

Economic Benchmarking RIN

Basis of Preparation
2018-2019



Contents

Purpose	4
Australian Energy Regulator's Instructions	5
Structure of this document	6
General approach	6
3.1.1 Revenue grouping by chargeable quantity and 3.1.2 Revenue grouping by customer type or class	10
3.1.3 Revenue (penalties allowed (deduced) through incentive schemes	12
3.2.1 Operational Expenditure Categories and 3.2.2 Operational Expenditure Consistency	15
3.2.3 Provisions	15
3.2.4 Operational Expenditure for High Voltage Customers	19
3.3.1 Regulatory Asset Base Values	22
3.3.2 Asset Value Roll Forward	23
3.3.3 Total Disaggregated RAB Asset Values	24
3.3.4 Asset Lives	25
3.4.1 Energy Delivery	28
3.4.2 Customer Numbers	31
3.4.3 System Demand	34
3.4.3.5 Power Factor Conversion between MVA and MW	37
3.4.3.6 & 3.4.3.7 Demand supplied (for customers charged)	39

•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•		
•	3.5.1 Network Capacities	43
•	3.5.2 Transformer Capacities	45
•	3.5.3 Public Lighting	46
	3.6.1 Reliability	48
	3.6.2 Energy not Supplied	49
	3.6.3 System Losses	50
	3.6.4 Capacity Utilisation	52
	3.7.1 Density Factors	54
	3.7.2 Terrain Factors	55
	3.7.3 Service Area Factors	57

Purpose

The Economic Benchmarking RIN (RIN) requires Endeavour Energy to prepare a Basis of Preparation. By this, the AER mean that for every variable in the templates, Endeavour Energy must explain the basis upon which we prepared information to populate the input cells. The Basis of Preparation must be a separate document (or documents) that Endeavour Energy submits with its completed templates. The AER will publish Endeavour Energy's Basis of Preparation along with the templates.

This document is Endeavour Energy's Basis of Preparation in relation to the Economic Benchmarking RIN required to be submitted to the AER by 31 October 2019.

Australian Energy Regulator's Instructions

The AER requires the Basis of Preparation to follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how Endeavour Energy has complied with the requirements of the Notice.

To do this, the AER recommended that Endeavour Energy structures its Basis of Preparation with a separate section to match each of the worksheets titled '3.1 Revenue' to '3.7.3 Service area factors' in the templates.

The AER noted that Endeavour Energy may consider structuring these sections with subheadings for each subject matter table in each worksheet. For example, for the worksheet '3.4 Operational data', Endeavour Energy would explain its Basis of Preparation for the variables under the heading '3.4.1 Energy delivery', '3.4.2 Customer numbers' and '3.4.3 System demand'. Endeavour Energy's Basis of Preparation has followed this recommended structure.



Endeavour Energy must include in its Basis of Preparation, any other information Endeavour Energy prepares in accordance with the requirements of the Notice (including this document). For example, if Endeavour Energy chooses to disaggregate its RAB using its own approach in addition to the AER's standard approach, Endeavour Energy must explain this in its Basis of Preparation.

The AER has set out what must be in the Basis of Preparation. This is set out below:

1. Demonstrate how the information provided is consistent with the requirements of the Notice.
2. Explain the source from which Endeavour Energy obtained the information provided.
3. Explain the methodology Endeavour Energy applied to provide the required information, including any assumptions Endeavour Energy made.
4. In circumstances where Endeavour Energy cannot provide input for a variable using actual Information, and therefore must use an estimate, explain:
 - (i) why an estimate was required, including why it was not possible for Endeavour Energy to use actual Information;
 - (ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Endeavour Energy's best estimate, given the information sought in the Notice.
5. For variables that contain financial information (actual or estimated) the relevant Basis of Preparation must explain if accounting policies adopted by Endeavour Energy have materially changed during any of the Regulatory Years covered by the Notice:
 - (i) the nature of the change; and
 - (ii) the impact of the change on the information provided in response to the Notice.

Endeavour Energy may provide additional detail beyond the minimum requirements if Endeavour Energy considers it may assist a user to gain an understanding of the information presented in the templates.

In relation to providing an audit opinion or making an attestation report on the templates presented by Endeavour Energy, an auditor or assurance practitioner shall provide an opinion or attest by reference to Endeavour Energy's Basis of Preparation.

Structure of this document

The document is structured as follows:

- We outline our general approach to developing our response to the RIN. We identify key systems used to provide data and note issues relating to data quality.
- We set out our response to worksheets 3.1 to 3.7, in accordance with the AER's instructions. We note that Worksheet 1 requires no input material.

General approach

In this section, we identify our general approach to collecting and preparing information.

A key concern of Endeavour Energy is that the AER may use information which is of a poor quality to make regulatory determinations. We note that this issue has been raised with the AER in consultations relating to this notice.

Systems used to provide data

Where methodologies or assumptions were required to complete the files other than the mere application of the AER approved CAM to the general purpose financial statements Endeavour Energy has included commentary by way of the "note" function within Microsoft Excel to provide guidance to the AER.

Below is a listing of Endeavour Energy's systems that, to a greater or lesser extent, were directly related to or supported the development of the information contained in the RIN templates:

- Cognos – Business reporting system managing database information such as organisation policies and procedures;
- Ellipse – financial management system including: accounts payable; payroll; asset and equipment registers and financial reporting functions. The Ellipse system also caters for defect management (condition based) and also routine maintenance (planned). The equipment register is also linked to various other supporting systems such as field inspections and the Geographical Information System (GIS);
- TM1 – Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory accounts allocations. It is a cube-based technology which allows rules to be created between cubes and within cubes;
- eFrams – Endeavour Energy uses this system in relation to IT Allocation Drivers. The system enables access to all telecommunication billing, inventory management/asset register and reporting;
- Remedy - Endeavour Energy uses this system in relation to IT Allocation Drivers. This is a BMC tool used by CGI for asset management, definitive software library, incident management and service request management;

- Autocad - Endeavour Energy uses this system in relation to Property Drivers. This is a program used for computer-aided design and drafting. The program is used to maintain Floor Plans which can be used to summarise occupancy by business unit;
- Banner – Endeavour Energy’s customer database and billing system;
- Figtree – Worker’s compensation claims management data base. This system is maintained separate (but linked at aggregate levels) to other systems to maintain confidentiality of data as required by legislation;
- Value Development Algorithm (VDA) – Endeavour Energy uses the Value Development Algorithm (VDA) for its high-level asset renewal expenditure modelling. The model is populated with specific asset data in order to produce the replacement capital forecast. Data for each asset is allocated into asset categories, which represent major components that make up the network such as poles, transformers, conductor, cable, switchgear etc. Each asset type is assigned an asset life and a replacement cost. The quantity of assets installed on the network each financial year is also entered, thus generating an age profile of the network assets;
- Visual Risk – Endeavour Energy uses this in-house Treasury Management System for improving the productivity of its treasury operations. Visual Risk provides functions such as capturing a facility drawdown; valuing an FX option; and facilitating back office administration and financial reporting. Specifically, it was used to prepare the cost of funds schedule;
- System Fault Recording (SFR) – Endeavour Energy uses this Oracle database system for all reliability reporting. The data in this system is accessed using Cognos, with further analysis and processing of data being undertaken using Microsoft Office programs such as Access and Excel;
- SCADA - Endeavour Energy uses this system to monitor and control its network. This system is used to identify and register an event such as a plane strike on the network;
- Outage Management System - Endeavour Energy uses this system to log outages on its network, with the point of contact being from external sources. This system can also be used to identify events where these are externally identified;
- Contact Centre 6 – Endeavour Energy’s call centre uses this system to run reports on historical call volume according to skill set (Call Type). The system is also used to assign agents to specific call taking groups based on call type.

Data quality issues

In previous consultations on the Economic Benchmarking RIN, we have raised significant concerns with providing historical data in the form required by the AER.

Approach to our obligations under the NEL

Our view of the NEL is that a DNSP is only obligated to provide information that is available, that is, data which has been historically collected in our systems. In cases, where that information cannot be provided in the form required by the AER from our systems, we would have a reasonable excuse under section 28(5) of the NEL not to comply with that element of the notice. We have strong doubts that a RIN can



require a business to prepare information by way of estimate that cannot be reasonably derived from information currently held in its systems.

Our understanding of the term 'prepare' relates to a power the AER has to compel a DNSP to collect information in the form required by the AER for future periods (for example, by developing new systems) rather than to manipulate historical data in potentially inaccurate ways. We suggest that the AER should give more careful consideration to whether it has appropriately informed itself of the distinction under section 28D of the NEL between the ability of a RIN to require existing information to be provided and the ability to require information to be prepared, maintained and kept on a going forward basis.

Despite this Endeavour Energy has prepared and included the estimated data on an unaudited basis.

Recognition by AER that 'best estimates' are not robust

The AER has acknowledged that if we are compelled to provide best estimates then there is potential for the data to lack robustness.

Reliability of applying data to economic benchmarking

We consider that the application of economic benchmarking to guide regulatory decision making would result in error, leading to outcomes that are detrimental to the long-term interests of customers. Our view is based on the following reasons:

- As noted in the sections on data quality, there is recognition by the AER that data quality from best estimates will not be of a robust quality and may not pass audit and reviews. This document identifies where material has been developed from best estimates and the confidence we have in that data. We note in this respect that models such as Total Factor Productivity (TFP) are based on the interaction of multi-variables. If a data series is inaccurate, it can significantly alter the findings of the model and lead to misleading conclusions.
- We are not convinced that economic benchmarking tools such as TFP can be used to infer relative efficiency of DNSPs over time. We consider that the models cannot adequately normalise for differences between DNSPs, and do not provide meaningful assessment of the apparent differences in productivity levels. For example, TFP will show that a firm that replaces ageing assets has declining levels of capital productivity, as the model would show higher prices for capital while maintaining existing service levels. In our view this would be driven by the age of the asset base which is likely to vary between DNSPs.
- We consider that economic benchmarking models such as TFP do not provide the AER with guidance on how to target its review of expenditure forecasts, as the information provided is at too high a level to identify potential areas of efficiency. The models and data collected will not provide any guidance on the underlying drivers of apparent productivity, and therefore does not provide useful analysis on which areas to review in a DNSP's capex and opex forecasts.

3.1 Revenue

3.1 Revenue

3.1.1 Revenue grouping by chargeable quantity and 3.1.2 Revenue grouping by customer type or class

Compliance with requirements of the notice

The data presented in tables 3.1.1 and 3.1.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- Total revenue reported in tables 3.1.1 and 3.1.2 is equal and reconciles to revenue reported in the Annual RIN. Specifically, total Standard Control Services revenue reconciles to the distribution revenue as reported in the Annual RIN. In addition, total Alternative Control Services revenue reconciles to the total of revenue from maintenance of Public Lighting Maintenance, Metering Services and Ancillary Network Services as reported in the Annual RIN;
- Revenue from unmetered supplies is identical in tables 3.1.1 and 3.1.2;
- Revenue presented in table 3.1.1 reflects revenue earned by chargeable quantity in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. Revenue categories DREV0101 to DREV0109 in table 3.1.1 reflect Distribution-Use-Of-System ('DUoS') revenue earned from customers by chargeable quantity. "Revenue from Other Sources" (DREV0113) reflects Ancillary Network Services revenue reported in the Annual RIN; and
- Revenue presented in table 3.1.2 reflects revenue earned by customer type or class in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. "Revenue from Other Customers" (DREV0206) reflects all Alternate Control Services revenue (i.e. total of revenues from Public Lighting Maintenance, Metering Services and Ancillary Network Services), whereas all other categories in table 3.1.2 reflect DUoS revenue earned from customers by customer type or class.

Source of information

DUoS revenue information (DREV0101 to DREV0109 in table 3.1.1 and DREV0201 to DREV0205 in table 3.1.2) used to populate the tables contained in section 3.1 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes. More specifically, DUoS revenue information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store, analyse and report data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end results and is also used extensively for budgeting and forecasting revenue related items.

Non-DUoS revenue information (DREV0110 to DREV0113 in table 3.1.1 and DREV0206 in table 3.1.2) was extracted directly from the Annual RIN.

Methodology and Assumptions

The following table sets out the methodology applied to obtain required data for each of the tables in section 3.1.

3.1 Revenue

Table	Methodology	Assumptions
3.1.1 & 3.1.2 DUoS Revenue	<ol style="list-style-type: none"> 1. DUoS revenue data was extracted from the TM1 NUoS cube by network tariff and by revenue type (i.e. NAC revenue, demand revenue and peak, shoulder, off-peak and Non TOU energy revenue). 2. Total DUoS revenue derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 3. Total DUoS revenue from TM1 was reconciled to DUoS revenue reported in the Annual RIN. Material variances (greater than 1%) were investigated and resolved and adjustments made where required. The variances between DUoS revenue in TM1 and DUoS revenue as reported in the Annual RIN was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 3.1.1 and 'Revenue from residential Customers' (DREV0201) in table 3.1.2 to ensure total DUoS revenue reconciled to the Annual RIN. 4. DUoS revenue line items in table 3.1.1 (DREV0101 to DREV0109) and table 3.1.2 (DREV0201 to DREV0205) were populated from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: Given TM1 NUoS cube data is available and represents information reported to management, all information provided for DUoS revenue consists of Actual Information (no Estimated Information required).</i></p>	The immaterial variance between DUoS revenue in TM1 and DUoS revenue as reported in the Annual RIN was added to 'Revenue from Energy Delivery charges where time of use is not a determinant' (DREV0102) in table 3.1.1 and 'Revenue from residential Customers' (DREV0201) in table 3.1.2 to ensure total DUoS revenue reconciled to the Annual RIN.
3.1.1 & 3.1.2 Non-DUoS Revenue	<ol style="list-style-type: none"> 1. For the purposes of table 3.1.1, Revenue from Metering Services, Public Lighting Maintenance and Ancillary Network Services (ANS) were identified from the Annual RIN and reported in DREV0110, DREV0112 and DREV0113 respectively under Alternative Control Services revenue. 2. For the purposes of table 3.1.2, 'Revenue from other customers' (DREV0206) represents the sum of all non-DUoS revenue (DREV0110 to DREV0113) from table 3.1.1. 	None.

3.1 Revenue

Note: Given the non-DUoS revenue data represents previously reported figures, all information provided for non-DUoS revenue consists of Actual Information (no Estimated Information required).

Use of estimated information

While Endeavour Energy made an assumption in order to ensure total DUoS revenue reported in table 3.1.1 and 3.1.2 reconciled to DUoS revenue reported in the Annual RIN (as outlined above), it has not used Estimated Information as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in tables 3.1.1 and 3.1.2.

Reliability of information

All the information provided represents Actual Information extracted from Endeavour Energy's reporting systems and has been reconciled to figures reported in the Annual RIN. As a result, the information contained in tables 3.1.1 and 3.1.2 is considered to be reliable.

3.1.3 Revenue (penalties allowed (deduced) through incentive schemes)

Compliance with requirements of the notice

The entries in table 3.1.3 capture the annual revenue adjustments that have resulted from a performance-based incentive scheme.

The values reflect the year in which the reward or penalty is applied to revenue, not the year in which they are earned.

Non-performance based allowances such as the Demand Management Innovation Allowance Scheme; equity raising costs and debt raising cost allowances are not included in this table.

Source of information

EBSS

EBSS revenue adjustments have been sourced from the AER's Final Decision PTRM for Endeavour Energy for the determination period 2014-15 to 2018-19, adjusted for inflation.

EBSS revenue adjustments apply to standard control services revenue only. There are no EBSS revenue adjustments for alternate control services.

STPIS

There was no STPIS reward or penalty applied to revenue in FY19.

The AER has incorporated FY18 and FY19 STPIS revenues into the calculation of Endeavour Energy's final decision remittal amount. The AER's final remittal decision includes an S-Factor True-Up amount of \$12.5m. This amount was used as an input to the AER's final 2019 revenue determination and will apply in the FY20 year.

-
-
-
-
-
-
- **3.1 Revenue**

STPIS revenue adjustments apply to standard control services revenue only. There are no STPIS revenue adjustments for alternate control services.

F-factor

Not applicable to Endeavour Energy.

S-factor true-up

Not applicable to Endeavour Energy.

Other

Not applicable to Endeavour Energy.

Methodology and assumptions

EBSS data is sourced from the AER's Final Decision PTRM for Endeavour Energy. The AER's final decision figure has been escalated from \$13-14 to \$18-19 using actual CPI.

Use of estimated information

Not applicable.

Material accounting policy changes

Not applicable.

Reliability of information

EBSS data is sourced from the AER's Final Decision PTRM for Endeavour Energy for the determination period 2014-15 to 2018-19, adjusted for inflation.

3.2 Operational Expenditure

3.2 Operational Expenditure

3.2.1 Operational Expenditure Categories and 3.2.2 Operational Expenditure Consistency

Compliance with requirements of the notice

The data presented in tables 3.2.1 and 3.2.2 is consistent with the requirements of the Benchmarking RIN

Source of information

Actual opex for standard and alternative control expenditure by purpose was sourced from the AER dollars by account cube in TM1. Endeavour Energy uses TM1 for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

Methodology and assumptions

The following tables set out the methodology applied to obtain the required data for tables 3.2.1 and 3.2.2.

Table	Methodology	Assumptions
3.2.1 – Operating Expenditure Categories	Actual expenditure for both standard and alternate control is sourced from AER Totex by account cube in TM1.	None.
3.2.2 – Operating Expenditure Consistency	Data in 3.2.2 is an aggregation of numbers derived in 3.2.1	None.

Use of estimated information

None

Reliability of information

Information reported in tables 3.2.1 and 3.2.2 consists of Actual Information extracted from Endeavour Energy's reporting systems and reconciles to opex figures calculated and reported in the Annual RIN. As a result, the information contained in tables 3.2.1 and 3.2.2 is considered to be reliable.

3.2.3 Provisions

Background

On an annual basis, Endeavour Energy must complete the AER Economic Benchmarking Regulatory Information Notice (RIN) which includes an analysis of Provisions.

The data presented in the RIN Provisions is consistent with requirements of the Economic Benchmarking RIN. In particular:

3.2 Operational Expenditure

- Data presented in the RIN Provisions covers the regulatory period with respect to financial information on provisions relating to Standard Control Services, in accordance with the Cost Allocation Methodology.
- Financial information provided relates to individual provisions as follows:
 - A Employee Entitlements
 - B Self Insurance
 - C Defined Benefits Superannuation
 - D Other
 - E Distributions (only where applicable).
- Each individual provision has been specified by name and variable codes for the respective line items have been separately identified as required.

Source of information

The source information used to populate the RIN Provisions was extracted initially from the Endeavour Energy Group Financial Statements (for the period ended 30 June 2019), Note 11 Provisions which details opening balances, additional provisions, amounts used, amounts reversed and closing balance amounts for each of the provision types listed in the Note. The Movement in Provisions schedule which is the basis for Note 11 Provisions in the Financial Statements is used as a base to split the various provisions into Standard Control, Alternate Control and Unregulated.

Methodology and assumptions

The Provisions schedule details the opening balance, additional provisions, amounts used (paid), unused amounts reversed, impact of change in discount rates (if applicable) and closing balance for each provision. The opening balance is based on the previous year closing balance rolled forward. The closing balance and movements for each provision were derived by applying relevant allocation driver percentages, updated for regulatory financial year information, to the closing balance and movements consistent with the annual Group Financial Statements, adjusted for any errors or misstatements identified post completion of the annual financial statements (where applicable).

Use of the prior year closing balance to equate to the current year opening balance creates an opening balance adjustment, due to variations in allocation drivers between years. All opening balance adjustments have been included within “additional provisions”.

Allocation driver percentages applied to the closing balance and movements are based on the relevant organisational unit structure utilising the relevant TM1 cube. A further dissection provides a split into Standard Control Services, Alternative Control Services and Unregulated Services based on application of relevant allocation drivers for the year. Employee Entitlements (A) generally utilise an employee entitlements allocation driver; Self-Insurance (Workers Compensation) (B) and Defined Benefits Superannuation (C) utilise labour allocation drivers sourced from Labour expense in the TM1 Totex cube; Other (D) utilises labour allocation drivers where relevant as well as direct allocation (where more appropriate); Distributions (where applicable) (E) utilise Profit After Tax percentage outcomes consistent with the AER Annual Reporting RIN Income Statement split of Standard Control Services, Alternative Control Services and Unregulated Services where these services are reporting a profit.

● 3.2 Operational Expenditure

Additional provisions, amounts used (paid) and unused amounts reversed for Employee Entitlements, Self Insurance, Defined Benefits Superannuation and Other have been split into Opex and Capex components, based on an allocation method utilising Endeavour Energy's internal Overhead Capitalisation model. The Capex component was determined based on a combination of the Network Headcount percentage and Network Capitalisation Rate. The balance was treated as Opex.

For both Employee Entitlements and Defined Benefit provisions, the movement pertaining to the discount rate (which is based on the Corporate Bond Rate) has been reported under “the increase during the period in the discounted amount arising from the passage of time and the effect of any change in the discount rate”. For Employee Entitlements this amount is further split into Opex and Capex components based on an allocation method utilising Endeavour energy’s internal Overhead Capitalisation model. For Defined Benefits Superannuation the movement has been disclosed under “Other” for the movement during the period which has been recorded directly in Equity within the Annual Financial Statements, and other movements further split into Opex and Capex components based on an allocation method utilising Endeavour energy’s internal Overhead Capitalisation model. The discount rate for Employee Entitlements and Defined Benefits Superannuation was calculated based on information provided by the actuary.

All movements with respect to the Distribution provision (where applicable) are shown as an “Other” component, as these movements do not impact either Opex or Capex.

Listed below is the 2018-19 dissection into the RIN categories for illustrative purposes based on the Movements in Provisions schedule. Refer movement schedule tab.

3.2 Operational Expenditure

	Standard Control Services	Alternative Control Services	Retail/Unregulated	Total
Employee Entitlements				
Refer Balance Sheet tab "Employee E	70.97%	25.37%	3.67%	100%
Opening Balance	129,716,023.59	40,766,315.40	10,144,722.55	180,627,061.54
Liabilities paid from provision	(31,765,172.82)	(11,354,618.31)	(1,640,968.74)	(44,760,759.86)
Increase/decrease in provision	39,208,638.69	19,616,641.56	(1,418,181.34)	57,407,098.91
Reversed	(12,614.72)	(4,509.19)	(651.67)	(17,775.58)
Closing Balance	137,146,874.75	49,023,829.45	7,084,920.81	193,255,625.01
	-	-	-	-
Self Insurance (WC)				
LABOUR Allocation Driver	74.25%	22.77%	2.98%	100%
Opening Balance	14,835,323.46	4,668,592.01	1,243,084.53	20,747,000.00
Liabilities paid from provision	(2,950,655.56)	(904,746.31)	(118,563.18)	(3,973,965.05)
Increase/decrease in provision	4,291,363.14	1,196,138.30		5,487,501.44
Reversed			(474,536.39)	(474,536.39)
Closing Balance	16,176,031.04	4,959,984.22	649,984.99	21,786,000.00
	-			
Defined Benefits Superannuation				
LABOUR Allocation Driver	74.25%	22.77%	2.98%	100.00%
Opening Balance	9,790,217.30	3,080,925.76	820,343.94	13,691,487.00
Liabilities paid from provision				-
Increase/decrease in provision	7,931,947.84	2,353,142.41		10,285,090.25
Reversed			(108,232.25)	(108,232.25)
Closing Balance	17,722,165.14	5,434,068.17	712,111.69	23,868,345.00
	-			
Other - labour related (bonus)				
LABOUR Allocation Driver	74.25%	22.77%	2.98%	100.00%
Opening Balance	7,714,903.39	2,427,836.27	646,448.80	10,789,188.46
Liabilities paid from provision	(4,979,963.45)	(1,526,983.90)	(200,104.79)	(6,707,052.14)
Increase/decrease in provision	7,256,715.68	2,162,844.28	(44,859.50)	9,374,700.46
Reversed				-
Closing Balance	9,991,655.63	3,063,696.64	401,484.51	13,456,836.78
Other - Site Remediation	100.00%	0.00%	0.00%	100.00%
Opening Balance	1,531,672.92			1,531,672.92
Liabilities paid from provision	(1,502,824.50)			(1,502,824.50)
Increase/decrease in provision	538,151.58			538,151.58
Reversed	-			-
Closing Balance	567,000.00	-	-	567,000.00
	-			
TOTAL				
Opening Balance	163,588,140.66	50,943,669.43	12,854,599.82	227,386,409.92
Liabilities paid from provision	(41,198,616.32)	(13,786,348.52)	(1,959,636.71)	(56,944,601.55)
Increase/decrease in provision	59,226,816.93	25,328,766.54	(1,463,040.84)	83,092,542.64
Reversed	(12,614.72)	(4,509.19)	(583,420.30)	(600,544.22)
Closing Balance	181,603,726.55	62,481,578.50	8,848,502.00	252,933,806.79

Based on the file above, this is linked into RIN Provisions template as shown below (extract only). Refer Movement Schedule tab.

3.2 Operational Expenditure

Network Headcount %	Capitalisation Rate %	Capex %
74.06%	73.42%	54.37%

Note the discount rate impact on employee entitlements is calculated as part of the year-end employee entitlements calculation. The discount rate for Defined Benefits Superannuation is the changes in financial assumptions in the actuarial report.

The capitalisation overhead rate is determined starting with data from the Capitalised Overhead model.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in regulatory reporting statement 3.2.3

Reliability of information

In light of the sources of information used to complete this reporting statement, it is considered reliable for the purposes of confirming the provisions and changes in the provisions over time in accordance with the prevailing obligations and regulatory tools.

Use of estimated information

Endeavour Energy uses an estimated information in determining a profit and loss split of Standard Control Services, Alternative Control Services and Unregulated Services for the period for allocation of Distribution provision movements (only where applicable). The profit and loss split is required to allocate the Dividend provision consistent with profit after tax percentage outcomes (only where applicable).

3.2.4 Operational Expenditure for High Voltage Customers

Compliance with requirements of the notice

Estimates have been made for the OPEX that Endeavour Energy would have incurred had it owned the distribution transformers which are owned by HVC's. The OPEX estimates consist of substation inspections, network switching and fault & emergencies.

Source of information

Data that was used to produce the estimates includes:

- Ellipse asset database (Extracted using Cognos in July 2019); and
- Finance Opex Spreadsheet (June 2019).

Methodology and assumptions

To estimate the substation inspection OPEX requirements:

- A query was run to determine the volume of in-service distribution HVCs were in Ellipse;
- A query was run to determine how many HVCs were currently being inspected by EE;

3.2 Operational Expenditure

- The difference between the above provides the number of HVCs that would need to be inspected;
- A labour component of six man-hours was applied to each substation for an inspection. This was based on the standard job in Ellipse for Distribution Sub Inspections (Standard job number SI107); and
- Average labour rate for SI107 was obtained from Finance. An overhead percentage was added to this rate. The percentage was calculated from Actuals.

To estimate Fault & Emergency OPEX:

- The proportion of distribution F&E compared to distribution maintenance was calculated based on OPEX actuals; and
- The percentage calculated was then applied to the estimated OPEX derived for substation inspections to determine the estimated Fault & Emergency costs.

To estimate Network Switching OPEX:

- The proportion of switching costs to the sum of F&E and distribution & transmission maintenance costs was calculated based on OPEX actuals; and
- This percentage was applied to the F&E estimates to determine the estimated switching costs.

The total estimated OPEX for HVC's is the sum of substation inspections, fault & emergencies and network switching costs.

Use of estimated information

Endeavour Energy has used estimated information for OPEX as the requirement is to provide what OPEX would have incurred if Endeavour Energy had owned the transformers in the HVCs.

Reliability of information

Information is based on Ellipse data and corporate finance reports available at the time of preparation.

3.3 Assets

3.3 Assets

3.3.1 Regulatory Asset Base Values

Compliance with requirements of the notice

Endeavour Energy has two Alternative Control Services that include a RAB as part of the current pricing arrangements, that being type 5 and 6 meter service provision and public lighting assets in service prior to July 2009. This is a change to prior years due to changes in service classification as part of the AER's April 2015 determination.

There is also a residual recovery amount for pre-2009 Public Lighting assets; however, this value is not maintained in a RAB as defined in normal use.

Source of information

Table 3.3.1 is sourced from:

- The 2017/18 economic benchmarking RIN for the opening RAB for both standard and alternative control services;
- The RFM attached to the AER's 2019-24 final determination published 30 April 2019 for regulatory inflation and the nominal vanilla WACC;
- The RFM attached to the AER's 2019-24 final determination published 30 April 2019 for SCS straight line depreciation;
- the metering pricing model and public lighting pricing model included with the AER final decision published in April 2015 for the ACS straight line depreciation; and
- Annual RIN preparatory files for actual network funded capex and proceeds from disposals for SCS and ACS.

Methodology and assumptions

This table was completed using reference data contained in the Metering Model and Public Lighting Model attachments to the AER's final decision for the 2014 to 2019 periods, and the RFM attached to the AER's 2019-24 final determination.

The instructions and description of this table seek to replicate the annual RAB roll forward processes, in particular noting the capex amount as recognised in the RFM.

Consequently, this table and all subsequent RAB tables have adopted the treatment convention relating to metering assets as encapsulated in the AER's RFM.

Endeavour Energy has ensured that the mapping of the fixed asset register financial data was reconciled to the RFM values used by the AER in the 2014-19 and 2019-24 distribution determinations.

Leasehold improvements have been classified as other assets with long lives noting that the closest proxy for these investments is non-system buildings for which such leases and consequential improvements would most likely relate.

3.3 Assets

The CPI applied in the RFM and PTRM is that which applies for annual pricing purposes aligned to the timing conventions used in the RFM.

Use of estimated information

No variables were assumed in the completion of this table for standard control services. All information was drawn from AER decisions, published CPI data, or statutory information that is used as the basis for completing the annual RIN.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.3.1.

Reliability of information

In light of the sources of information used to complete this table it is considered reliable for the purposes of confirming the RAB and changes in the RAB over time in accordance with the prevailing obligations and regulatory tools.

3.3.2 Asset Value Roll Forward

Compliance with requirements of the notice

Endeavour Energy has applied the standard approach as set out in section 4.1.1 of the RIN Instructions and definitions. Endeavour Energy developed a map of the fixed asset register assets to the RIN RAB categories as set out in Chapter 9, Definitions.

The mapping of the financial information allowed for a direct allocation of each fixed asset register asset class to a single RIN RAB asset category allowing Endeavour to adopt this approach. The mapping is consistent with that of prior years.

Source of information

Information has been sourced from:

- Endeavour Energy's fixed asset register;
- The PTRM and RFM provided to Endeavour by the AER as part of the April 2019 NSW Distribution Determination;
- The Metering Pricing Model and Public Lighting Model provided to Endeavour by the AER as part of the April 2015 NSW Distribution Determination;
- The 2017/18 economic benchmarking RIN for the opening RAB for both standard and alternative control services;
- Endeavour Energy Statutory P&L allocated in accordance with the CAM; and
- Work papers for the 2018/19 Annual RIN.

Methodology and assumptions

Endeavour Energy sources the opening value for each category from the closing value from the previous year's reporting. The inflation on this value is then linked to the overall inflation on the RAB taken from table 3.3.1 above.

3.3 Assets

The straight-line depreciation for each Benchmarking RIN asset class is calculated by apportioning the regulatory straight-line depreciation obtained from table 3.3.1 weighted by the opening value of each Benchmarking RIN asset class.

Actual additions and proceeds from disposals are drawn directly from fixed asset register data that has been mapped to the Benchmarking RIN asset classes and allocated where appropriate between service classifications.

This process is set out below.

Opening value = Closing value from the 2017-18 benchmarking RIN for each asset category.

Inflation addition = (Opening value / Total RAB opening value) x Total RAB inflation addition

Straight line depreciation = (Opening value / Total RAB opening value) x Total RAB straight line depreciation

Actual Additions = Sum of fixed asset register capex for asset classes relevant to RAB asset class * nominal vanilla WACC ^{0.5}

Disposals = Sum of fixed asset register disposals for asset classes relevant to RAB asset class * nominal vanilla WACC ^{0.5}

Closing Value = Opening value - Regulatory depreciation + Actual Additions – Disposals

Use of estimated information

Endeavour Energy has not used any estimated information to calculate the values in the standard control services elements of table 3.3.2, all sources of information are actual financial or actual determination amounts.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact on the data in table 3.3.2.

Reliability of information

Endeavour submits that the information is reliable as all amounts ultimately aggregate to either RAB values contained in the relevant Roll Forward or Pricing Models or audited statutory amounts.

3.3.3 Total Disaggregated RAB Asset Values

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to calculate the values in this table as being the average of the opening and closing RAB asset class values from Table 4.2 above. The values in this table have been linked to the opening and closing RAB roll forward amounts as calculated in table 3.3.2.

3.3 Assets

Source of information

The information for table 3.3.3 was sourced from table 3.3.2.

The exception being capital contributions received that are sourced directly from the statutory financial values applying the same asset class mapping and service classifications as per table 3.2.1.

Methodology and assumptions

The calculation for each item in table 3.3.3 is as per below:

(Opening Value for RAB class 1 + Closing Value for RAB class 1) / 2

Capital contributions received are those amounts allocated to standard and alternative control service classifications as sourced from Endeavour's statutory accounting information.

Use of estimated information

Endeavour Energy has not used estimated information specifically for table 3.3.3. All information sourced from table 3.3.2 is dependent upon actual financial information and application of the RAB Framework. The only exception being capital contributions that is sourced from the audited statutory accounts.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data in table 3.3.3.

Reliability of information

Table 3.3.3 is directly linked to table 3.3.2 and hence the reliability of the information in table 3.3.3 is directly equivalent to that as per table 3.3.2 above. The only exception being capital contributions that have been audited as part of the statutory account preparation.

3.3.4 Asset Lives

Compliance with requirements of the notice

As set out in section 4.1.2 of the RIN Instructions and Definitions Endeavour Energy is required to apply a weighted average life calculation to determine the standard and remaining lives. These lives will represent the proportional contribution of the fixed asset register asset classes, their actual standard and remaining lives and actual financial values.

Source of information

The data for table 3.3.4 was sourced from actual fixed asset register information for each year of reporting.

Methodology and assumptions

To determine the **standard** life for each asset class required by the RIN, Endeavour calculated the Weighted Average Standard life using the underlying fixed asset register asset class information. This methodology is unchanged from prior years.

Algebraically this approach can be described as

$$\text{Service life of new assets} = \frac{\sum_{j=1}^n \text{OCC}_j \times \text{Life}_j}{\sum_{j=1}^n \text{OCC}_j}$$

3.3 Assets

To determine the **remaining** life for each asset class required by the RIN, Endeavour calculated the Weighted Average remaining life using the underlying fixed asset register asset class information.

Algebraically this approach can be described as

$$\text{Residual life of assets} = \left(\frac{\sum_{j=1}^n WDV_j}{\sum_{j=1}^n OCC_j} \right) \times Life_j$$

Where:

n is the number of individual assets in an AER asset class

OCC_j is the Opening Capital Cost of individual asset j

WDV_j is the Written Down Value of individual asset j

$Life_j$ is the standard life of individual asset j

Dep_j is the Depreciation of individual asset j

It is noted that consistent with our pre-existing accounting policies a periodic revaluation exercise was undertaken in 2010/11 for statutory reporting purposes. The combined impact of both restatement of the original capital cost in line with a replacement cost methodology as well as a cash flow value in use impairment on the residual value was providing step changes in the calculated remaining asset lives, in the order of a 20-year reduction in expected life in some instances. To remedy the impact of these revaluation transactions, the impact on the asset register since that time was removed from the underlying data using the journals and work papers that supported the original adjustments. The resultant outcomes are presented without the impact of the periodic revaluation.

It has been assumed that the composition of network services metering assets and standard control services assets are equal and therefore have the same standard and remaining life expectations.

Use of estimated information

No estimated data was used in the calculation of the asset lives. All information used was drawn from actual fixed asset register information.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.3.4.

Reliability of information

The data used in the calculations is all sourced from annual audited accounting information and is therefore considered reliable.

3.4 Operational Data

3.4 Operational Data

3.4.1 Energy Delivery

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.1 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.4.1, 3.4.1.1 and 3.4.1.4 represents the total electricity transported out of Endeavour Energy's network (measured in GWh). This is reflective of the energy metered at the customers charging location (i.e. connection point) and reconciles to total energy consumption reported in management reports. The figures in these tables represent energy consumption reported for the financial year and therefore include year-end accruals;
- The data presented in table 3.4.1.1 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. In particular, the peak, shoulder and off-peak periods relate to Endeavour Energy's own charging periods. Energy delivery where time of use is not a determinant is reflective of energy which is measured by an accumulation meter and charged on an accumulation basis;
- The data presented in table 3.4.1.2 reflects energy input into Endeavour Energy's network as measured at supply points from TransGrid and other DNSPs in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. All energy input into Endeavour Energy's network from TransGrid or other DNSPs is measured as being received in either peak, shoulder or off-peak times and therefore there is nil energy received from TNSP and other DNSPs not included in the above categories;
- The data presented in table 3.4.1.3 reflects energy input in Endeavour Energy's network by embedded generators, including residential embedded generators. The data is reported in accordance with the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. It is noted that energy received from residential embedded generators is measured on an accumulation basis and not measured by the time of receipt and therefore energy input from this source is allocated to the 'energy received from embedded generation not included in above categories from residential embedded generation' (DOPED0408) category; and
- The data presented in table 3.4.1.4 reflects energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9 of the Economic Benchmarking RIN Instructions and Definitions. This category breakdown is also consistent with the customer types reported in table 3.4.2.1.

Source of information

The information used to populate the tables contained in section 3.4.1 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

Set out in the table below are the specific cubes used to obtain the required information for the tables in section 3.4.1, along with a description in relation to the use of the cube by Endeavour Energy:

3.4 Operational Data

Table	TM1 Cube	Description
3.4.1, 3.4.1.1 & 3.4.1.4	NUoS cube	The NUoS cube is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end revenue accrual and report on month end revenue results and is also used extensively for budgeting and forecasting revenue related items.
3.4.1.2 & 3.4.1.3	TUoS Reconciliation cube	The TUoS Reconciliation cube is primarily used by Endeavour Energy to reconcile TransGrid's monthly TUoS invoice with internal system import data for the month. In performing this task, the TUoS Reconciliation cube contains information regarding system imports and peak demand by Bulk Supply Point ('BSP') and for each embedded generator (including residential solar system imports). The TUoS Reconciliation cube is also used to calculate and report on total system imports for the month which is used in the monthly NUoS accrual process.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 3.4.1.

Table	Methodology	Assumptions
3.4.1, 3.4.1.1 & 3.4.1.4	<ol style="list-style-type: none"> 1. Extract energy consumption data from the TM1 NUoS cube at the network tariff level for the financial year and by time period of consumption (i.e. Peak, Shoulder, Off-peak and Non TOU). 2. Reconcile the total derived at the individual network tariff level to the total from the TM1 NUoS cube to ensure no network tariffs have been excluded. 3. Populate tables 3.4.1, 3.4.1.1 and 3.4.1.4 from the detailed TM1 NUoS cube data in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	None.

3.4 Operational Data

3.4.1.2	<ol style="list-style-type: none"> 1. Extract TransGrid system import data from the TM1 TUoS Reconciliation cube at the BSP level for the financial year and by time period of delivery to the network by TransGrid (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the BSP level to the total from the TM1 TUoS Reconciliation cube to ensure no BSPs have been excluded. 3. TransGrid system import data from the TM1 TUoS Reconciliation cube is used to populate table 3.4.1.2 in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: given TM1 TUoS Reconciliation cube data for TransGrid system imports is available and represents previously reported figures, all information provided for this table consists of Actual Information (no Estimated Information required).</i></p>	None.
3.4.1.3	<ol style="list-style-type: none"> 1. Extract embedded generation system import data from the TM1 TUoS Reconciliation cube at the embedded generator level for the financial year and by time period of delivery to the network (i.e. Peak, Shoulder and Off-peak). 2. Reconcile the total derived at the embedded generator level to the total from the TM1 TUoS Reconciliation cube to ensure no embedded generators have been excluded. 3. Embedded generator system import data from the TM1 TUoS Reconciliation cube is used to populate the table in accordance with the Benchmarking RIN Instructions & Definitions. <p><i>Note: given TM1 TUoS Reconciliation cube data for Embedded Generation system imports is available and represents previously reported figures, all information provided for this table consists of Actual Information (no Estimated Information required).</i></p>	None.

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing the tables in section 3.4.1.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 3.4.1.

3.4 Operational Data

Reliability of information

All the information provided for the financial year represents Actual Information extracted from Endeavour Energy's reporting systems and reconciles to information reported to management. As a result, the information contained in the tables in section 3.4.1 is considered to be reliable.

3.4.2 Customer Numbers

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.2 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in tables 3.4.2.1 and 3.4.2.2 represents the average number of NMIs in Endeavour Energy's network for the financial year (except for unmetered customers, which is the number of connection points), calculated as the average of the number of NMIs on the first day of the regulatory year and on the last day of the regulatory year. Both energised and de-energised NMIs are included and extinct NMIs are not included. In addition, customer numbers have been reported in accordance with the categorisation as per the definitions provided in chapter 9 of the Benchmarking RIN Instructions & Definitions;
- Unmetered customer numbers presented in table 3.4.2.1 represents the sum of connections (excluding public lighting connections) in Endeavour Energy's network that do not have a NMI and the energy usage for billing purposes is calculated using an assumed load profile. For Endeavour Energy, this predominantly includes unmetered connections related to bus shelters, telephone boxes etc. These figures specifically exclude unmetered connections related to traffic signals on the basis that the customer for the connections has a market NMI and therefore does not meet the definition of an unmetered customer. In addition, public lighting connections are not included in the unmetered customer category but rather included in the 'Non-residential customers not on demand tariff customer numbers' (DOPCN0102) category; and
- In order to account for the fact that unmetered connections related to traffic signals have been specifically excluded from the definition of unmetered customers, table 3.4.2.4 provides the number of unmetered connections reported, and the number of unmetered connections not reported (i.e. unmetered connections related to traffic signals), in unmetered customers in table 3.4.2.1.

Source of information

Table 3.4.2.1 - Customer numbers excluding unmetered customers & de-energised customers

The information used to populate table 3.4.2.1 (excluding unmetered customers and de-energised customers) was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts/RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

3.4 Operational Data

Table 3.4.2.1 - Unmetered customers

The information used to calculate unmetered customer numbers by connection point was extracted from a monthly report provided to the default retailer in Endeavour Energy's network area. This report is generated from Endeavour Energy's billing system (Banner) and includes details of all unmetered connection points in Endeavour Energy's network area and also the date which each supply was connected.

Table 3.4.2.1 – De-energised customers

Customer numbers obtained from the TM1 NUoS cube originate from Endeavour Energy's billing system and therefore only relate to active or energised customers. The number of de-energised customers was obtained from C9 Customer Count reports run from MSATS as at 30 June. The C9 Customer Count report includes details of customer numbers by status (i.e. Active, De-energised and Greenfield).

Table 3.4.2.2

Endeavour Energy disclose customer numbers by location on the network in the Annual RIN 6.2.4 (Distribution Customer Numbers). This report was used, in conjunction with customer numbers reported in table 3.4.2.1, to calculate customer numbers by location on the network whilst ensuring the total customer numbers reconciles to table 3.4.2.1.

Methodology and Assumptions

The following table sets out the methodology applied to calculate the required data for each of the tables in section 3.4.2.

Table	Methodology	Assumptions
3.4.2.1	<ol style="list-style-type: none"> 1. Extract 30 June customer number data from the TM1 NUoS cube at the network tariff level. This data represents active or energised customers only and unmetered customer numbers represent the number of NMLs billed rather than the number of connection points. This information is used to calculate average customer numbers for the financial year (excluding unmetered customers and de-energised customers). 2. Reconcile the total derived at the individual network tariff level to the total from the TM1 NUoS cube to ensure no network tariffs were excluded. 3. In order to calculate unmetered customer numbers by connection point, Endeavour Energy utilised the information contained in a monthly report provided to the default retailer in Endeavour Energy's network area. This report is generated from Endeavour Energy's billing system (Banner) and includes details of all unmetered connection points in Endeavour Energy's network area and also the date on which supply was connected. 	<p>A limitation with the unmetered connection point report utilised in step 3 is that it will only include details of unmetered connection points as at 1 March 2010 (date of Retail business sale) and any unmetered connection points added to the network from that date.</p> <p>However, given unmetered connection points represent items such as bus shelters, bill boards, telephone boxes etc, it is unlikely a material number of these would be</p>

3.4 Operational Data

	<p>Using the dates from this report, the number of unmetered connection points at the end of the financial year was calculated along with the average for the financial year.</p> <p>4. In order to calculate the number of de-energised customers Endeavour Energy obtained MSATS C9 Customer Count reports as at 30 June. C9 Customer Count reports from MSATS detail the number of customers by status including Active, De-energised and Greenfield. An average for the financial year was calculated.</p> <p>5. Based on the results of the steps above, table 3.4.2.1 was populated. The total number of de-energised customers (calculated in step 4) was allocated to the 'Other Customer Numbers' (DOPCN0106) category on the basis that de-energised customers do not have a network tariff assigned and therefore cannot be allocated to any of the other customer categories.</p> <p><i>Note: given the data used to populate table 3.4.2.1 is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	<p>removed from the network over time. In general, unmetered connection points increase in number over time. As a result, this limitation is considered an insignificant risk.</p>
3.4.2.2	<p>1. Information on customer numbers by location on the network is reported in the Annual RIN 6.2.4 (Distribution Customer Numbers). These constitute averages for the year and, from 2013/14, include unmetered customers by connection point and de-energised customers.</p> <p>2. Total customer numbers from the Annual RIN 6.2.4 (Distribution Customer Numbers) were reconciled to total customer numbers calculated for table 3.4.2.1. Given the variances identified were immaterial (i.e. less than 1%), total customer numbers from table 3.4.2.1 was prorated against the network location categories using the information from the Electricity Network Performance Report. This was done to ensure customer numbers per table 3.4.2.2 reconciled to the customer numbers in table 3.4.2.1.</p> <p>3. The customer numbers calculated in step 2 were used to populate table 3.4.2.2 in accordance with the Benchmarking RIN Instructions & Definitions.</p>	None.

3.4 Operational Data

Note: given the data used to populate table 3.4.2.2 is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing that table in section 3.4.2.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables in section 3.4.2.

Reliability of information

All the information provided for the financial year represents Actual Information extracted from Endeavour Energy's reporting systems and reconciles to information reported to management. As a result, the information contained in the tables in section 3.4.2 is considered to be reliable.

3.4.3 System Demand

3.4.3.1 Annual system maximum demand characteristics at the zone substation level – MW measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.1 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2020-29.

Methodology and assumptions

Assumption – Upon determining the financial year for Endeavour Energy's maximum demand, the season (summer or winter) that the maximum demand falls in will become the assumed financial peak for all substations and high voltage customers.

E.g. FY18-19 Endeavour Energy's maximum demand fell in summer. It is assumed that all individual substations and high voltage customers' maximum demand will also be in summer for FY18-19.

DOPSD0101 – This was calculated by taking the summation of all individual zone substations and high voltage customers' maximum demand for the relevant financial year in MVA converted to MW by its respective power factor.

DOPSD0102 – This was calculated by taking the summation of all individual zone substations and high voltage customers' weather corrected values at the 10% PoE MW level.

3.4 Operational Data

DOPSD0103 – This was calculated by taking the summation of all individual zone substations and high voltage customers' weather corrected values at the 50% PoE MW level.

DOPSD0104 – This was calculated by the summation of all zone substations and high voltage customers (in MW) by date and time and taking the maximum of the summated values.

DOPSD0105 – Summation of all zone substations and high voltage customers by date and time and applying a weather correction to the summated values at the 10% PoE MW Level.

DOPSD0106 – Summation of all zone substations and high voltage customers by date and time and applying a weather correction to the summated values at the 50% PoE MW Level.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been directly taken from the Historian database and forecasting documents.

3.4.3.2 Annual system maximum demand characteristics at the transmission connection point – MW measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.2 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2020-29.

Methodology and assumptions

Assumption - Upon determining the financial year for Endeavour Energy's maximum demand, the season (summer or winter) that the maximum demand falls in will become the assumed financial peak for all substations.

E.g. FY18-19 Endeavour Energy's maximum demand fell in summer. It is assumed that all individual substations demand will also be in summer for FY18-19.

DOPSD0107 – This was calculated by taking the summation of all individual transmission substations (Endeavour Energy Bulk Supply Points) maximum demand for the relevant financial year in MVA and converted to MW by its respective power factor.

DOPSD0108 – This was calculated by the summation of all transmission substation (Endeavour Energy Bulk Supply Points) weather corrected values at the 10% PoE MW level.

DOPSD0109 – This was calculated by the summation of all transmission substation (Endeavour Energy Bulk Supply Points) temperature corrected values at the 50% PoE MW level.

DOPSD0110 – This was calculated by the summation of all transmission substations (Endeavour Energy Bulk Supply Points) in MW by date and time and taking the maximum of the summated values.

3.4 Operational Data

DOPSD0111 – Summation of all transmission substations (Endeavour Energy Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 10% PoE MW Level.

DOPSD0112 – Summation of all transmission substations (Endeavour Energy Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 50% PoE MW Level.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been directly taken from the Historian database and forecasting documents.

3.4.3.3 Annual system maximum demand characteristics at the zone substation level – MVA measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.3 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2020-29.

Methodology and assumptions

Assumption – The power factors of the Endeavour Energy network provide an adequate conversion between MVA and MW at the zone substation and high voltage customer level.

In this section, DOPSD0204, DOPSD0205 and DOPSD0206 were calculated using the power factor from *Table 3.4.3.5 Power factor conversion between MVA and MW - DOPSD0301*.

DOPSD0201 - This was calculated by taking the summation of all individual zone substations and high voltage customers' maximum demand.

DOPSD0202 - This was calculated by the summation of all individual zone substations and high voltage customer weather corrected values at the 10% PoE MVA level.

DOPSD0203 - This was calculated by the summation of all individual zone substations and high Voltage Customer weather corrected values at the 50% PoE MVA level.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been calculated from the Historian database and forecasting documents.

3.4 Operational Data

3.4.3.4 Annual system maximum demand characteristics at the transmission connection point – MVA measure

Compliance with requirements of the notice

The data presented in the tables contained in section 3.4.3.4 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Historian Database, Summer Demand Forecast 2020-29.

Methodology and assumptions

Assumption - The power factor of the Endeavour Energy network provides an adequate conversion to MVA for transmission connection points.

DOPSD0207 – This was calculated by taking the summation of all individual transmission substations (EE Bulk Supply Points) maximum demand for the relevant financial year in MVA.

DOPSD0208 – This was calculated by taking the summation of all individual transmission substation (EE Bulk Supply Points) weather corrected values at the 10% PoE MVA level.

DOPSD0209 – This was calculated by taking the summation of all individual transmission substation (EE Bulk Supply Points) weather corrected values at the 50% PoE MVA level.

DOPSD0210 – This was calculated by the summation of all transmission substations (EE Bulk Supply Points) in MW by date and time and then finding the maximum of the summated values in MW and converted to MVA by its respective power factor.

DOPSD0211 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 10% PoE MW Level. A conversion to MVA was applied to its respective power factor.

DOPSD0212 – Summation of all transmission substations (EE Bulk Supply Points) by date and time and applying a weather correction to the summated values at the 50% PoE MW Level. A conversion to MVA was applied to its respective power factor.

Use of estimated information

No estimated figures were used for this section.

Reliability of information

Information has been directly taken from the Historian database and forecasting documents.

3.4.3.5 Power Factor Conversion between MVA and MW

Compliance with requirements of the notice

The data that has been supplied complies with the requirements of the notice as it has been calculated using the method outlined for the benchmark guidelines i.e. dividing the MW value by MVA to obtain the power factor. The Summer Demand Forecast (SDF) document contains MW and MVA data and calculated MVA for all zone substations in Endeavour Energy's network.

3.4 Operational Data

Source of information

- *Summer Demand Forecast 2020 – 2029 (SDF Report)* [For substations not covered by Category RIN table 5.4]

Coincident/diversified load at 50% POE temperature control data used. If coincident/diversified load is not available, non-coincident/undiversified load was used.

Methodology and assumptions

Overall system power factor

This is the calculated power factor derived from actual total system coincident MW and MVar load history. This power factor is a published value in the annual Summer Demand Forecast.

132kV

The average power factor was found by calculating the sum of all corresponding 132kV bulk supply point raw MW and raw MVar using data from the Category Analysis RIN or Summer Demand Forecast (SDF) report listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

66kV

The average power factor was found by calculating the sum of all corresponding 66kV bulk supply point raw MW and raw MVar and the 66kV secondary transmission substation MW and MVar using data from the Category Analysis RIN or Summer Demand Forecast (SDF) report listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

33kV

The average power factor was found by calculating the sum of all corresponding 33kV secondary transmission substation raw MW and raw MVar using data from the Summer Demand Forecast (SDF) report listed in the preceding section and then calculating the ratio of MW to MVA for the summated values.

11kV and 22kV

The average power factor was found by calculating the sum of all corresponding zone substation MW and MVAR using data from the aforementioned SDF report.

Adjustments were made to MVAR data by adding VARs associated with capacitor banks on the 11kV and 22kV busbar at zone substations in order to capture native MVar load.

12.7kV SWER

The PF of our SWER lines were taken to be the PF at Kandos ZS, where most of our SWER lines are located.

Low Voltage

There is no metering or SCADA information for the vast majority of the low voltage network. The power factor of our LV distribution network was assumed to be the same as the 11kV network power factor, since 11kV is the main network distribution voltage for Endeavour Energy.

3.4 Operational Data

Use of estimated information

Low Voltage power factor was estimated in line with the methodology and assumptions above.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

The assumptions that have been made were done as a best estimate due to the limited availability of data relating to the distribution and SWER lines.

The PF values included in this section are based on actual data and do not make use of estimates, making the information provided reliable.

3.4.3.6 & 3.4.3.7 Demand supplied (for customers charged)

Compliance with requirements of the notice

The data presented in tables 3.4.3.6 and 3.4.3.7 contained in section 3.4 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 3.4.3.6 represents the total Maximum Demand amount supplied to customers as measured in MW. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand; and
- The data presented in table 3.4.3.7 represents the total Maximum Demand amount supplied to customers as measured in MVA. All Maximum Demand charges are based on measured Maximum Demand rather than contracted Maximum Demand.

Source of information

The information used to populate tables 3.4.3.6 and 3.4.3.7 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube which is used by Endeavour Energy to store and report billed, accrued and import data related to energy volumes, customer numbers and demand KW/kVA and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Methodology and assumptions

The following table sets out the methodology applied to calculate the required data for tables 3.4.3.6 and 3.4.3.7.

3.4 Operational Data

Table	Methodology	Assumptions
3.4.3.6	<p>1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for the financial year.</p> <p>2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process.</p> <p>3. The detailed TM1 NUoS cube data was used to populate table 3.4.3.6 in accordance with the Benchmarking RIN Instructions & Definitions. Only those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category are charged Maximum Demand on a measured MW basis.</p> <p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	None.
3.4.3.7	<p>1. Maximum Demand data was extracted from the TM1 NUoS cube at the network tariff level for the financial year.</p> <p>2. The total derived at the individual network tariff level was reconciled to the total from the TM1 NUoS cube to ensure no network tariffs were excluded from the extraction process.</p> <p>3. The detailed TM1 NUoS cube data was used to populate table 3.4.3.7 in accordance with the Benchmarking RIN Instructions & Definitions. All customers, except those customers in Endeavour Energy's 'Bulk & Inter-Distributor Transfer' category, are charged Maximum Demand on a measured MVA basis.</p> <p><i>Note: given TM1 NUoS cube data is available and represents previously reported figures, all information provided for these tables consists of Actual Information (no Estimated Information required).</i></p>	None.

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing tables 3.4.3.6 and 3.4.3.7.

Material accounting policy changes

Endeavour Energy have not undertaken any material changes in accounting policies which would impact the data contained in the tables 3.4.3.6 and 3.4.3.7.

-
-
-
-
-
-
- **3.4 Operational Data**

Reliability of information

All the information provided represents Actual Information (as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions) extracted from Endeavour Energy's reporting systems. As a result, the information contained in the tables 3.4.3.6 and 3.4.3.7 is considered to be reliable.

● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

-
-
-
-
- **3.5 Physical**
- **Assets Expenditure**

3.5.1 Network Capacities

Compliance with requirements of the notice

Endeavour Energy has reported network circuit length and circuit capacity MVA capacities for low voltage to 132kV voltages in line with AER RIN Instructions and Definitions document for Final RIN for Economic Benchmarking.

3.5.1.1 Overhead network length of circuit at each voltage and 3.5.1.2 Underground network circuit length at each voltage

DPA0101 to DPA0206 Circuit Lengths

Source of information

Circuit length actual data (DPA0101 to DPA0107 and DPA0201 to DPA0206) was determined from GIS production data as of 30 June for the reporting period. Circuit length is from GIS production data as at 30 June, end financial reporting year. Circuit length is determined using the same criteria as report statistics on the company intranet website.

Methodology and assumptions

A snapshot of GIS production data as at 30 June for the reporting period was considered the best available data for this reporting. Geospatial (GIS) systems do not have readily available historical or audit-trail records to enable this reporting, hence the use of the 30 June GIS snapshot data. Specific assumptions are detailed further in 'Use of estimated information'.

Use of estimated information

The information used to provide circuit lengths is derived from systems that are used in the normal course of business and thus are considered actual information. Production systems are constantly updated and can produce dynamic results. The figures are accurate as at 30 June for the reporting period.

3.5.1.3 Estimated overhead network weighted average MVA capacity by voltage class and 3.5.1.4 Estimated underground network weighted average MVA capacity by voltage class

Compliance with requirements of the notice

The data presented in these tables is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

The sources of information are other tables in the RIN as listed below:

- 30 June GIS data for this reporting period;
- Conductor Code master (including revised ratings); and

-
-
-
-
- **3.5 Physical Assets Expenditure**

Methodology and assumptions

Low Volt and up to less than 33kV was determined from 30 June snapshot GIS data for the reporting period and Conductor Code ratings in line with prior year reporting. Methodology remains unchanged from previous year.

- Low Voltage underground MVA circuit capacity is based on actual data and ratings for common conductor types (ratings are not available for all LV conductors), and in line with prior calculations.
- 11kV and 22kV underground MVA circuit capacity is based on actual data and ratings, with a de-rating factor of 0.75 applied for these conductors in line with common conductor configurations and common de-rating factors as indicated in company standard MDI0011.

The method for determining MVA circuit capacity for 33, 66 and 132kV has changed from a prior year source of Network Characteristics to be based on GIS transmission trace data. Review of data for this process and in comparison to prior processes shows a couple of adjustments were necessary, as follows:

- Conductor Code current ratings historically has had some zero amp ratings for conductor codes (particularly higher voltage) rather than the most appropriate rating for use of that conductor type. For cases where this affected 33, 66 and 132 kV conductors for this report period a rating was determined for replacing the zero value.
- In prior reporting some conductors not owned by Endeavour Energy were included in reporting, for this report these have been excluded.

The method used this for this report period:

- Determined in service conductors grouped by feeder in GIS, and determined length and current rating for each section

For every section the “rating x km” was calculated.

This parameter as well as length was summed by voltage and construction type (underground or overhead) in a pivot table.

The weighted average capacity in amps for each voltage and construction type was then calculated based on the sum of “ratings x km” divided by length in km.

The weighted average capacity in amps is then converted to MVA.

It is further noted that Endeavour Energy is currently working on system and technology changes which are likely to have further impacted reporting data, as data corrections, and adjustments have been made.

-
-
-
-
-
- **3.5 Physical Assets Expenditure**

Use of estimated information

Circuits with missing ratings data are ignored and not included in the calculation. Data ignores voltage limited capacity (not readily available - need to load flow) - capacity in some rural lines will be overstated. Data ignores line segments where there is missing ratings data.

Summer normal ratings assumed, as per AER instructions ratings are to be provided for normal circumstances as such emergency ratings ignored. The weighted average (weighted average capacity based on line length) overstates throughput capacity of the network due to various sections of different conductor being in series. Endeavour Energy will be limited by the lowest rated section.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

The information is reliable based on available data with some level of estimation as described above. The methodology here is expected to be more accurate than what was provided for the Reset Economic Benchmarking RIN based on GIS data and splitting underground/overhead and individual section ratings where available.

3.5.2 Transformer Capacities

Compliance with requirements of the notice

Endeavour Energy has reported Transformer capacities in line with AER RIN Instructions and Definitions.

Source of information

Organisation databases:

- Ellipse - The MINCOM Information Management System (an IT system used by Endeavour Energy for HR, Payroll, Logistics, Finance, Equipment). A snapshot copy of Ellipse as at 30 June for the reporting period was taken and this formed the source data for reporting purposes.
- Reminda – metering system for maximum meter reading data in order to determine Distribution transformer capacity owned by High Voltage Customers (DPA0502) only

Methodology and assumptions

Data is sourced from the ELLIPSE nameplate for power transformers and as such is only as accurate as the data in the system. High Voltage Customer data is sourced from maximum meter reading data from the Reminda system.

Use of estimated information

Data is actual data sourced from the Endeavour Energy's asset management system, ELLIPSE-nameplate for power transformers. For High Voltage Customers (DPA0502) data is determined in accordance with AER guidelines using maximum meter reading data from Reminda.

-
-
-
-
- **3.5 Physical Assets Expenditure**

Material accounting policy changes

Endeavour Energy has replaced the Nemstar metering system with Reminda resulting in a change to the data source for High Voltage Customers (DPA0502), while doing this the calculation method was reviewed and an error discovered with the prior Nemstar derived method.

Otherwise Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

As noted above, Endeavour Energy has used available reported information for this section.

3.5.3 Public Lighting

The number of luminaires, wood poles (dedicated) and columns (dedicated) is taken as of 30 June 2019 from the Street Lighting Usage of System (SLUoS) report for the financial year 2019/19 (1 July 2018 to 30 June 2019).

Compliance with requirements of the notice

The data provided is in line with the format provided.

Source of information

The information is extracted from the financial year end report of SLUoS for the month of June 2019. This report relies on the information on Ellipse data base of Endeavour Energy.

Methodology and assumptions

SLUoS reports are prepared by Network Revenue Analyst, Commercial Finance, Endeavour Energy, every month. The report for the month ending June 2019 was used to extract the data for 30th June 2019. The data for the assets installed and energised during the month of June 2019 are appropriated as the number of days in service in June 2019 times the asset/s installed in June 2019 divided by 30 (the total number of days in June 2019). Example: If 10 luminaires are installed in June 2019 for 27 days then the luminaire count for June 2018 will be $10 \times 27 / 30 = 9$. This methodology applies only for June 2019 as all other months have 100% active days. No assumptions were made.

Use of estimated information

Data from the SLUoS report is applied. All data on public lighting assets is held in the street lighting equipment register in the company's Ellipse database. This includes all constructed, energised and proposed new assets. This data is the basis for generating Street Lighting Use of System (SLUoS) customer bills.

Reliability of information

Ellipse database is considered reliable and is Endeavour Energy's main source of asset / financial data. Historical data is frequently applied for budgeting and forecasting.

3.6 Quality of Service Data

3.6 Quality of Service Data

3.6.1 Reliability

Compliance with requirements of the notice

Reported SAIDI/SAIFI complies with the requirements of the Benchmarking RIN. The following aspects are noted:

Excluded incidents have been determined in accordance with the requirements of the STPIS (3.3a)

Major Event Days (MED's) have been determined in accordance with the requirements of the STPIS (3.3b) – and as per Endeavour Energy distribution determination 2015–16 to 2018–19 Attachment 11 – Service target performance incentive scheme April 2015.

The determination allows for the alternative Box cox methodology. The process is described in WPB 1012 – Calculation of Major Event Day Threshold.

Therefore, the 2018/19 MED SAIDI threshold is 3.42 and any day in the period that exceeded this threshold was classified as a MED.

Outages affecting single premises – Single premise outages that occur as a result of a fault on Endeavour Energy's network are included in the reliability result.

Subsequent interruptions caused by network switching during fault finding, in general switching operations associated with an unplanned incident may include subsequent interruptions to customers that are associated with fault finding. Current systems do not have any facility to identify these operations and therefore exclude them from reliability calculations. It should be noted that removing these operations from reliability calculations would result in an inaccurate record of actual customer experience.

Unplanned interruptions are sustained interruptions greater than one minute in accordance with the SAIDI definition in appendix A of the STPIS.

Source of information

Base outage data (customers interrupted and CMI)

Data sourced from OMS. All records in this database were validated and checked in accordance with a Work Place Instruction WPB1014.

Reporting tool – Cognos 10

Customer numbers for calculation of SAIDI and SAIFI

Customer numbers used to calculate SAIDI and SAIFI were average customer numbers for the relevant reporting period and were sourced from customer numbers in the OMS Archive database

Methodology and assumptions

MED days – MED day threshold of 3.42 (2018/19 threshold) was applied, therefore any day in the period that exceeded this threshold was classified as a MED.

Excluded interruptions – Reporting tool Cognos 10 identifies excluded interruptions based on a cause that is assigned to each interruption in accordance with STPIS 3.3a.

3.6 Quality of Service Data

Use of estimated information

The information used to provide reliability statistics is derived from systems that are used in the normal course of business and thus considered to be actual information.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in this section.

Reliability of information

All the information provided represents actual information extracted from Endeavour Energy's reporting systems and reconciled to reported figures in previous audited RINs. As a result, the information contained is considered to be reliable cognisant of the comments made above.

3.6.2 Energy not Supplied

Compliance with requirements of the notice

We were unable to fully comply with any of the methods prescribed by the AER in the Benchmarking RIN. Options were:

Average consumption of the customers interrupted based on their billing history

Current reporting systems do not support alignment of consumption data to individual customers interrupted and requires the manipulation of large amounts of data in multiple systems. Establishing a process to facilitate this would require significant development to reporting systems and databases.

Feeder demand at the time of the interruption divided by the number of customers on the feeder
Feeder demand at the time of the outage is not recorded in the OMS

Average consumption of customers on the feeder based on their billing history
Customers in the billing system (Banner) do not have the feeder allocated.

Average feeder demand derived from feeder Maximum Demand and estimated load factor divided by the number of customers on the feeder
No definition provided to allow accurate allocation of load factor

The provided information is an estimation of data using a variant of option 1. Refer below for more detail.

Source of information

Energy not supplied - Unplanned – OMS customer minutes off supply used to calculate unplanned SAIDI in section 3.6.1.

Energy not supplied - Planned – Customer minutes off supply used to calculate Planned SAIDI 2018/19 Annual RIN. This data is supplied by System Operations.

Methodology and assumptions

Average annual consumption of **all** customers was divided by the number of customers, average days of supply and minutes per day (1440) to obtain an average kWh per minute consumption per customer, for each reporting period.

3.6 Quality of Service Data

Average kWh per minute per customer was then multiplied by the number of customers interrupted and the duration of the interruption to determine kWh energy not supplied (expressed as GWh in the RIN).

Consumption data per customer is based on Domestic Controlled Load, Domestic General Rate, Commercial General Supply non TOU and Commercial General Supply TOU

Excluding Unmetered (a summated figure) and Industrial load based on the assumption that the majority of industrial load has either a backup supply or is on dedicated feeders that have high reliability. Including this load would over state load lost to other customers.

The method that Endeavour Energy has adopted is a variant of the AER's option 1, using averaged customer consumption data.

Use of estimated information

Endeavour Energy has used estimated information for table 3.6.2 - refer above estimate was required because we were unable to apply current or historical data to get actual information in accordance with the AER prescribed options.

Limitations included:

- lack of complete data for all reporting periods;
- Available data in large volumes and separated across different information systems; AND
- merging data sets unmanageable and requires a large degree of assumptions to be made.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

All information provided represents estimated information as the data for table 3.6.2 is not readily available or captured. This information should not be relied upon as an accurate estimation of the actual energy not supplied to customers when they are interrupted.

3.6.3 System Losses

Compliance with requirements of the notice

The data presented in table 3.6.3 contained in section 3.6 is consistent with the requirements of the Economic Benchmarking RIN. In particular:

- The data presented in table 3.6.3 represents system losses as the proportion of energy that is lost in distribution of electricity from the transmission network to Endeavour Energy customers; and
- System losses have been calculated as per the below equation as stipulated in the Economic Benchmarking RIN Instructions & Definitions:

3.6 Quality of Service Data

Equation 2 Calculation of system losses

$$\text{system losses} = \frac{\text{electricity imported} - \text{electricity delivered}}{\text{electricity imported}} \times 100$$

Where:

Electricity imported is the total electricity inflow into Endeavour Energy's distribution network (including from Embedded Generation) minus the total electricity outflow into the networks of the adjacent connected distribution network service providers or the transmission network(s).

Electricity delivered is the amount of electricity transported out of Endeavour Energy's network to its customers as metered (or otherwise calculated) at the customer's connection.

This is a system wide figure not a feeder level figure.

Source of information

The information used to populate table 3.6.3 was extracted directly from TM1. Endeavour Energy uses this OLAP tool for various purposes including budgeting and forecasting, monthly reporting and regulatory account allocations and it has been used historically to provide data for previous audited Regulatory Accounts / RINs. It is a cube-based technology which allows rules to be created between cubes and within cubes.

The information was extracted from the TM1 NUoS cube (energy delivered) and the TM1 TUoS Reconciliation Cube (energy imported). These cubes are used by Endeavour Energy to store and report energy import data, as well as data related to energy delivered, and calculate associated revenue outcomes (i.e. energy revenue, NAC revenue and demand revenue) at the network tariff level. It is the primary tool used to calculate the month end NUoS accrual and report on month end NUoS results and is also used extensively for budgeting and forecasting NUoS related items.

Methodology and assumptions

As outlined above, system losses have been calculated in accordance with equation 2 of the Economic Benchmarking RIN Instructions & Definitions.

Use of estimated information

Endeavour Energy has not used Estimated Information, as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions, in completing table 3.6.3.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the table 3.6.3.

Reliability of information

All the information provided represents Actual Information (as defined in chapter 9 of the Economic Benchmarking RIN Instructions & Definitions) extracted from Endeavour Energy's reporting systems. As a result, the information contained in the table 3.6.3 is considered to be reliable.

-
-
-
-
-
-
- **3.6 Quality of Service Data**

3.6.4 Capacity Utilisation

Compliance with requirements of the notice

The data presented in table 3.6.4 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

The sources of information are other tables in the RIN as listed below:

- 3.5.2.2 Zone Substation Transformer Capacity
- 3.4.3.3 Annual system demand characteristics at the zone substation level

Methodology and assumptions

Utilisation is calculated reference other tables in the Economic Benchmarking RIN as per the formula below:

Overall utilisation (DQS04) = $DOPSD0201 / (DPA0602 + DPA0603 + DPA0605)$

This is the total undiversified maximum demand at zone substation level divided by the sum of zone substation transformer capacity.

Use of estimated information

Refer to basis of preparation for 3.4.3.3 and 3.5.2.2.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Refer to basis of preparation for 3.4.3.3 and 3.5.2.2.

[illegible]

3.7 Operating Environment Factors

3.7.1 Density Factors

Compliance with requirements of the notice

The data presented in table 3.7.1 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Customer density numbers use the figure in 3.4 Operational data worksheet, item DOPCN01. Route Line Length is from 3.7.3, item DOEF0301.

Energy density MWh (converted from GWh) figures are from worksheet 3.4, item DOPED01 in line with the AER definition.

Demand density MVA (converted to KVA) figures are from worksheet 3.4, item DOPSD0203 in line with the AER definition for using Zone Substation figures.

Actual sources of information are considered actual values as they are derived from systems that are used in the normal course of business.

Endeavour Energy has calculated the Energy and Demand density factors as follows:

- DOEF0102 is actual based on $DOPED01 * 1000 / DOPCN01$ for each year (refer sheet 3.4 Operational data); and
- DOEF0103 is actual based on $(DOPSD0203 * 1000) / DOPCN01$ (refer sheet 3.4 Operational data) for each year.

Methodology and assumptions

It is assumed the number of Customers, Route Line Length, GWh, and kVA, reported elsewhere in the RIN are correct and appropriate to the reporting required.

Use of estimated information

As the sources of information are considered to deliver actual values, the ratios of these quantities are also considered to be actual values.

Endeavour Energy has calculated Customer density factors as follows:

- DOEF0101 is estimated based on $DOPCN01 / DOEF0301$ for each year. (refer sheet 3.4 Operational data and sheet 3.7 Operating environment)

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the tables in this section.

Reliability of information

Information provided represents estimated and actual information as the data for table 3.7.1 is based on data reported elsewhere in the RIN.

3.7 Operating Environment Factors

3.7.2 Terrain Factors

Compliance with requirements of the notice

The data presented in table 3.7.1 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

Information provided in table 3.7.2 was sourced from Endeavour Energy's Geographical Information System (GIS), Rural Fire Service map polygons applied to the GIS, a Scope data directly supplied by our Contractors and Audit review of vegetation management contracts using the GIS Cloud work flow management system, the Bureau of Meteorology web site and the Vegetation Program Completion Process.

GIS Cloud Work flow Management System:

The GIS Cloud mobile data collection system was implemented FY16 to replace the AM4 System. It delivers to Endeavour Energy improved functionality over the provision of an auditable, sophisticated workflow management system that is geospatially enabled (including tracking) with real time data capability.

GIS Cloud is a cloud-based solution delivering a "Real-time mapping platform for the entire workflow of your organisation" and integrates with Ellipse. Endeavour Energy implements the workflow described below to manage;

1. Vegetation Management contracts
2. Auditing function
3. the Defect management system to integrate with the Ellipse corporate asset database.

The Vegetation Program Completion Process is detailed in Branch Work Place Instruction WVM 0838. The purpose of this Branch Workplace Instruction is to define the process, including clarity of roles and responsibilities within the Vegetation Control Section of the Maintenance Branch. It is also to minimise business risk.

Methodology and assumptions

The assumptions made in regard to the data in Table 3.7.2 are as follows:

- Average number of trees per urban and CBD vegetation maintenance span?

Average = total number of trees identified for trimming in urban areas divided by the total number of maintained spans in urban areas.

- Average number of trees per rural vegetation maintenance span?

Average = total number of trees identified for trimming in rural areas divided by the total number of maintained spans in rural areas.

3.7 Operating Environment Factors

Average number of defects

Table 3.7.2 refers to the average number of defects in specific categories per maintenance span and the detail provided is the spans divided by the number of trees. The basis for using trees is because these have been fully scoped by external contractors and therefore are a more accurate count of the defect exposure.

A tree growing beneath a maintained span could have multiple non-compliances with the Network standards for clearances to overhead conductors and the removal of single branch often removes multiple defects. The records of defects in the corporate Ellipse database are not consistently accurate and can contain duplications. It is considered the methodology employed to record the average number of defects is a more accurate reflection of the number of defects per maintenance span.

The approach we have adopted in table 3.7.2 is outlined below:

- Average number of defects per urban and CBD vegetation maintenance span:

Average = the total number of spans that have identified defects in urban areas divided by the total number of trees identified for trimming in urban areas. The defects do not include trees with defects identified for trimming in the future. It should be noted that by dividing one by the reported result, it converts the outcome to a per span figure.

- Average number of defects per rural vegetation maintenance span:

Average = the total number of spans that have identified defects in rural areas divided by the total number of trees identified for trimming in rural areas. The defects do not include trees with defects identified for trimming in the future. It should be noted that by dividing one by the reported result, it converts the outcome to a per span figure.

- Standard vehicle access:

Access = Total length of Transmission and Distribution conductors in Kms in accordance with the AER definition.

- Variability:

The number of defects identified in Urban, CBD and Rural vegetation maintenance spans have a natural variability each year dependent upon the climate effects of El Nino and La Nina.

- Vegetation Management Process:

The process is characterised in work place instruction WMV-0838. The process describes in detail the methodology of the discrete contracts of work for Scope and Audit contract, Maintenance Cutting contracts and Auditing by Endeavour Energy staff of the cutting.

- The Tropical proportion is zero as Endeavour Energy does not have any network in an area zoned as Tropical by the Bureau of Meteorology.

3.7 Operating Environment Factors

Use of estimated information

As specified in the methodology and assumptions section above.

Material accounting policy changes

Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in table 3.7.2.

Reliability of information

The information provided for the 2015-16 year is from the various Endeavour Energy systems as detailed above. The information provided for DOEF0202 and DOEF0205 has been calculated using the methodology and assumptions outlined above.

3.7.3 Service Area Factors

Compliance with requirements of the notice

The data presented in table 3.7.3 is consistent with the requirements of the Economic Benchmarking RIN.

Source of information

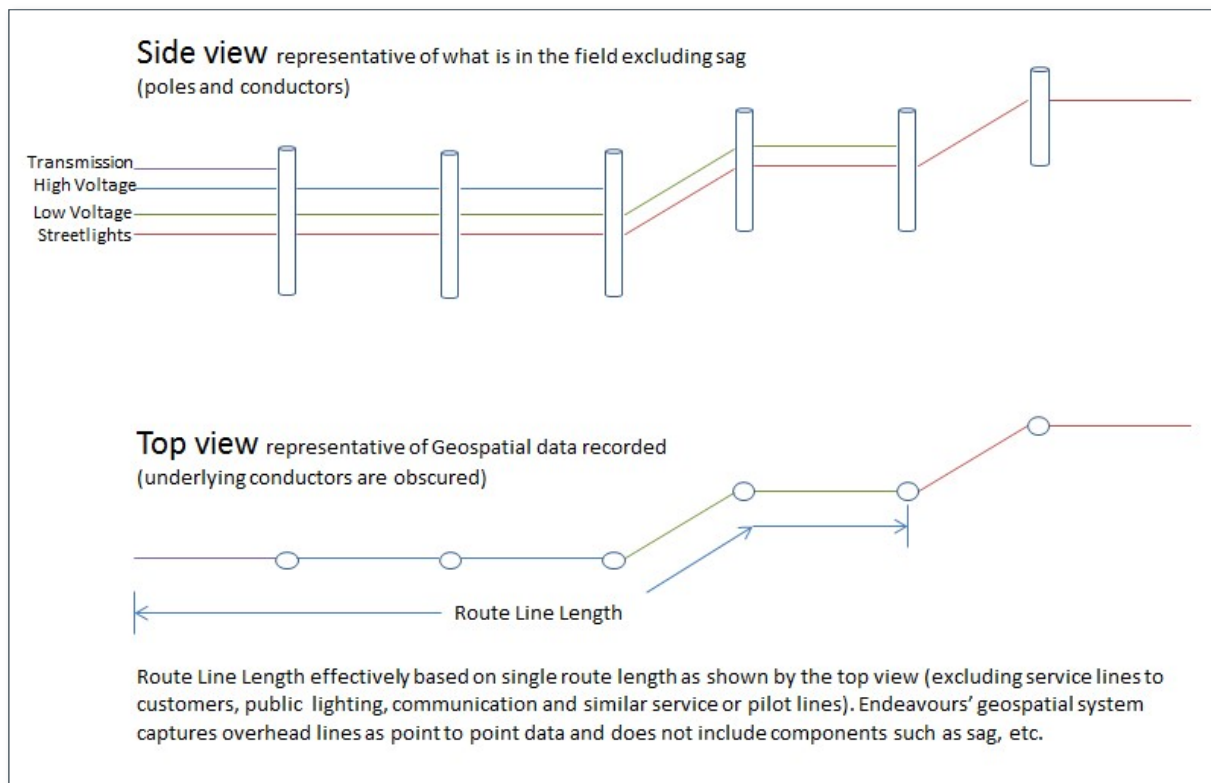
A snapshot of Endeavour Energy's GIS data as at 30 June for the reporting period was used to determine route line length (using two complex geospatial queries for both Overhead and Underground data). The Overhead route line length uses the same methodology and complex geospatial queries as in previous reporting periods.

Actual geospatial data was used as the basis for Underground route line length. Underground geospatial data is captured differently to how Overhead geospatial data is captured. Additionally, not all Underground Duct geospatial data is available on Endeavour Energy's GIS system, therefore a mix of Duct data where available and Underground Conductor data was used. Determining the Underground route is complicated by the capture process which does not place conductors on top of each other where in the same route (Overhead conductors are placed on top of each other), rather Underground conductors are offset from each other. The mix of incomplete Duct data and offset Underground Conductor capture, required a complex geospatial method to determine Underground route length and this was developed in the prior year in consultation with a geospatial vendor.

Methodology and assumptions

Overhead Route Line Length (same method used as in previous reporting periods). Complex geospatial queries were used to determine route line length. The below diagram, for Overhead route line length outlines how the query relates to assets in the field, including a comparison to how it is visually recorded as data (or layers) in Endeavour Energy's geospatial database. The spatial query reported conductor route length once, regardless of whether there were multiple layers (Transmission, High and Low voltage) or a single layer.

3.7 Operating Environment Factors



Underground Route Line Length (revised method calculated from actual data)

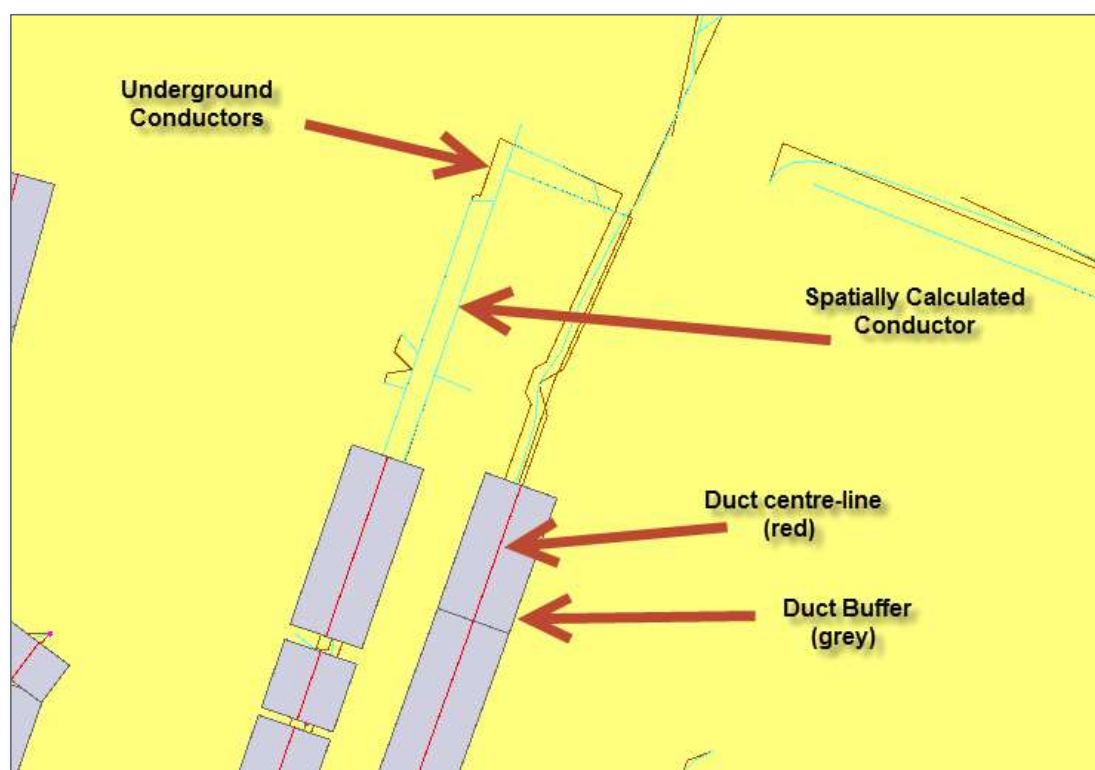
Previous Underground route line length components were calculated based on ratios of Overhead circuit lengths. In line with reporting requirements from 2015 on, the method used for this reporting period is based on actual data for Underground route line length via a complex geospatial calculation. Circuit total lengths are available from historical reports. The method used to calculate Underground Route line length included use of the following (a) and b) were added to determine total Underground Route Line Length:

- a) current Underground Ducts, where captured (Duct centre-line, in the screenshot below)
- b) current Underground Circuit Total Length (Underground Conductors in the below screenshot, this may include a small component of Streetlights, though that component is expected to be minimised via the spatial operations (buffer, snapping, etc.). Except where inside a five-metre buffer distance to Duct location (refer Duct Buffer (grey) in the screenshot below)) – this was used for the Spatially Calculated Conductor [Route] as shown in the screenshot below (aqua coloured) Note: conductors more than two metres apart were treated as two separate Underground routes for the purpose of this calculation

Underground route line length was calculated via addition of Duct lengths + spatially calculated underground Conductor lengths where the underground Conductors were outside a five-metre buffer for underground Ducts. The spatial calculation of underground Conductor route also used generalization and snapping techniques to obtain an approximation of actual underground route length.

3.7 Operating Environment Factors

Underground route line length was then added to Overhead route line length to determine total Route line length.



Use of estimated information

Endeavour Energy has used actual geospatial information to calculate via complex geospatial queries the route line length. It is noted Endeavour Energy GIS systems do not have audit trails nor historical data readily available.

Material accounting policy changes

The spatial report process for this spatial data has not been changed compared to the prior reporting period. Otherwise Endeavour Energy has not undertaken any material changes in accounting policies which would impact the data contained in the table in this section.

Reliability of information

All information provided represents calculated information based on actual data for table 3.7.3. Data is not in a readily available format to enable easy reporting, due to data captured (not all Underground ducts are recorded in the geospatial system) and capture standards (which does not accurately locate Underground conductors, rather these are offset relative to adjacent Underground conductors in the same ducts), therefore a complex geospatial query was used to derive the Underground Route line length.

Produced by Network Regulation branch

W endeavourenergy.com.au

E endeavourenergyRIN@endeavourenergy.com.au

T 131 081



ABN 11 247 365 823