

**ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT**

For

**GREY DISTRICT COUNCIL AND PIONEER
ENERGY LIMITED**

NZBN: 9429041903407

Prepared by: Rebecca Elliot

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Date audit report completed: 3 November 2021

Audit report due date: 1 Dec 2021

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EXECUTIVE SUMMARY

This audit of the **Grey District Council (GDC)** DUML database and processes was conducted at the request of **Pioneer Energy Limited (Pioneer)** 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, which became effective on 1 June 2017.

The Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Pioneer.

Pioneer reconciles this DUML load using the DST profile. The submission information is calculated and submitted by EMS on behalf of Pioneer. The on and off times are derived from data logger information.

I recalculated the submissions for July 2021 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	101.5	Wattage from the survey is higher than the database wattage by 1.5%
R _L	100.2	With a 95% level of confidence, it can be concluded that the error could be between 0.2% and 5.3%
R _H	105.3	

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 B (detailed below) applies.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be 3 kW 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 1 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is 3 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 400 and 10,700 kWh higher than the database indicates.

This audit found five non-compliances and repeats one recommendation. The future risk rating of nine indicates that the next audit be completed in 12 months. I have considered this in conjunction with Pioneer’s comments and 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	<p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p> <p>The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.</p>	Moderate	Low	2	Identified
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	Light type recorded as 'Other' for two lamps	Strong	Low	1	Identified
All load recorded in database	2.5	11(2A) of Schedule 15.3	Three additional lights found in the field.	Moderate	Low	2	Identified
Database accuracy	3.1	15.2 and 15.37B(b)	<p>The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.</p> <p>Light type recorded as 'Other' for two lamps.</p>	Moderate	Low	2	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)	<p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p> <p>The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.</p>	Moderate	Low	2	Identified
Future Risk Rating						9	

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
Location of each item of load	2.3	Align items of load with a single street with a uniform format of street names.

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

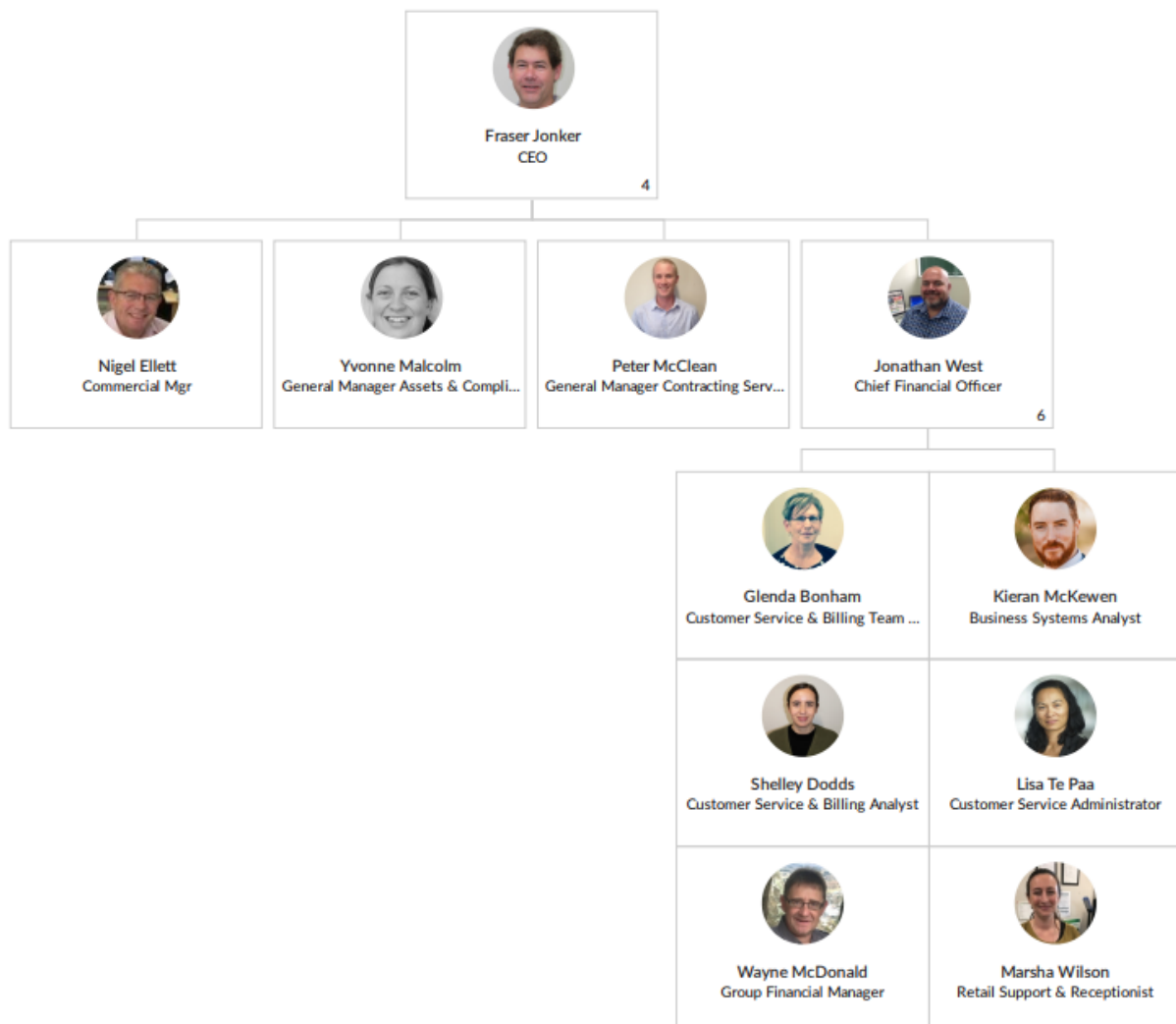
The Electricity Authority's website was reviewed to identify any exemptions relevant to the scope of this audit.

Audit commentary

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

1.2. Structure of Organisation

Pioneer provided a copy of their organisational structure.



1.3. Persons involved in this audit

Auditors:

Name	Company	Role
Rebecca Elliot	Veritek Limited	Lead Auditor
Claire Stanley	Veritek Limited	Supporting Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Glenda Bonham	Retail Customer Service Team Leader	Pioneer
Danielle Sollitt	GIS Technician	ElectroNet
Violet Penty	Asset Support Officer	ElectroNet
Chris Busson	GIS Administrator	ElectroNet

1.4. Hardware and Software

The Arc GIS SQL database used for the management of DUMML is managed by ElectroNet.

The database back up is in accordance with standard industry procedures. Access to the database is restricted using a login and password.

Systems used by the trader and their agent 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)
0000950020WPB1C	GDC GYM0661 SL AC	GYM0661	DST	195	4,745
0000950040WP4EC	GDC GYM0661 SL AC	GYM0661	DST	966	31,979
0000950090WP9AE	GDC DOB0331 SL AC	DOB0331	DST	399	9,971
0000950091WP5EB	GDC KUM0661 SL AC	KUM0661	DST	27	624
0000950092WP92B	GDC RFN1102 SL AC	RFN1102	DST	4	103
Total				1,591	47,422

1.7. Authorisation Received

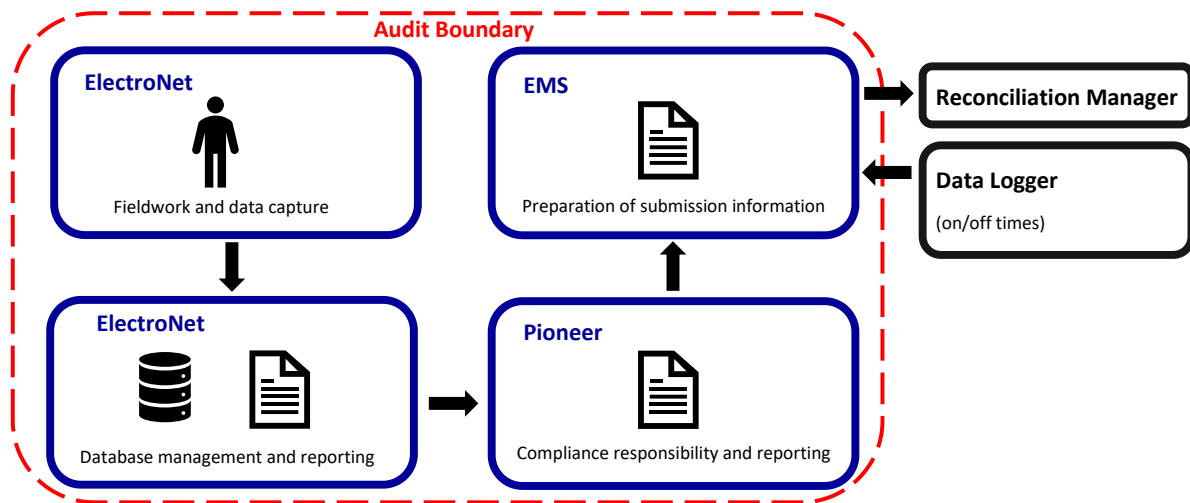
All information was provided directly by Pioneer and ElectroNet.

1.8. Scope of Audit

This audit of the ADC DUMML database and processes was conducted at the request of Pioneer Energy 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 Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Pioneer.

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.



1.9. Summary of previous audit

The previous audit was completed in May 2020 by Rebecca Elliot of Veritek Limited. 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	One item of load has no wattage information recorded in the database. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Cleared Still existing
Description and capacity of load	2.4	11(2)(c) and (d) of Schedule 15.3	2 items of load have missing capacity and/or lamp type information.	Still existing for different lamps
Database accuracy	3.1	15.2 and 15.37B(b)	1 item of load with missing wattage information.	Cleared
Volume information accuracy	3.2	15.2 and 15.37B(c)	1 item of load with missing wattage information. The data used for submission does not track changes at a daily basis and is provided as a snapshot.	Cleared

Recommendations

Subject	Section	Recommendation	Status
Location of each item of load	2.3	Align items of load with a single street with a uniform format of street names.	Not adopted

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 DUMML database audits are completed:

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

Audit observation

Pioneer 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. DUMML 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:

- *DUMML 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

Pioneer reconciles this DUMML load using the DST profile. The submission information is calculated and submitted by EMS on behalf of Pioneer. The on and off times are derived from data logger information.

I recalculated the submissions for July 2021 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

The field audit found that the database was just outside the allowable +/-5% accuracy threshold. This indicates that total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.

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 DUMML 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: 27-May-20 To: 16-Aug-21	The data used for submission does not track changes at a daily basis and is provided as a snapshot. The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates. Potential impact: Low Actual impact: Low Audit history: Three times previously Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time. The impact is assessed to be low due to the impact on submission.		
Actions taken to resolve the issue		Completion date	Remedial action status
Work with Grey DC		01/02/2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
Work with Grey DC			

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 DUMML database must contain:

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

Audit observation

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

Audit commentary

All items of load have an ICP number recorded.

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

All items of load have a GPS location recorded, and all but 20 items of load also have a street address recorded. In the previous audit it was recommended that the address fields be reviewed to associate an item of load with a single street rather than the current range of physical address descriptions and street name variances. This hasn't been actioned and I have repeated the recommendation below to maintain visibility.

Description	Recommendation	Audited party comment	Remedial action
Location of each item of load	Align items of load with a single street with a uniform format of street names.	Work with Grey DC to update and review	Identified

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

A description of each light is recorded in the light type field, and total wattage, including ballast. All items of load have a light type and wattage populated. Two items of load have light type of 'Other' recorded, therefore the details cannot be confirmed. This is recorded as non-compliance.

The accuracy of the lamp description, capacity and ballasts recorded is discussed in **section 3.1**.

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

The database records light type and total wattage, including ballast. The last audit indicated that ElectroNet were planning to split the total wattage into lamp and ballast wattage fields. Electronet confirmed that this will not be progressed, with the exception of four lamps, all lamps are now LED.

Audit outcome

Compliant

Non-compliance	Description		
Audit Ref: 2.4 With: Clause 11(2)(c) and (d) of Schedule 15.3 From: 04-May-20 To: 27-Sep-21	Light type recorded as 'Other' for two lamps. 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 recorded as strong because they mitigate risk to an acceptable level. The impact is assessed to be low because only two items of load are affected.		
Actions taken to resolve the issue		Completion date	Remedial action status
Ask Grey DC to find and fix the two lamp light types		01/02/2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	

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

A field audit of a statistical sample of 232 items of load was undertaken on 14 and 15th September 2021.

Audit commentary

The field audit discrepancies are detailed in the table below:

Light model	Database count	Field count	Light count difference	Wattage recorded incorrectly	Comments
180 Prestons Road	21	21		1	1 x 22W LED recorded in the database but 1 x 58W LED found in the field
Karoro Place	6	7	+1		1 x additional 22W LED found in the field
Bodytown	10	11	+1		1 x additional 17W LED found in the field
Shakespeare Rd	30	31	+1	2	1 x additional 58W LED found in the field 2 x 58W LED recorded in the database but 2 x 51W LED found in the field (pedestrian crossing)
Grand total	232	235	3	3	

There were three additional items of load found in the field. This is recorded as a non-compliance. The 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: 27-May-20 To: 16-Aug-21	Three additional lights found in the field from the 232 lights sampled. Potential impact: Low Actual impact: Low Audit history: None Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	Controls are rated as moderate, as they are sufficient to mitigate the risk most of the time but there is room for improvement The impact is assessed to be low due to the small number of additional lights found.		
Actions taken to resolve the issue		Completion date	Remedial action status
Work with Grey DC to ensure their data base is updated		01/02/2022	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As above		Proposed or actual 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 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 and compliant 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

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	Grey DC streetlights
Strata	The database contains 1,591 items of load in the Grey DC region. The management process is the same for all lights. I created three strata: <ol style="list-style-type: none">1. Rural North2. Rural South, and3. Urban
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 75 sub-units.
Total items of load	232 items of load were checked

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority, and the manufacturer's specifications or in the case of LED lights against the LED light specification.

The process to manage changes made in the field being updated in the database was examined.

Audit commentary

Database accuracy

A field audit was conducted of a statistical sample of 232 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	101.5	Wattage from the survey is higher than the database wattage by 1.5%
R _L	100.2	With a 95% level of confidence, it can be concluded that the error could be between 0.2% and 5.3%
R _H	105.3	

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 B (detailed below) applies.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be 3 kW 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 1 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is 3 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 400 and 10,700 kWh higher than the database indicates.

Scenario	Description
A - Good accuracy, good precision	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (a) R_H is less than 1.05; and (b) R_L is greater than 0.95 <p>The conclusion from this scenario is that:</p> <ul style="list-style-type: none"> (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	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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. <p>There is evidence to support this finding. In statistical terms, the inaccuracy is statistically significant at the 95% level</p>
C - Poor precision	<p>This scenario applies if:</p> <ul style="list-style-type: none"> (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 <p>The conclusion from this scenario is that the best available estimate is not precise enough to conclude that the database is accurate within +/- 5 %</p>

Lamp description and capacity accuracy

The database was checked against the published standardised wattage table, and manufacturer's specifications where available.

As discussed in **section 2.4**, all lights have a lamp and gear wattage recorded. Two items of load have light type of 'Other' recorded, therefore the details cannot be confirmed. This is recorded as non-compliance below.

Change management process findings

There have been no changes to the processes in place during the audit period. The Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet office staff validate the data and post it to the database after the field devices are synchronised to the main database.

Most new connections relate to network extensions, and new subdivisions are rare. There were no new lights connected during the audit period. When new subdivisions are created, Westpower ensure that the installation is compliant and provides approval for connection.

Permanent festive lights are recorded in the database and seasonal lights are added and removed from the database each year using the new connection process.

A process workflow in the Maximo system is used to manage all new connections and includes a step to update GIS information. Maximo tasks are normally allocated to a work group rather than individual, and key tasks are escalated within Maximo if not completed within specified timeframes. Tasks can be reassigned as necessary. Once the installation job is complete, a work task is created for the GIS team to check the Arc GIS database is up to date.

Audit outcome

Non-compliant

Non-compliance	Description		
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 27-May-20 To: 16-Aug-21	The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates. Light type recorded as 'Other' for two lamps. Potential impact: Low Actual impact: Low Audit history: Three times previously Controls: Moderate Breach risk rating: 2		
Audit risk rating	Rationale for audit risk rating		
Low	The controls are rated as moderate, because most items of load have capacity and wattage information recorded. The impact is assessed to be low because only one item of load is affected.		
Actions taken to resolve the issue		Completion date	Remedial action status
Work with Grey DC to ensure their data base is regularly updated and checked for accuracy		ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As above		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 DUMML is being calculated accurately*
- *profiles for DUMML 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

Pioneer reconciles this DUMML load using the DST profile. The submission information is calculated and submitted by EMS on behalf of Pioneer. The on and off times are derived from data logger information.

I recalculated the submissions for July 2021 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

The field audit found that the database was just outside the allowable +/-5% accuracy threshold. This indicates that total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.

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 DUMML load and volumes.

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

Audit outcome

Non-compliant

Non-compliance	Description		
<p>Audit Ref: 3.2</p> <p>With: Clause 15.2 and 15.37B(c)</p> <p>From: 27-May-20</p> <p>To: 16-Aug-21</p>	<p>The data used for submission does not track changes at a daily basis and is provided as a snapshot.</p> <p>The database was not within the +/-5% accuracy threshold. In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUMML database indicates.</p> <p>Potential impact: Low</p> <p>Actual impact: Low</p> <p>Audit history: Three times previously</p> <p>Controls: Moderate</p> <p>Breach risk rating: 2</p>		
Audit risk rating	Rationale for audit risk rating		
Low	<p>The controls are rated as moderate, because they are sufficient to ensure that changes to the database are correctly recorded most of the time.</p> <p>The impact is assessed to be low because only one item of load is affected.</p>		
Actions taken to resolve the issue		Completion date	Remedial action status
Work with Grey DC to find a solution		Ongoing	Identified
Preventative actions taken to ensure no further issues will occur		Completion date	
As Above		Ongoing	

CONCLUSION

The Arc GIS database used for submission is managed by ElectroNet, on behalf of Westpower. New connection, fault, and maintenance work is completed by ElectroNet, who update the GIS in the field using Arc GIS collector. ElectroNet provide a monthly report from the database to Pioneer.

Pioneer reconciles this DUML load using the DST profile. The submission information is calculated and submitted by EMS on behalf of Pioneer. The on and off times are derived from data logger information.

I recalculated the submissions for July 2021 for the five ICPs associated with the GDC database using the data logger and database information. I confirmed that the calculation method was correct.

Database accuracy is described as follows:

Result	Percentage	Comments
The point estimate of R	101.5	Wattage from the survey is higher than the database wattage by 1.5%
R _L	100.2	With a 95% level of confidence, it can be concluded that the error could be between 0.2% and 5.3%
R _H	105.3	

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 B (detailed below) applies.

The conclusion from Scenario B is that the variability of the sample results across the strata means that the true wattage (installed in the field) could be 3 kW 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 1 kW lower than the database indicates.

There is a 95% level of confidence that the installed capacity is 3 kW higher than the database.

In absolute terms, total annual consumption is estimated to be 3,100 kWh higher than the DUML database indicates.

There is a 95% level of confidence that the annual consumption is between 400 and 10,700 kWh higher than the database indicates.

This audit found five non-compliances and repeats one recommendation. The future risk rating of nine indicates that the next audit be completed in 12 months. I have considered this in conjunction with Pioneer’s comments and agree with this recommendation.

The matters raised are detailed below:

PARTICIPANT RESPONSE

Pioneer Energy has reviewed this report and their comments are contained within the report.