a NZTA RAMM dataset and have identified key issues. NZTA Northland have committed to complete a 100% field audit by 31/12/2019. Genesis will be changing to NZTA data.	01/02/2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been working with NZTA Northland and will continue building the relationship and reviewing their dataset for exception identification.	01/02/2020	

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 103 items of load on 10th September 2019.

Audit commentary

The field audit discrepancies found are detailed in the table below.

There were three lamps not found in the field that were recorded in the database.

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
Far North					
SH10 TAIPA	5	4	1	5	1 x 250W HPS not found in field
SH1 1 KAITAIA	7	7	0	7	4 x 150W HPS with no wattage recorded
NORTH ROAD KAITAIA	11	11	0	10	1 x 150W HPS with no wattage recorded
SOUTH ROAD KAITAIA	6	6	0	6	1 x 150W HPS with no wattage recorded
North East					
SH10 KERIKERI	3	3	0	3	1x 150W HPS with no wattage recorded
SH10 PUKETONA	4	4	0	4	1x 150W HPS with no wattage recorded
NEUMANN STREET KAWAKAWA	1	1	0	1	1x 150W HPS with no wattage recorded
SH10 WAIPAPA	13	13	0	13	1x 150W HPS with no wattage recorded
North West					
TAHEKE STREET KAIKOHE	8	8	0	8	1x 150W HPS with no wattage recorded
SH1 OHAEAWAI	14	13	1	14	4x 150W MH with no wattage recorded
SH12 OHAEAWAI	6	6	0	6	1x 100W HPS and 1x 150W MH AND

Street	Database count	Field count	Light count differences	Wattage recorded incorrectly	Comments
					2x 150W HPS with no wattage recorded
SH12 OUE	1	0	1	1	1x 250w HPS not found in field
SH12 WHIRINAKI	1	1	0	4	1x 150W HPS with no wattage recorded
Grand Total	**103**	**100**	**3**	**102**	

This clause relates to lights in the field that are not recorded in the database. The audit did not find any additional lights in the field.

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

Audit outcome

Compliant

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 database tracks additions and removals as required by this clause.

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

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 spreadsheet was checked for audit trails.

Audit commentary

Top Energy has demonstrated a complete audit trail of all additions and changes to the spreadsheet information.

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

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	NZTA Northland Streetlights
Strata	The database contains items of load on the Northland state highway network. The processes for the management of all NZTA items of load are the same, but I decided to place the items of load into three strata based on location as follows; 1. Far North 2. North East 3. North West
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 21 sub-units.
Total items of load	103 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority against the database.

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

Audit commentary

A statistical sample of 103 items of load found that the field data was 115.5% of the database data for the sample checked.

Result	Percentage	Comments
The point estimate of R	115.5%	Wattage from survey is higher than the database wattage by 1.6%
R_L	98.5%	With a 95% level of confidence it can be concluded that the error could be between -1.5% and +34.3%
R_H	134.3%	

These results were categorised in accordance with the "Distributed Unmetered Load Statistical Sampling Audit Guideline", effective from 01/02/19 and the table below shows that Scenario B (detailed below) applies.

The conclusion from Scenario B is that in statistical terms, the inaccuracy is statistically significant at the 95% level. The sample results across the strata means that the true wattage (installed in the field) could be between 2.5% lower and 34.3% 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 11.0 kW higher than the database indicates.

There is a 95% level of confidence that the installed capacity is between 1 kW lower to 25 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 48,800 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 4,600 kWh p.a. lower to 107,700 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 %

Lamp description and capacity accuracy

I checked the ballasts being applied and found that 422 lamps had a discrepancy when compared to the standardised wattage table. This is detailed in the table below:

Lamp Type	Database Total Wattage	EA Standardised Wattage	Variance	Database Quantity	Estimated Annual kWh effect on consumption
125w MV Lamp	142	136	+6	6	+154
250w MV Lamp	275	270	+5	1	+21
70w HPSV Lamp	90	83	+7	28	+837
150w HPSV Lamp	172	168	+4	363	+6,201
150w HPSV Lamp	156	168	+4	1	-51
250w HPSV Lamp	279	278	+1	21	+90
400w HPSV Lamp	434	438	-4	2	-34
Total estimated annual effect on submission					+7,218

The incorrect capacities will be resulting in an estimated over submission of 7,218 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if the database were being used for submission.

As detailed in **section 2.4**, there are 164 lights in the database with no input wattage recorded, this would result in under submission at 117,675 kWh, assuming these were all 150W HPS lights, if the database were used for submission.

Change management process findings

Updates of any changes made are provided to Top Energy by the contractors who complete the work.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 15-Dec-18 To: 30-Aug-19	Database is not confirmed as accurate with a 95% level of confidence. 422 items of permanent load have the incorrect ballast applied indicating over submission of 7,218 kWh per annum if it were used for submission. 164 lights with no input wattage being recorded resulting in under submission of an estimated 117,675 kWh if the database were used for submission. Potential impact: High Actual impact: High Audit history: Three times Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	The controls are rated as weak as the database has not been updated to reflect the field information. The impact is assessed to be high due to the kWh volumes.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis have reviewed a NZTA RAMM dataset and have identified key issues. NZTA Northland have committed to complete a 100% field audit by 31/12/2019. Genesis will be changing to NZTA data.	01/02/2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been working with NZTA Northland and will continue building the relationship and reviewing their dataset for exception identification.	01/02/2020	

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 all ICPs have the correct profile and submission flag; and
- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles this DUML load using the NST profile. The total volume submitted to the Reconciliation Manager is based on historic data received some years ago. Top Energy do send a monthly report, but the data is not complete (as detailed below and in other sections of this report) and therefore this data is not used. NZTA have a RAMM database but this is not being used for submission purposes as the data needs to be updated. They have committed to undertaking a 100% field audit of the RAMM database so that Genesis can use this for submission going forward.

I checked the August 2019 extract provided by Top Energy against the submission totals supplied by Genesis and found as detailed in **section 2.1**, the database extract did not match the volumes submitted by Genesis resulting in an under submission of 6,836.96 kWh for the month of July 2019. Annualised this will result in an estimated annual under submission of 82,043.55 kWh.

The database extract is provided by Top Energy and is not used for submission due to it not being complete and accurate. Specifically:

- 164 lights in the database with no input wattage recorded which would equate to an estimated under submission at 117,675 kWh per annum if the database were being used for submission; and
- 422 lamps had a lamp ballast discrepancy when compared to the standardised wattage table which would equate to an estimated over submission of 7,218 kWh per annum (based on annual burn hours of 4,271 as is detailed in the DUML database auditing tool) if the database were being used for submission.

The field audit against the database quantities found that the database is not confirmed as accurate with a 95% level of confidence. This is detailed in **section 3.1.**

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 data used is a snapshot and this practice is non-compliant.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 15-Dec-18 To: 30-Aug-19	Database not used for submission resulting in a potential under submission of 82,043.55 kWh per annum. 164 items of load have the no recorded wattage recorded in the DUML database which would result in under submission of 117,675 kWh per annum if used for submission. 422 items of load have the incorrect ballast recorded in the DUML database which would result in under submission of 7,218 kWh per annum if used for submission. Database is not confirmed as accurate with a 95% level of confidence as recorded in **section 3.1**. The data used for submission does not track changes at a daily basis and is provided as a snapshot. Potential impact: High Actual impact: High Audit history: Twice Controls: Weak Breach risk rating: 9
Audit risk rating	**Rationale for audit risk rating**
High	Controls are rated as weak as the database has a high level of inaccuracy indicating controls are weak and it is not used for submission purposes. The impact is assessed to be high due to the kWh volumes.

Actions taken to resolve the issue	Completion date	Remedial action status
Genesis have reviewed a NZTA RAMM dataset and have identified key issues. NZTA Northland have committed to complete a 100% field audit by 31/12/2019. Genesis will be changing to NZTA data.	01/02/2020	Identified
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis has been working with NZTA Northland and will continue building the relationship and reviewing their dataset for exception identification.	01/02/2020	

CONCLUSION

The Northland NZTA DUML ICPs are managed in excel spreadsheets by Top Energy and a report is sent to Genesis in spreadsheet form each month. The data in the excel spreadsheets is incomplete and therefore Genesis use data received historically to calculate submission. NZTA have a RAMM database but this is not being used for submission purposes as the data needs to be updated. They have committed to undertaking a 100% field audit of the RAMM database so that Genesis can use this for submission going forward.

The field audit was undertaken of a statistical sample of 103 items of load from the database on 10th September 2019. The field audit found that the database is not confirmed as accurate with a 95% level of confidence. Contributing to this will be the 164 lights with no input wattage being recorded indicating potential under submission of 117,675 kWh per annum.

Comparison of the database extract and the volumes submitted by Genesis indicate potential under submission of 82,043.55 kWh per annum. This combined with the high level of inaccuracy found in the field indicate that potentially the volumes for this database are likely to be double the volume being submitted.

The future risk rating of 37 indicates that the next audit be completed in three months but I recommend that the next audit period be in six months to allow Genesis to work with NZTA. This audit found four non-compliances and makes no recommendations.

PARTICIPANT RESPONSE

Genesis Energy have made progress and working with NZTA Northland in order to ascertain a accurate dataset. Genesis are aware that the current submission information may be incorrect due to Top Energy's data being out of date. NZTA have committed themselves to complete a field audit by 31/12/2019. Due to the current incompleteness of the NZTA data set it is Genesis decision to continue with the Top Energy data until Genesis Energy believes there is sufficient improvements made by NZTA. Genesis are seeking a 6 month review period in order to give time for the field audit to be completed.