Basis of Preparation

Response to Economic Benchmarking RIN dated 18 December 2013

31 October 2014

Contents

Purpose

The RIN requires Ausgrid to prepare a Basis of Preparation. By this, the AER means that for every variable in the Templates, Ausgrid 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 Ausgrid submits with its completed Templates. The AER will publish Ausgrid's Basis of Preparation along with the Templates.

AER'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 Ausgrid has complied with the requirements of the Notice.

To do this, Ausgrid has structured its Basis of Preparation with a separate section to match each of the worksheets titled '3.1 Revenue' to '3.7 Operating environment' in the Templates.

Ausgrid has structured these sections with subheadings for each subject matter table in each worksheet. For example, for the worksheet '3.4 Operational data', Ausgrid explains 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'.

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

The AER has set out what must be in the Basis is preparation. This is set out in Table 1 below:

1	Demonstrate how the information provided is consistent with the requirements of the Notice
2	Explain the source from which Ausgrid obtained the information provided
3	Explain the methodology Ausgrid applied to provide the required information, including any assumptions Ausgrid made
4	In circumstances where Ausgrid 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 Ausgrid to use Actual Information; (ii) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is Ausgrid'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 Ausgrid 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. Ausgrid may provide additional detail beyond the minimum requirements if Ausgrid 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 Ausgrid, an auditor or assurance practitioner shall provide an opinion or attest by reference to Ausgrid'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 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.

Systems used to provide data

Where data has been sourced directly from Ausgrid's financial and other information systems this system has been identified. Similarly where estimated data is based on data sourced from Ausgrid's systems those systems are identified.

Process used to determine if information is actual or estimated

Where Actual Information is not able to be derived from Ausgrid's financial and information systems, then information has been estimated on the basis which Ausgrid considers provides the best available estimate. In circumstances where the AER has recommended an approached for estimating, that approach has been followed as far as practicable and reasons for variations have been identified and explained.

Worksheet 3.1 – Revenue

3.1.1   Revenue grouping by chargeable quantity

Compliance with requirements of the notice

The information reported in Table 3.1.1 is consistent with the requirements of the Notice, AER's RIN Benchmarking Explanatory Statement and Instructions and Definitions Manual. In particular, the Revenue reported in Table 3.1.1;

- has been reported in accordance with the definition of Standard Control Services and Alternative Control Services as defined in the National Electricity Rules (NER) Chapter 11 appendix 1.6.2.3B.

- has been reported in accordance with the Regulatory Accounting Statements as per the Annual Reporting Requirements.

- reconciles to Direct Control Services revenues reported in the Regulatory Accounting Statements.

- has been grouped into chargeable quantity categories in accordance with the definitions provided in the RIN Economic Benchmarking Instructions and Definitions Manual, November 2013.

In addition, in accordance with the instructions provided Total Revenue by Chargeable Quantities reported in Table 3.1.1 equals the Total Revenue by Customer Class reported in Table 3.1.2. Also Revenue from Unmetered Supplies reported in Table 3.1.1 agrees to Unmetered Supplies reported in Table 3.1.2.

The completion of Table 3.1.1 for the 2013-14 year has been prepared in a consistent manner to the completion of the 2005-06 to 2012-13 Revenue Templates previously submitted to AER.

Source of information

Table 3.1.1 Revenue Grouping by chargeable Quantities - Variables DREV101 to DREV0113 has been sourced from SAP Financials, SAP Business Warehouse (BW) Network Tariff Reports and Regulatory Accounting Statements.

Methodology and Assumptions

Revenue reported in Table 3.1.1 is as per the definition of Standard Control Services and Alternative Control Services as defined in the National Electricity Rules (NER) Chapter 11 appendix 1.6.2.3B.

Standard Control Services - Distribution service that is provided by a NSW Distribution Network Service Provider and that was determined by IPART to be prescribed distribution services (for the purposes of the regulatory control period 2004-2009) is deemed (for the purposes of the regulatory control period 2009-2014) to be classified as Direct control service and further classified as a standard control service.

Alternative Control Services - Distribution service that is provided by a NSW Distribution Network Service Provider and that was determined by IPART to be an excluded distribution service (for the purposes of the regulatory control period 2004-2009) is deemed (for the purposes of the regulatory control period 2009-2014) to be classified as Direct control service and further classified as alternative control service.

Total Revenue reported in Table 3.1.1 for the financial year 2013-14 agrees to the Direct Control Services Revenue reported in the Regulatory accounts as at 30 June 2014. The revenue includes both Billed and Accrued data.

BW Network Tariff report collates billed and accrued revenue by Network Tariff and Tariff component. This has been used to enable the completion of Table 3.1.1 Variables DREV0101 to DREV0109.

The Variables DREV0101 to DREV0109 categorises Distribution Use of System Revenue into tariff component charges.

Each Ausgrid Network tariff is comprised of more than one component except for unmetered loads which has only a single component.

DREV0101	This represents the Network Access Charge (NAC) of the Ausgrid Network Tariff. This is a fixed (c/day) applied to each energised connection point at which energy or demand is recorded.

DREV0102	This represents Non Time of Use charge (c/kWh) applied to the total energy determined from an energy only meter. Step pricing structures applies to selected Non ToU energy charges.
DREV0103	Revenue from customer consumption of electricity during peak period.
DREV0104	Revenue from customer consumption of electricity during shoulder period.
DREV0105	Revenue from customer consumption of electricity during off peak period.
DREV0106	Controlled Load is applicable to electricity which is separately metered and controlled. It is used for operating storage water heaters, thermal storage space heaters, and other approved fixed wired appliances. Control Load Tariffs are secondary tariffs and can only be applied at installations with selected Primary Tariffs.
DREV0107	Unmetered Supplies are metering installations that do not have a physical meter attached to the installation.
DREV0108	For the Financial period 2013-14 Contracted Maximum Demand Charges was not a component of the Ausgrid Network Tariff.
DREV0109	This variant includes charges calculated on maximum demand that is either reset on a monthly basis or ratcheted.

Variables DRE0110 to DREV0113 categorises the remaining standard control revenues and Alternative Control Revenue.

Standard Control

DREV0110	There were no Metering services as per the AER requirements for the Financial period 2013-14 for Ausgrid.
DREV0111	This definition for Connection Services as per AER requirements is consistent with the definition under the NECF. The NECF definition was effective as from 1 July 2013. Therefore monopoly Services and Miscellaneous Services has been categorised in the Variant DREV0113 for the completion of this template for the Financial period 2013-14.
DREV0113	Miscellaneous services as identified in appendix G of Final Decision NSW Determination of the regulatory control period 2009-2014
	Monopoly services as identified in appendix G of Final Decision NSW Determination of the regulatory control period 2009-2014
	Emergency Recoverable Works as identified in appendix G of Final Decision NSW Determination of the regulatory control period 2009-2014
	Ausgrid Prescribed Transmission Standard Control Services Revenue

Alternative Control Revenue

DREV0112	The construction and maintenance of Public Lighting Infrastructure
	Customer specific services

Use of estimated information

There is no estimated information for Revenue groupings by chargeable Quantities.

Material accounting policy changes

There has been no material accounting changes during the financial period 2013-14 that has had an impact on Revenue reported in Table 3.1.1.

Ausgrid Basis of Preparation

3.1.2 Revenue grouping by customer type of class

Compliance with requirements of the notice

The information reported in Table 3.1.2 is consistent with the requirements of the Notice, AER's RIN Benchmarking Explanatory Statement and Instructions and Definitions Manual. In particular, the Revenue reported in Table 3.1.2;

- has been reported in accordance with the definition of Standard Control Services and Alternative Control Services as defined in the National Electricity Rules (NER) Chapter 11 appendix 1.6.2.3B.

- has been reported in accordance with the Regulatory Accounting Statements as per the Annual Reporting Requirements.

- reconciles to Direct Control Services revenues reported in the Regulatory Accounting Statements.

- has been grouped into chargeable quantity categories in accordance with the definitions provided in the RIN Economic Benchmarking Instructions and Definitions Manual, November 2013.

In addition, in accordance with the instructions provided Total Revenue by Chargeable Quantities reported in Table 3.1.1 equals the Total Revenue by Customer Class reported in Table 3.1.2. Also Revenue from Unmetered Supplies reported in Table 3.1.1 agrees to Unmetered Supplies reported in Table 3.1.2.

The completion of Table 3.1.2 for the 2013-14 year has been prepared in a consistent manner to the completion of the 2005-06 to 2012-13 Revenue Templates previously submitted to AER.

Source of information

Table 3.1.2 Revenue groupings by customer type or class - Variables DREV0201 to DREV0206 has been sourced from SAP Financials, SAP Business Warehouse (BW) Network Tariff Reports and Regulatory Accounting Statements.

Methodology and Assumptions

Revenue reported in Table 3.1.2 is as per the definition of Standard Control Services and Alternative Control Services as defined in the National Electricity Rules (NER) Chapter 11 appendix 1.6.2.3B.

Standard Control Services - Distribution service that is provided by a NSW Distribution Network Service Provider and that was determined by the IPART to be prescribed distribution services (for the purposes of the regulatory control period 2004-2009) is deemed (for the purposes of the regulatory control period 2009-2014) to be classified as Direct control service and further classified as a standard control service.

Alternative Control Services - Distribution service that is provided by a NSW Distribution Network Service Provider and that was determined by the IPART to be an excluded distribution service (for the purposes of the regulatory control period 2004-2009) is deemed (for the purposes of the regulatory control period 2009-2014) to be classified as Direct control service and further classified as alternative control service.

Total Revenue reported in Table 3.1.2 for the financial year 2013-14 agrees to the Direct Control Services Revenue reported in the Regulatory accounts as at the 30th June 2014. The revenue includes both Billed and Accrued data.

BW Network Tariff report collates billed and accrued revenue by Network Tariff and Tariff component. This has been used to enable to completion of Table 3.1.2 Variables DREV0201 to DREV0205.

The Variables DREV0201 to DREV0205 categorises Distribution Use of System by Customer class

Each Ausgrid Network tariff is comprised of more than one component except for unmetered loads which has only a single component.

DREV0201	Residential Tariffs are assigned to premises where electricity use is principally for private domestic purposes. For Ausgrid this includes (but not limited to) Residential tariffs such as EA010 Residential Inclining Block, EA025 Residential ToU and Controlled Loads 1 & 2.
DREV0202	Revenue from Non Residential Customers not on demand includes (but not limited to) Small Business Tariffs such as EA050 Small Business Inclining Block and EA225 Small Business ToU. A small number of Cost Reflective Network Price (CRNP's) Customers are also populated in this category.

DREV0203	Revenue from Non Residential Low Voltage Demand Tariff Customers is assigned to those customers where the usage is from 40MWh up to 750MWh per annum. This includes (but not limited to) the following Tariffs EA302 LV 40-160MWh Tariff, EA305 LV 160-750MWh Tariff and EA310 >750MWh.
DREV0204	Revenue from Non Residential High Voltage Demand Tariff Customers includes EA370 and EA380 HV Connection Network Tariffs, EA390 Sub-transmission Connection Network Tariff and the majority of CRNP Tariffs.
DREV0205	Unmetered Supplies are metering installations that do not have a physical meter attached to the installation. These include Network Tariffs EA401 Public Lighting, EA402 Constant Unmetered and EA403 EnergyLight.

Variables DRE0206 categorises other standard control revenue and Alternative Control Revenue

Standard Control

DREV0206	Revenue from Other Customers include Miscellaneous services, Monopoly Services and Emergency Recoverable Works
	Ausgrid Prescribed Transmission Standard Control Services Revenue

Alternative Control Revenue

DREV0206	The construction and maintenance of Public Lighting Infrastructure
	Customer specific services

Use of estimated information

There is no estimated information for Revenue groupings by Customer Type or Class

Material accounting policy changes

There has been no material accounting changes during the financial period 2013-14 that has had an impact on Revenue reported in Table 3.1.2.

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

Compliance with requirements of the notice

The information reported in Table 3.1.3 is consistent with the requirements of the Notice, AER's RIN Benchmarking Explanatory Statement and Instructions and Definitions Manual, November 2013.

The completion of Table 3.1.3 for the 2013-14 year has been prepared in a consistent manner to the completion of the 2005-06 to 2012-13 Revenue Templates previously submitted to AER.

Source of information

Final Decision NSW Determination 2009-10 to 2013-14 28 April 2009 and IPART 2004 determination.

Demand management incentive schemes for the ACT and NSW 2009 distribution determinations.

The final D-factor Submission Reports submitted by EnergyAustralia/Ausgrid to IPART/AER over the requested reporting period.

The independent audit reports prepared for the D-Factor Submission in each year.

Letters from the Regulator confirming the D-Factor revenue adjustment factor for each year.

Methodology and Assumptions

Revenue reported in Table 3.1.3 has been populated as follows:

Variant DREV0301 - Efficiency Benefit Sharing Scheme (EBSS). The EBSS was not implemented under the 2004-2009 IPART determination nor 2009-2014 Regulatory Control Period.

Variant DREV0302 - Service Target Performance Incentive Scheme (STPIS). For 2013-14 STPIS was not implemented under the 2009-14 Regulatory Conrol period.

Variant DREV0303 – F-Factor does not apply to NSW for 2013-14.

Variant DREV0304 – S-Factor True up does not apply to NSW for 2013-14.

Variant DREV0305 - This variant has been populated by estimates for Demand management incentive schemes (DMIS). They include Demand Management innovation allowance (DMIA) Scheme which applied from the regulatory control periods 2009 to 2014 and D-Factor scheme developed originally applied by IPART in its 2004 determination.

The DMIA amount reported for the financial year 2013-14 was taken from the Demand management incentive schemes for the ACT and NSW 2009 distribution determinations – the allowance allowed for EnergyAustralia/Ausgrid was $1m per annum for the control period 2009-2014.

The D-Factor incentive amount reported for each year was taken from copies of the final D-Factor Reports submitted to the regulator. Where possible, the D-Factor incentive adjustment factor has also been confirmed by referring to the letter of confirmation provided by the regulator.

Use of estimated information

Table 3.1.3 Revenue (penalties) allowed (deducted) through incentive schemes has been completed as estimated information rather than actual financial information.

The basis for completing Table 3.1.3 as estimated information was Ausgrid's' inability to readily populate the data requested / required directly from our General Ledger (i.e. accounting) system. Additionally, it should be noted, as outlined above under Methodology & Assumptions, a number of external third party sources (i.e. AER, IPART etc.) to which the estimated amounts are underpinned, and to include third party correspondence confirming these amounts, provide for the basis for which this data has been provided.

For these reasons the estimate provided is considered to be the best estimate of the information required by the RIN.

Material accounting policy changes

There has been no material accounting changes during the financial period 2013-14 that has had an impact on Revenue reported in Table 3.1.3.

Worksheet 3.2 – Opex

3.2.1   Opex categories

Compliance with requirements of the notice

Information reported in Template 3.2 is in accordance with the annual audited Statutory and Regulatory financial statements as well as Ausgrid's Cost Allocation Methodology (CAM). Ausgrid prepares Standard Control Services Annual Regulatory Statements for the AER which comply with Australian Accounting Standards and the Regulatory Information Requirements Guidelines for the NSW Electricity Distributors. These are independently audited and reviewed each year before reporting separately to the AER. The Regulatory Financial Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

Ausgrid has reported Opex line items in a manner that is consistent with the Regulatory Accounting Statements.

The opex reported in table 3.1.1.1 is consistent with the Regulatory Accounting Statements.

Opex reported in Table 3.2.1.2A has been prepared consistently with the cost allocation approach and the regulatory accounting statements that were in effect for the year.

Ausgrid allocates costs to each line of business on either a direct attribution basis or by the application of allocators. A comprehensive review of the allocations between Network and External businesses occurs each year. Compliance is in line with the CAM and the Network Regulatory Policy Directions Paper. The current CAM is on Ausgrid's Website.

Source of information

Financial data included in Template 3.2 is sourced from SAP and TM1 (Ausgrid's financial accounting and reporting systems), and they have been verified against Statutory Accounts and Regulatory financial statements.

Ausgrid also has in place accounting treatment policies (Statement of Accounting Treatments or SATs), Policies & Procedures, standard reporting, accounting and reporting systems, a centralised finance function and qualified staff who are able to manage the requirements.

Total Opex reported in Tables 3.2.1 & 3.2.2 aligns with the Regulatory Accounts.

Methodology and Assumptions

Table 3.2.1 - Current opex categories and cost allocations

Opex reported in Table 3.2.1 has been prepared for in accordance with Ausgrid's CAM and aligns to the Annual Reporting Requirements used in the FY2014 financial year.

Ausgrid recognises any year end adjustments in the Corporate Finance Function.

Alternative Control Services Opex Summary categories are equal to that reported in the Regulatory Accounting Statements. The financials align to the Statement of Financial Performance and/or the financial data extracted from SAP and TM1 (Ausgrid's financial accounting and reporting systems).

Table 3.1.2 - Historical opex categories and cost allocations

Opex reported in Table 3.2.1.2A reflects the current opex categories and cost allocations for FY2014 and reconciles to Table 3.2.1.1.

Use of estimated information

All financial data reported in Tables 3.2.1.1 & 3.2.1.2 are actuals and can be verified in SAP.

Material accounting policy changes

Ausgrid has adopted the revised AASB 119 Employee Benefits. The amount of net defined benefit expense that is recognised in profit or loss under the revised standard is higher than the amount that would have been recognised under the pre-1 July 2013 rules.   The impact for FY2014 is $21 million higher.

3.2.2   Opex consistency

Compliance with requirements of the notice

Information reported in Table 3.2.2.1 is in accordance with the Ausgrid's Cost Allocation Methodology & Table 3.2.2.2 is in accordance with the IPART Accounting Separation Code and the ACCC Requirement Guidelines.

Source of information

Financial data included in Tables 3.2.2.1 & 3.2.2.2 is sourced from SAP and TM1 (Ausgrid's financial accounting and reporting systems).

Methodology and Assumptions

Table 3.2.2.1 Opex consistency - current cost allocation approach

Ausgrid has prepared the information in Table 3.2.2.1 for disclosure purposes as Ausgrid is not required to complete this table as there has been no material change in Ausgrid's Cost Allocation Methodology. Opex reported in Table 3.2.2.1 has been prepared in accordance with Ausgrid's Cost Allocation Methodology and aligns to the Annual Reporting Requirements for 2013/14 financial year.

Ausgrid has determined "Opex for network services" as the aggregate of opex for the year less the opex for metering and connection services.

There are no numbers for "Opex for amounts payable for easement levy or similar direct charges on DNSP" as Ausgrid capitalises these amounts.

There are no numbers for "Opex for transmission connection point planning" as Ausgrid's costs are capitalised as a part of the planning of our transmission network with discussions with Transgrid.

Table 3.2.2.2 Opex consistency - historical cost allocation approaches

Opex reported in Table 3.2.2.2 has been prepared according to Ausgrid's Cost Allocation Methodology and aligns to the Annual Reporting Requirements for FY2014.

Use of estimated information

All financial data reported in Table 3.2.2.1 & 3.2.2.2 are actuals and can be verified in SAP.

Material accounting policy changes

Ausgrid has adopted the revised AASB 119 Employee Benefits. The amount of net defined benefit expense that is recognised in profit or loss under the revised standard is higher than the amount that would have been recognised under the pre-1 July 2013 rules.   The impact for FY2014 is $21 million higher.

3.2.3 Provisions

Compliance with requirements of the notice

Information reported is in accordance with the Regulatory Accounting statements as well as Ausgrid's Cost Allocation Methodology. Ausgrid prepares Standard Control Services Annual Regulatory Statements for AER which comply with Australian Accounting Standards and the Regulatory Information Requirements Guidelines for the NSW Electricity Distributors. These are independently audited and reviewed each year before reporting separately to the AER. The Regulatory Accounting Statements include Standard Control Services (Distribution) and Standard Control Services (Transmission).

The financial information in the template is Standard Control Services (Distribution) and Standard Control Services (Transmission) only as per advise from Scott Haig from the AER on 27 August 2014.

The financial information provided is for each grouping of provisions identified as follows:
- Employee Benefits
- Restructuring costs
- Insurance
- Dividends
- Other

Other provisions consist of Asbestos Remediation, Polychlorinated Biphenyls (PCB) disposal costs for end of life equipment provision, legal provision, and asset decommissioning. Each individual provision has been specified by name and the variable codes for the line items have been separately identified as required.

Source of information

Information provided is based on:

- Audited Regulatory Accounting statements;

- TM1 and SAP (Ausgrid's financial accounting and reporting systems) and

- External actuarial reports.

Methodology and Assumptions

Ausgrid applied the Cost Allocation Methodology in providing the required information for FY2014.

Financial information on provisions reconciles to the reported closing balances for provisions in the Regulatory Accounting Statements for each Regulatory Year. In circumstances where a provision closing balance is compiled from actual and estimated numbers, the carrying amount at the end of the period is reflected in the actual and consolidated sheet.

The disclosure of the discount rate may have impacted the values reported Regulatory Accounting Statements for each Regulatory Year in the categories of "increases to the provision"or "unused amount reversed during the period". The discount rate impact in some circumstances was estimated and was not sourced from the accounting system.

The discount rate assumptions applied to the provisions are outlined below:

- Defined Benefits Superannuation (in Employee Benefits Provisions)

    The defined benefits superannuation position has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary did not provide Ausgrid any information on the impact of discount rates unless specifically requested. The discount rate impact is known for the years ended 30 June 2014 and has been shown as actual.

- Long Service Leave, Supplementary Superannuation and Severance allowance, and Preserved Sick leave (in Employee Benefits Provisions)

    The position of these provisions has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary only provided information as at 28 February 2014. As Ausgrid does not know the impact of discount rates due to the actuarial report being prepared

for a different period, Ausgrid has recognised the whole year end adjustment as the actuarial impact for 30 June and this has been recognised in the estimated template.

- Workers' Compensation Insurance

  The position of this provision has been assessed by an actuary each year. The impact and value of this assessment is recognised by Ausgrid. The actuary has indicated that the "effect of change in economic assumptions" can be used as the impact of discount rates and has been shown as 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 FY2014. This actuarial information used by the actuary is based on data extraction dates which are not exact balance sheet dates.

- PCB and Site Remediation provisions (in Other Provisions)

  For the Regulated distribution business, the Other Provision is related to site remediation, removal and disposal of equipment and decommissioning of assets to meet the legal and constructive obligation of Ausgrid. The discount rate applied to the above provisions was based on market yield on Commonwealth government 10 year bond rate as at 30 June for the relevant year.

Use of estimated information

Ausgrid has used estimated information for "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" where actual information was not available. Information provided is categorised as estimates as they are not readily available from either Ausgrid's annual financial statements, TM1 or SAP. Furthermore, actuaries have not specifically provided Ausgrid the impact of discount rate information. This is the best estimate available as the methodologies used (as described above) are based on information relevant and available to each provision.

Ausgrid has outlined above under Methodology and Assumptions the basis for the estimates.

Material accounting policy changes

No accounting policy changes for FY2014 have had a material impact on provisions.

3.2.4 Opex for high voltage customers

Compliance with requirements of the notice

The information reported in Table 3.2.4 is consistent with the requirements of the Notice, AER's RIN Benchmarking Explanatory Statement and Instructions and Definitions Manual.

Source of information

High Voltage customer numbers and loads are sourced from Ausgrid's Metering Systems being Meter Data Agency Database (MDA) and Maintenance Costs are sourced from SAP ECC (Data was obtained from Current Regulatory Proposal).

Methodology and Assumptions

The process adopted was as follows;

1. Identify HV Customers and their current loads.
   HV Customers and their loads were identified from our metering systems.

2. Allocate HV customers' to substation types on the basis of capacity characteristics of substation types.
   HV loads were then allocated to various substation types on the basis of the following substation capacities;

DC's	< 2MVA
Chambers & Large DC's	2-5 MVA

Zones	≥ 10 MVA

3. **Calculate Ausgrid's average maintenance cost by substation type.**
   Ausgrid's average maintenance costs by substation type were calculated by dividing total maintenance costs for the year by the number of commissioned substations.

4. **Derive estimated maintenance costs.**
   Maintenance costs were then estimated by multiplying the average internal maintenance costs by the number of HV substations.

Use of estimated information

Ausgrid has used estimated information for Table 3.4 Opex for High Voltage Customers.

Since this is a cost incurred by customers, Ausgrid has no actual information on these costs. As a result, it is necessary to estimate this cost on the basis of best available information. This is the best estimate available as the methodology used is based on information relevant and available.

These estimates are significantly limited in their application. Ausgrid has not been able to evaluate the age, condition or state of these assets. Ausgrid's actual maintenance costs, if Ausgrid owned these assets, may significantly vary from these estimates.

Material accounting policy changes

There have not been any material changes in accounting policies.

Worksheet 3.3 – Assets (RAB)

3.3.1 RAB values

Compliance with requirements of the notice

Worksheet 3.3 Assets (RAB) (hereafter RAB worksheet) required the allocation of the Regulatory Asset Base (RAB) data into aggregated categories of capital inputs: namely overhead lines, underground cables, transformers and other capital. Furthermore, a split between Network Services, Standard Control Services and Alternative Control Services as per the definitions in Chapter 9 of the Economic Benchmarking Instructions was required.

This overarching requirement has been met with information provided in all three templates: the Worksheet 3.3 Actual Information template, Worksheet 3.3 Estimated Information template, and the Worksheet 3.3 Consolidated Information template. These worksheets show the various asset categories for which Ausgrid must provide the relevant RAB values. These asset categories are referred to in this section as 'RIN asset categories'.

Additionally, compliance with the RIN also involved the requirements detailed in Table 1, which also details the actions Ausgrid completed to meet these requirements.

Table 1 Compliance with the RIN

Compliance Requirement	Ausgrid's Compliance
All cells filled where highlighted yellow in the templates	Ausgrid has provided information in all yellow highlighted cells.
RAB values reported in accordance to the Standard Approach (section 4.1.1) detailed in the Instructions provided by the AER.	Ausgrid has complied with the Standard Approach provided in Chapter 4 of the Instructions. Assets have been directly attributed to the RIN asset categories where appropriate, and have applied the more detailed allocation approach where direct attribution was not possible. Details are provided in following sections of this Basis of Preparation document.
RAB Standard Control Services values reported in accordance with the Financial Reporting Framework in Box 7 of section 4.1 of the Instructions provided by the AER.	Ausgrid provided Standard Control Services in the templates using information in Ausgrid's Roll Forward Models (RFMs). These in turn reconcile to amounts reported in Annual Reporting Requirements (where actual data was provided in the templates). In the sections below, we explain and provide further details on the calculation of the 20013-14 RAB values, calculated using the AER's RFMs.
The provision of a Basis of Preparation to accompany the filled worksheets (this document); in particular detailing the allocation methodology used (see 'Methodology and Assumptions' below).	Ausgrid has complied with this requirement through the provision of this Basis of Preparation document.
Substation land to be included in the 'substation asset' category	Ausgrid has complied with this requirement by allocating all substation land to the 'substation asset' category.
Reporting of Alternative Control Services where the AER has approved a RAB or RAB equivalent for the services, or alternatively the reporting of '0' in the absence of any approved RAB.	Ausgrid has complied with this requirement with the provision of Public Lighting RAB information.
All financial information are reported in thousands of dollars, rounded to the nearest dollar, and Non-	Ausgrid has complied with this requirement. Please see

Financial Information reported to 3 significant figures	each RAB Template.

Details of the steps Ausgrid has taken to comply with this RIN are detailed in sections below.

Moreover, as detailed in the instructions, Table 3.3.1 must reconcile to Table 3.3.2.[1] This requirement has been met.

Source of information

At the time of preparing and submitting this basis of preparing (relating to worksheet 3.3) the AER has not made a final decision on the opening value of Ausgrid's regulatory asset base as at 1 July 2014 (which, by implication, is the closing balance as at 30 June 2014).

Information for Table 3.3.1 RAB Values has been calculated using the AER's RFMs and based on the provisions of Schedule 6.2 of the National Electricity Rules. The inputs into the RFMs are reconcilable to either the Annual Regulatory Accounts or the RFMs underpinning the AER's final decision for Ausgrid for the 2004-09 regulatory control period.

Two main RFMs have been used as source data for Table 3.3.1:

1. Ausgrid Distribution RFM for the 2014-19 period: this includes distribution RAB data between FY2010 and FY2014. This will be referred to as the 'Distribution RFM 0914'.

2. Ausgrid Transmission RFM for the 2014-19 period: this includes distribution RAB data between FY2010 and FY2014 (FY2014 partially forecast). This will be referred to as the 'Transmission RFM 0914'.

We note that the 'Distribution RFM0914' and 'Transmission RFM 0914' are used to established the opening value of regulatory asset base for the 2014-19 period (i.e. opening value as at 1 July 2014). We note that the AER's final decision on Ausgrid's opening RAB value for the 2014-19 period is not due until February 2015. Consequently, the RAB values reported in the AER's Economic Benchmarking RIN for 2013-14 are Ausgrid's calculation using the latest available data, noting that the AER's final decision on these values are still pending.

For Alternative Control Services, the RAB value data was sourced AER's 2010 determination model for pre-2009 public lighting capital charges (referred to in this document as the PL PTRM).[2] This model is updated for actual data to derive the RAB values for public lighting.

Methodology and Assumptions

The methodology for this section involved the following:

A. Standard Control Services

The line items 'Opening Value', 'Inflation addition', 'Straight line depreciation', Actual additions (recognised in RAB)' and 'Disposals' (DRAB0101 to DRAB0103, DRAB0105-DRAB0106) in Table 3.3.1 were sourced or calculated from the Distribution RFM 0914, Transmission RFM 0914. The values shown in these line items represents the total values of all asset classes used in the provision of standard control services (as they are classified for the 2009-14 period).

B. Network Services

Network Services was obtained by removing the Metering Service RAB components from each Standard Control Service Table 3.3.1 lines, including direct IT system assets and non-system assets attributable to the Metering Services RAB as per the Cost Allocation Method (CAM).

The proportion of Metering IT system assets relative to total IT system assets was determined using FY2013 actual book value data. The non-system assets were segregated using the proportion of direct metering assets to direct non-metering assets. This is consistent with the methodology Ausgrid used, in our 2014-19 regulatory proposals, to remove the RAB values of assets used to provide Metering Services. This removal was necessary to give effect to the reclassification by the AER of Metering Services from Standard Control Services to Alternative Control Services.

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[1] We note that the AER has renumbered the tables in the RIN for 2013-14. Accordingly, the reference to tables 4.1 and 4.2 in the Instructions and Definitions now correspond to tables 3.3.1 and 3.3.2 respectively.

[2] Note: The PL PTRM does not include new capital expenditure after 1 July 2009, as public lighting changed to an alternative arrangement outside of the RAB. The PL PTRM has also been adjusted for CPI since last being approved by the AER.

C. Alternative Control Services

Alternative Control Services Table 3.3.1 has been generated using information from the PL PTRM.

We note that the AER's RFM recognised net actual capex which is the capex incurred by Ausgrid less the proceeds from sale of assets. In order to comply with the Economic Benchmarking RIN requirements to show the actual additions and disposals separately, Ausgrid has disaggregated the 'actual net capex' amounts in the RFMs into actual additions (i.e. gross capex) and disposals and reported these in Tables 3.3.1 and 3.3.2. We have adopted this approach to ensure compliance with the requirements of the RIN as well as ensuring that the closing values (which are protected cells) are calculated correctly. Also in accordance with the RFM, a half year application were also included in these values.

We also note our discussion with AER's officer regarding the opening balance and closing balance. We understand that the opening balance for FY13-14 only need to equate to the closing balance of the previous year on a total basis, not at the individual RIN asset categories level.

Use of estimated information

The Network Services lines in Table 3.3.1 has been classified as estimated information as a result of the allocation methodology used to extract metering related assets from the Standard Control Services Table 3.3.1 lines, as described in 'B. Network Services' above. This method is considered to produce the best estimate of the value of assets for Network Services.

The Standard Control Services and the Alternative Control Services Table 3.3.1 columns have been classified as Actual Information as they have been derived from the Roll Forward Models, and the inputs for which are reconcilable to the Annual Reporting Requirements.

Material accounting policy changes

Not applicable.

3.3.2 Asset value roll forward

Compliance with requirements of the notice

In this section we demonstrate how the information provided is consistent with the requirements of this Notice.

The RAB worksheet required Regulatory Asset Base data into aggregated categories of capital inputs: namely overhead lines, underground cables, transformers and other capital. Furthermore, a split between Network Services, Standard Control Services and Alternative Control Services as per the definitions in Chapter 9 of the Economic Benchmarking Instructions was required.

This overarching requirement has been met with information provided in all three templates: the Worksheet 3.3 Actual Information template, Worksheet 3.3 Estimated Information template, and the Worksheet 3.3 Consolidated Information template. These worksheets show the various asset categories for which Ausgrid must provide the relevant RAB values. These asset categories are referred to in this section as 'RIN asset categories'.

Additionally, compliance with the RIN also involved the requirements detailed above in Table 1, as well as requirements specific to RIN table 3.3.2. These are detailed in Table 2 below which also specifies the actions Ausgrid completed to meet these requirements.

Table 2: Compliance with the RIN for RIN table 3.3.2

Compliance Requirement	Ausgrid's Compliance
Ausgrid must report RAB Asset Financial Information broken down in accordance with the RAB Assets as per definitions of the categories specified in Chapter 9.	Ausgrid has used the definitions specified in Chapter 9 as required. All assumptions and variations from these definitions are detailed in 'Methodology and Assumptions' below.
Where previously reported, Ausgrid must provide values separately for Easements. Otherwise, this should be included in the remaining categories. Data	Easements have been reported separately. Data that contains easements has been identified.

that includes Easements should be identified.	
Provision of Actual information where applicable	Ausgrid has attempted to provide as much actual information as possible. The RAB values for 2013-14 incorporate actual information on capex, proceeds of asset disposals and capital contribution, of the financial year 2013-14 as well as those of the prior financial years.

Details of the steps Ausgrid has taken to comply with this RIN are detailed in sections below.

Source of information

The source information for RIN table 3.3.2 is the same as for RIN table 3.3.1, with the additional inclusion of data from Ausgrid's Fixed Asset Register to create a method to allocate the existing RAB values into RIN asset categories. The Fixed Asset Register has disaggregated replacement cost data for 2013-14 with details of splits between distribution and transmission system assets.

Ausgrid has relied on the FY2013-14 "Book Value Land by Property Usage" report from Ausgrid's FAR to determine the split of Ausgrid's "Land and Easements" RAB class. This was required to meet the AER's requirement to allocate system land to the respective substation RIN category as required. We note that in the RIN submitted in April 2014 that the reported values for the years from 2006 to 2013, we inadvertently applied incorrect data to this methodology. Instead of using book value of land by property usage, we used book value of building by property usage. We have corrected for this error in deriving the RAB values for 2013-14.

The Capital Contribution values (DRAB 13 Estimated Value of Capital Contributions or Contributed Assets) is Actual Information sourced from SAP and TM1 (Ausgrid's Financial and Reporting System).

Methodology and Assumptions

The methodology used for RIN table 3.3.2 included a detailed allocation of RAB asset classes to the RIN asset categories. Direct allocation was utilised where possible in line with the Standard Approach. RAB assets that could not be directly allocated utilised the depreciated replacement cost approach described in the Instructions. As such, this approach produced the best estimate of the information being sought in the RIN within the confines of the Standard Approach.

This overall methodology is detailed as follows:

1) Assets that could be directly allocated to RIN categories were allocated in full.

2) For the remaining assets that required allocation across a number of RIN classes, in particular between overhead and underground classifications or zone and distribution substations, these were assigned an allocator based on depreciated replacement costs. The allocators were created as follows:

   a. Ausgrid's Fixed Asset Register (FAR) was used to estimate weightings for 2013-14. The FAR was used to determine the depreciated replacement cost of assets by financial class. Assets by financial classes aggregate to form RAB assets for the RFM. This method is in line with the Instructions; part (c) of the *RAB allocation approach* section. The FAR data provided a more accurate basis for estimation of the depreciated replacement cost in comparison to using the physical asset data (Template 6), the unit rate replacement cost and the weighted average asset age as recommended by the AER in part (c).

   Each disaggregated RAB asset was allocated a specific RIN asset category, being:

      i. overhead assets less than 33kV

      ii. underground assets less than 33kV

      iii. zone substations

      iv. distribution substations

      v. overhead assets greater than 33kV

      vi. underground assets greater than 33kV

   b. The weightings were applied to the RAB Asset values calculated using the AER's RFM. This approach allowed for reconciliation to RIN Table 3.3.1 as required.

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3) Steps 1 and 2 were repeated for each RFM (distribution and transmission RFMs for both 2004-09 and 2009-14) with consolidated data inserted into the the Worksheet 3.3 Consolidated Information template.

4) In line with RIN table 3.3.1, Metering Services related assets (i.e. direct metering assets, direct IT metering assets and non-system assets allocated to Metering) were segregated from the Standard Control Services data to fill Network Services columns.

5) Public Lighting data was inserted separately, sourced from the Public Lighting PTRM. This was categorised into the "Other Assets with Long Lives" class.

6) Capital contribution data (DRAB13 Estimated Value of Capital Contributions or Contributed Assets) was obtained from SAP and TM1 (Ausgrid's Financial and Reporting System). The amounts reported for Network Services and Standard Control Services are the same as there were no capital contributions associated with metering services.

7) Metering was separated from the "Metering and Load Control" RAB asset class based on book values as of FY2013. The Load Control assets were allocated to the "Other" Long Life asset class, and also determined to be classified as Network Services assets.

8) The 'Customer metering (digital)' RAB asset class was previously allocated between the 'Meters' and 'Other assets with long lives' RIN asset categories. Upon further review, Ausgrid has determined that this RAB asset class should be allocated wholly to the 'Meters' RIN asset category. This change has been effected for the 2014 Economic Benchmarking RIN.

9) As Ausgrid's RAB has system land and easements in a single asset class ("Land and Easements"), zone system land and distribution system land was segregated from easements. This was undertaken using the FAR to initially isolate the easements, and then separate the system land into zone and distribution proportions using book values of land by property usage.

10) As a final step, the consolidated template was separated into actual and estimated information. This was based on direct attribution (step 1 above) or allocation (step 2), It was assumed that all RAB data that could directly be applied to a RIN category was deemed as accurate and therefore actual, whereas allocated RAB was less accurate and therefore estimated.

As the template involved the reproduction of the RAB into unorthodox categories, additional assumptions had to be made in order to provide information in a practical and reasonable manner. Assumptions include the following:

- In accordance with the AER's RFM and the provisions in the National Electricity Rules relating to the establishing of the RAB values, the RAB values as at 30 June 2014 contains a number of adjustments. These are:

    o The difference between forecast capex and actual capex for the year 2008-09.

    o The return on this difference.

    o Net value of asset changing classification between distribution and transmission, and vice versa. While this changing in classification does not affect the total RAB value, it does however affect the RAB of various asset classes, and consequently on the values of various RIN asset categories.

    o Re-allocation of transmission non system asset class. This re-allocation affects only the values assigned to "Other assets with long lives" and "Other assets with short lives" RIN asset categories.

- We have accounted for these adjustments as follow:

    o The line item "Actual Additions (recognised in the RAB)" comprises of actual capex (as recognised in the RAB) of $835.24 million nominal and the difference between forecast capex and actual capex for 2008-09 and the return on this difference of $279.90 million nominal. These amounts relate to standard control services. The equivalent amounts for network services are $811.04 million nominal and $297.76 million nominal.

    o The line item 'Disposal' comprise of disposal values (as recognised in the RAB), the value of asset changing classification as well as the re-allocation of non system asset class. We note that at the total level, the total disposal amount equates to the disposal values recognised in the RFMs (including the application of half year WACC). The values of assets changing

classification affect only the values reported for the RIN asset categories and do not affect the total amount reported as they net off to zero at the total level. That is, an increase in one RAB asset class (and therefore RIN asset categories) is offset by a reduction in another RAB asset class / RIN asset category. This is the same for the re-allocation of non system asset.

- RAB assets that could not clearly be attributed to a RIN category were assigned to an 'Other' category based on standard life. The majority were "Other Assets with Long Lives" which includes the following:

  o Communications equipment

  o Public lighting

  o Emergency spares

  o Furniture, fittings, plant and equipment

  o Motor vehicles

  o Non system buildings and land

  o Other non-system assets

  o Equity Raising Costs (for 2010-2013)

  o Load control assets

  The "Other Assets with Short Lives" mainly consists of IT related assets.

- Zone Substations includes ancillary assets, as well as zone buildings and zone land

- Load Control assets were disaggregated from the "Metering and Load Control" RAB asset in the process of determining a RAB values for Metering Services assets for the purpose of preparing Ausgrid's regulatory proposal for the 2014-19 period. Load control asset RAB values therefore formed part of Ausgrid Distribution Standard Control Services (as they are classified from 1 July 2014). For the purpose of the RIN, load control asset values are assigned to the Network Services assets.

- IT system assets and Non-System assets allocated to Metering were determined using the proportions based on FY13 data.

- Assets attributable to overhead categories may include assets associated with underground assets (e.g. underground to overhead connections (UGOHs)). These have not been segregated.

- As previously explained in section 4.1, Network Services differs to Standard Control Services only by value of metering service assets.

- Easement assets have not been included outside of the easements category.

- Public Lighting was part of Ausgrid (formerly EnergyAustralia's) RAB for 2004-09. This has been reported in the templates. For 2010 to 2014, new public lighting capex was not recorded against the RAB asset category, although the asset continued to be rolled forward as a RAB. Actual disposal and customer contributions (i.e. money paid by customers for the residual values of asset replaced) are incorporated.

- Disposals have been sourced from the RFM input sheet. In accordance with the RFM methodology, these values also include a half year application of WACC.

- Capital Contributions sourced from SAP and TM1 (Ausgrid's Financial and Reporting System). These values however do not include any WACC (i.e. half year application of WACC).

Use of estimated information

Ausgrid has treated allocated RAB data as estimated, which is explained in greater detail above.

As per the Instructions, the allocation method was necessary where RAB assets cannot be directly attributed to a single RIN asset category.

The allocation methodology provided by the AER alters the underlying actual data, and therefore cannot be treated as actual data. As indicated above, the approach produced the best estimate of the information being sought in the RIN within the confines of the Standard Approach.

Notwithstanding the estimated nature of the data in RIN table 3.3.2, at an aggregated level this data reconciles to the data in RIN table 3.3.1.

Material accounting policy changes

Not applicable.

3.3.3   Total disaggregated RAB asset values

Compliance with requirements of the notice

The RAB worksheet required Regulatory Asset Base data into aggregated categories of capital inputs: namely overhead lines, underground cables, transformers and other capital. Furthermore, a split between Network Services, Standard Control Services and Alternative Control Services as per the definitions in Chapter 9 of the Economic Benchmarking Instructions was required.

This overarching requirement has been met with information provided in all three templates: the Worksheet 3.3 Actual Information template, Worksheet 3.3 Estimated Information template, and the Worksheet 3.3 Consolidated Information template. These worksheets show the various asset categories for which Ausgrid must provide the relevant RAB values. These asset categories are referred to in this section as 'RIN asset categories'.

Additionally, compliance with the RIN also involved the requirements detailed above in Table 1 as well as requirements specific to RIN table 3.3.3. These are detailed in Table 3 below which also specifies the actions Ausgrid completed to meet these requirements.

Table 3 Compliance with the RIN for RIN table 3.3.3

Compliance Requirement	Ausgrid's Compliance
Calculation based on the average of opening and closing RAB values.	Ausgrid has averaged the opening and closing RAB values from Table 3.3.2.
Data must be directly reconcilable to opening and closing values in RIN table 3.3.2 for the relevant RIN asset categories.	The data directly reconciles to the opening and closing values for the relevant RIN asset categories in table 3.3.2

Details of the steps Ausgrid has taken to comply with this RIN are detailed in sections below.

Source of information

The source for RIN table 3.3.3 is RIN table 3.3.2.

Methodology and Assumptions

In this section we explain the methodology Ausgrid applied to provide the required information, including any assumptions Ausgrid made.

Ausgrid has calculated the disaggregated RAB values by averaging the opening and closing values.

Use of estimated information

Ausgrid has used estimated information where allocation has taken place, i.e. table data based on allocated Table 3.3.2 data has been treated as estimated.

Material accounting policy changes

Not applicable.

3.3.4   Asset lives

Compliance with requirements of the notice

The RAB worksheet required Regulatory Asset Base data into aggregated categories of capital inputs: namely overhead lines, underground cables, transformers and other capital. Furthermore, a split between Network Services, Standard Control Services and Alternative Control Services as per the definitions in Chapter 9 of the

Economic Benchmarking Instructions was required. This overarching requirement has been with information provided in through all three templates: the Worksheet 4 Actual Information template, Worksheet 4 Estimated Information template, and the Worksheet 4 Consolidated Information template.

Additionally, compliance with the RIN also involved the requirements detailed above in Table 1, as well as requirements specific to Table 4.3. These are detailed in Table 4 below which also specifies the actions Ausgrid completed to meet these requirements.

Table 4 Compliance with the RIN for RIN table 3.3.4

Compliance Requirement	Ausgrid's Compliance
Asset lives must be reported in accordance with definitions in Chapter 9	Ausgrid has used the definitions as per Chapter 9
Weightings must be calculated as specified in the Instructions, in order of preference.	Ausgrid has utilised option 1: based on the asset's share of the RAB for the category and expected lives
Ausgrid must provide actual information where possible; otherwise Ausgrid must provide estimated information.	Ausgrid has utilised a weighting approach and therefore has deemed Table 3.3.4 data as estimated.

Details of the steps Ausgrid has taken to comply with this RIN are detailed in sections below.

Source of information

The asset lives for each category for 2013-14 were derived from the RFMs to be used for the 2014-19 determination. As noted above, the RAB values contained in these RFMs are not yet approved by the AER because the AER's final determination is not due until April 2015. Consequently, these values are the best estimates as at the time of preparing and submitting this RIN. Nonetheless, the RFMs have been updated with the latest actual data.

Public lighting information for 2004-09 was obtained from the 2009 AER decision with public lighting forecasted in a separate model.

The allocators used to allocate RAB asset classes into RIN asset categories (for RIN table 3.3.2) are also used in deriving the asset lives of each RIN asset category.

Methodology and Assumptions

The asset lives for each year in the RIN template have been reported in line with the AER's RIN asset categories. RAB assets are separated for the Network Services component of Standard Control Services.

Asset lives values for the RAB have been reported in accordance with the Standard Approach detailed in the Instructions.

Where RIN categories comprise a number of RAB assets, asset lives for the whole category are calculated by weighting the lives of individual assets within that category, as explained in the Instructions. Weightings were calculated on the basis of the assets' share of the RAB for that RIN category, in line with the example provided in the Instructions.

The standard and remaining asset lives for each Ausgrid asset category in each year were derived from the RFMs being prepared for the 2014-19 determination.

1. The first step was to collect the standard lives for each RAB asset class, and apply this as the standard life for each year within the 2009-14 period.

2. The next step was to derive the weighted average standard lives and remaining lives for FY2013-14 for each RAB asset class.

3. Remaining lives for existing RAB as well as net capex in subsequent years within the 2009-14 period were weighted based on their real depreciated values within the relevant RFM.

4. After the weighted average standard and remaining lives had been collected for each RAB asset class for for FY2013-14, the next step was to allocate them into RIN asset categories. In some instances, one RIN category consisted of a number of RFM RAB asset classes. The standard and remaining lives in these

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cases were derived by weighting each life by its asset dollar value, and summing the weighted averages as they apply to each RIN category.

5. In other instances, one RFM RAB asset class was split into a number of RIN categories. These weightings were derived from weighting explained above using the Fixed Asset Register (see methodology in Basis of Preparation for RIN table 3.3.2). For example, the Ausgrid asset class of 'Sub-transmission lines' was allocated into two RIN categories; "Overhead assets 33kV and above' and 'Underground assets 33kV and above'.

Assumptions:

- The RFM RAB asset classes of 'Substations' and 'Transformers' have been allocated across the RIN categories of "Distribution substations including transformers" and "Zone substations". Given that the AER asset category of Distribution Substations included transformers, Ausgrid considers it is reasonable to assume that the "Zone substations" category should also include its share of transformers.

- Any asset classes that reported a standard or remaining life of "n/a" in the RAB RFM were given no weighting in calculating the weighted average remaining life when allocated to the RIN categories. Therefore, the standard and remaining lives as well as the dollar values for these asset classes were not included in the calculation of the weighted averages for RIN categories.

Use of estimated information

Ausgrid has used estimated information based on the premise that the weighting method has been provided by the AER and cannot be deemed as actual information from Ausgrid.

The Standard Approach set out in the RIN instructions necessitates the data to be estimated. The estimated data is considered to be the best estimate as the method used to derive it is consistent with the RIN instruction and provides an outcome considered to most closely align with that being sought by the RIN.

Worksheet 3.4 – Operational data

3.4.1 Energy delivery

Compliance with requirements of the notice

In this section we demonstrate how the information provided is consistent with the requirements of the Notice, specifically section 3.4.1 of the Instructions and Definitions.

Compliance Requirement	Ausgrid's Compliance
Energy delivered is the amount of electricity transported out of Ausgrid's network in the relevant Regulatory Year (measured in GWh). It must be the energy metered or estimated at the customer charging location rather than the import location from the TNSP. Energy delivered must be actual energy delivered data, unless this is unavailable. Where Actual Information is not available for the most recent reporting period, Energy Delivery data for that period may be reported on an accrual basis. Peak, shoulder and off-peak periods relate to Ausgrid's own charging periods.	Ausgrid has reported the electricity delivered for 2014 which underlies the 2014 revenues reported in Worksheet 2 of the RIN. Due to financial year end reporting deadlines the 2014 revenues necessarily rely on estimates of accrued electricity consumption. Accordingly energy delivered has been reported in the "Estimated information" RIN template. This will be the case in all future benchmarking RINs.
Table 3.4.1.1 Energy grouping - delivery by chargeable quantity Ausgrid must report energy delivered in accordance with the category breakdowns as per the definitions provided in chapter 9. Ausgrid must only report 'Energy Delivery where time of use is not a determinant' (DOPED0201) for Energy Delivery that was not charged for peak, shoulder or off-peak periods.	The reported electricity delivered is in accordance with the RIN definitions and instructions. Technically, DOPED0205 (Controlled load) and DOPED0206 (unmetered supplies) fall into the "Energy Delivery where time of use is not a determinant" (DOPED0201) category, but because they have been specifically requested these energy consumptions have been populated in DOPED0205 (Controlled load) and DOPED0206 (unmetered supplies).
Table 3.4.1.2. Energy - received from TNSP and other DNSPs by time of receipt Ausgrid must report energy input into its network as measured at supply points from the TNSP and other DNSPs in accordance with the definitions provided in chapter 9. Ausgrid must only report energy against 'Energy received from TNSP and other DNSPs not included in the above categories' (DOPED0304) where it is not possible to allocate the energy received into on-peak, shoulder and off-peak times.	The reported electricity received is in accordance with the RIN definitions and instructions. The energy reported is that measured at TransGrid bulk supply points and at Ausgrid's boundary with Endeavour Energy. The energy can be completely allocated to peak, shoulder and off-peak periods.

Compliance Requirement	Ausgrid's Compliance
Table 3.4.1.3 Energy - received into DNSP system from Embedded Generation by time of receipt Energy delivered *[sic – should read "received" in Instructions and Definitions document]* must be reported in accordance with the category breakdown as per the definitions provided in chapter 9. Ausgrid is required to report energy received from Non-residential Embedded Generation by time of receipt. Ausgrid is required to report back cast energy received from Residential Embedded Generation only if it records data for these variables (DOPED0405–DOPED0408), however Ausgrid is required to provide this data for future Regulatory Years. 'Energy received from Embedded Generation not included in above categories' (DOPED0404 and DOPED0408) includes energy received from Embedded Generation on an accumulation basis and not measured by the time of receipt. Ausgrid must only report energy received in DOPED0404 where it is not possible to allocate the energy received into on-peak, shoulder and off-peak times (DOPED0401–DOPED0403 and DOPED0405–DOPED0407). When completing the templates for Regulatory Years subsequent to the 2013 Regulatory Year, if Ausgrid can provide Actual Information for the Residential Embedded Generation variables (DOPED0405–DOPED0408) it must do so; otherwise Ausgrid must provide Estimated Information.	The reported electricity received is in accordance with the RIN definitions and instructions. Due to financial year end reporting and RIN reporting deadlines the 2014 Embedded Generation energy delivered associated with roof-top solar generation necessarily relies on estimates of accrued electricity generation. This is because the majority of roof-top solar generation applies to customers on quarterly-read metering. Accordingly energy received from Embedded Generation has been reported in the "Estimated information" RIN template. This will be the case in all future benchmarking RINs.
Table 3.4.1.4 Energy grouping - customer type or class Ausgrid must report energy delivered in accordance with the category breakdown as per the definitions provided in chapter 9. The category breakdown must be consistent with the customer types reported in table 3.4.2.3.	Ausgrid notes that the category breakdown in Table 3.4.1.4 is different to that in Table 3.4.2.1, the latter of which includes DOPCN0105 (Unmetered customer numbers), while no row for "unmetered" exists in Table 3.4.1.4. In Table 3.4.1.4 Ausgrid has entered unmetered energy deliveries into DOPED0505 (Other customer class energy deliveries).

Source of information

Table 3.4.1 requests both energy "delivered" and energy "received". Ausgrid relies on separate data sources for both measures.

The energy delivered data in Tables 3.4.1, 3.4.1.1 and 3.4.1.4 is sourced from SAP via the Business Warehouse which collates customer volume consumption for billing purposes. The reported energy delivered is a combination of actual and estimated (accrued) information. The reported energy delivered formed the basis for declared revenue for 2014, which will be subjected to the normal financial accounts audit process.

The energy received data in Tables 3.4.1.2. and 3.4.1.3 is a combination of actual and estimated (accrued) information, and is sourced from a combination of:

- Ausgrid's Bulk Supply Point (BSP) data processing system, which relies on market-standard metered data to calculate the half-hourly energy flows into the network from TransGrid, other DNSPs and non-

residential embedded generators. The BSP system is also the source for Ausgrid's reporting of system-wide maximum demand, and in this context the BSP system has been subject to and passed various independent audits as part of previous RIN audits; and

- The SAP Business Warehouse which is the source for the requested data on exports to the network from small embedded generators (most notably solar PV exports).

Methodology and Assumptions

Where available (see below under "Use of estimated information" for exceptions), metered data from the SAP Business Warehouse and BSP system has been used in populating Table 3.4.1.

In Table 3.4.1.4 the cells in "Other Customer Class Energy Deliveries" are unmetered supply tariffs.

Use of estimated information

Due to financial year end reporting deadlines the reported energy delivery necessarily includes estimates of accrued (or yet to be meter-read) energy pertaining to the 2014 financial year. The estimation process involves a long standing consultative approach between Ausgrid's Network Pricing and Network Revenue functions which for internal reporting purposes is undertaken at the end of each month, and for this reason is considered to be the best estimate of the information sought.

Due to financial year end reporting and RIN reporting deadlines the 2014 Embedded Generation energy delivered associated with roof-top solar generation necessarily relies on estimates of accrued electricity generation. This is because the majority of roof-top solar generation applies to customers on quarterly-read metering. The methodology adopted for these estimates, which is considered to be the best estimate of the information sought in this template, involved the following steps:

1. Estimate what 2014 roof-top solar generation will be when billed meter-reading for 2014 is finally completed. This estimate was based on the available 2014 billed meter-reading as at July 2014 from the SAP Business Warehouse, as well as accrued 2014 energy as at July 2014, also from the SAP Business Warehouse.

2. An SAP BW query was run on 2014 billed meter-reading as at July 2014 to extract the detailed breakdown of solar generation required for the RIN. The relative proportions of energy by residential and non-residential and by time-of-use from the SAP BW query results were then applied to the GWh volumes estimated from step 1.

3.4.2 Customer numbers

Compliance with requirements of the notice

In this section we demonstrate how the information provided is consistent with the requirements of the Notice, specifically section 3.4.2 of the instructions and definitions.

Compliance Requirement	Ausgrid's Compliance
Distribution Customers for a Regulatory Year are the average number of active National Meter Identifiers (NMIs) in Ausgrid's network in that year (except for Unmetered Customer Numbers). Each NMI is counted as a separate customer. The average is 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 must be counted. Extinct NMIs must not be counted. For unmetered customers, the Customer Numbers are the sum of connections (excluding public lighting connections) in Ausgrid's network that do not have a NMI and the energy usage for billing purposes is calculated using an assumed load profile (examples	The reported customer numbers are in accordance with the RIN definitions and instructions. In relation to unmetered customers Ausgrid does not allocate a NMI to all unmetered connections, however it does group connections together on a customer basis and allocate NMIs to those customers for billing purposes. Those connections whose consumption is measured by reference to a load table approved by AEMO.are grouped together for each customer for billing purposes and allocated a NMI which is active in the market. Those connections whose consumption is not measured by reference to a load profile table approved by AEMO for use in the market are not allocated an active market NMI but are allocated a non-active NMI by Ausgrid and consumption is measured

include bus shelters, security lighting and traffic signals where not metered). Public lighting connections must not be counted as unmetered customers.	by reference to a daily average load calculation. Ausgrid has reported unmetered connections as follows on the basis that it would appear to most closely provide the information being sought by the Notice as clarified by the AER in an email from Andrew Ley to Regulatory Managers dated 21 February 2014. Ausgrid has reported the total number of unmetered connections with an active market NMI (excluding public lighting) in DOPCN0106 "Other Customer Numbers" and DOPCN0301 "Number of unmetered Connection reported in customer numbers in the economic benchmarking RIN", notwithstanding that a "high level" NMI has been allocated to the customers responsible for these connections for billing purposes. Ausgrid has reported the total of unmetered connections (excluding public lighting) for which an active NMI has not been allocated under DOPCN0302.
Table 3.4.2.1 Distribution Customer Numbers by customer type or class Ausgrid must report Customer Numbers in accordance with the categorisation as per the definitions provided in chapter 9. Ausgrid must report customers against 'Other Customer Numbers' (DOPCN0106) only when customers cannot be allocated to the other customer classes (DOPCN0101–DOPCN0105).	The reported customer numbers are in accordance with the RIN definitions and instructions. Ausgrid has reported the "high level" NMIs which are active to which the unmetered connections relate in DOPCN0106."Other customers" as they are active NMIs that cannot be allocated to the other customer classes in 3.4.2.1.
Table 3.4.2.2 Distribution Customer Numbers by location on the network Ausgrid must report Customer Numbers in accordance with the category definitions provided in chapter 9. The locations are: CBD, urban, short rural and long rural.	The reported customer numbers are in accordance with the RIN definitions and instructions.

Source of information

Table 3.4.2 requests separate breakdowns of customer numbers into customer class categories and into location-based categories. Ausgrid relies on separate data sources for both measures.

The customer class breakdown in Table 3.4.2.1 is sourced from SAP via the Business Warehouse query "Accrual Tariff Usage - Installation Count". The customer count represents the number of distinct accrued installations as at the end of each month. The default parameter for this report includes sites with a status of occupied or vacant. The customer count query used to extract the data has been subject to and passed various independent audits as part of previous RIN audits.

The location-based breakdown in Table 3.4.2.2 is sourced from Ausgrid's Outage Management System (OMS) which contains customer numbers on the location-based breakdown requested by the RIN.

The following provides additional contextual information on the data contained within OMS.

There are applications (directly linked to OMS) and reference tables outside OMS that hold information relevant to performance reporting. Specifically:

- Electrical connectivity details (including where NMIs are attached to the network): source is GIS.

- NMI details: SAP Customer Care System (CCS) & B2B.

- Reporting Reference tables: Feeder categorisation (CBD, urban etc) and annual Tmed threshold values.

The reporting reference tables provide the capability of separating outage events, NMIs affected and NMIs fed by Feeder Category

Methodology and Assumptions

Table 3.4.2.1

Outputs from SAP via the Business Warehouse query "Accrual Tariff Usage - Installation Count" form the basis for the data in Table 3.4.2.1..

Table 3.4.2.2

Once the data is extracted into the reporting environment it is combined with the reference feeder category and NMI status (active vs. inactive) to generate the required performance measures:

A Business Objects report provides the summarised results for customer numbers by feeder category as required for the tables described.

It is recognised that the feeder category and number of customers may change throughout the year and therefore that data is as at the end of the financial year.

Key assumptions used in method:

- All outage events are correctly recorded in OMS (times, NMIs affected, Trigger, et al)

- All reference tables are accurate (feeder categories)

Table 3.4.2.4

Table 3.4.2.4 requests information on the number of connections (as against NMIs, which are reported in Table 3.4.2) of unmetered supplies.

There are three Ausgrid network tariffs which relate to unmetered supplies. Those tariffs, along with the calculated connection numbers, are listed below.

Tariff	Connections		
	30-Jun-13	30-Jun-14	Average FY14
EA401 - Public Lighting	253881	254637	254259.0
EA402 - Constant Unmetered	14759	14821	14790.0
EA403 - Energy Light	2505	2705	2605.0
Total Unmetered connections	271145.0	272163.0	271654.0

Ausgrid has reported to the total number of connections for tariffs EA 402 and EA 403 (ie Public Lighting connections have been excluded) in DOPCN0302. This reports the total number of unmetered connections without their own individual NMI. However as explained in the compliance table above for Table 3.4.2, these connections are allocated to a high level NMI for customer billing purposes, but this NMI has been ignored for the purpose of reporting the number of unmetered connections, excluding public lighting.

The EA401 and EA402 connection numbers listed above are actuals with EA401 sourced from Ausgrid's IAMS system and EA402 sourced from Ausgrid's PUMS (Permanently Unmetered Supply) database.

For EA403 the reported 30 June 2014 figure is the 1 July 2014 figure. The reported 30 June 2013 figure is an estimate based on Ausgrid's Street Lighting Engineering section's knowledge that approximately 200 EA403 connections were undertaken during FY14.

Use of estimated information

Table 3.4.2.2

The data in this table is estimated information. Actual information could not be provided in relation to this table because in the process of reconciling data for use in complying with the Economic Benchmarking RIN, a difference in customer totals was identified between SAP's Business Warehouse query "Accrual Tariff Usage -

Installation Count" and Ausgrid's Outage Management System (OMS). Consequently Ausgrid has estimated the values of DOPCN0201 to DOPCN0204 as shown below. To calculate the feeder category allocation, reports were extracted on 30/6/2014 and the percentage breakdowns by location were calculated. The global percentages are expected to have been minimally impacted by the reporting problem and for this reason are considered to produce the best estimate of the customer numbers in the categories being sought by the RIN.

The estimation process for DOPCN0201 to DOPCN0204 was as follows:

1. Use the total customer count value from DOPCN01 (that is, the customer count from the SAP Business Warehouse customer count query).

2. Then, apportion the splits across feeder categories in DOPCN0201 to DOPCN0204 on the basis of the splits obtained on the 30/6/2014 OMS data extract.

The estimation process adopted for the 2014 RIN is the same as was applied for the 2006-2013 Benchmarking RIN in May 2014.

Ausgrid is currently working to resolve the above customer count reconcilliation.

3.4.3   System demand

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice. Specifically, for sections 3.4.3.6 and 3.4.3.7:

Compliance Requirement	Ausgrid's Compliance
Table 3.4.3.6 Demand supplied (for customers charged on this basis) – MW measure Ausgrid is only required to complete this table if it charges customers for Maximum Demand supplied. If Ausgrid does not charge customers on this basis then Ausgrid should enter '0'. Ausgrid must report Maximum Demand amounts for customers that are charged based upon their Maximum Demand as measured in MW. Where Ausgrid cannot distinguish between contracted and measured Maximum Demand, demand supplied must be allocated to contracted Maximum Demand.	Ausgrid does not charge customers for "contracted" maximum demand. Ausgrid has reported the "measured" maximum demand for 2014 which underlies the 2014 revenues reported in Worksheet 2 of the RIN. Due to financial year end reporting deadlines the 2014 revenues necessarily rely on estimates of accrued demand. Accordingly measured maximum demand has been reported in the "Estimated information" RIN template. This will be the case in all future benchmarking RINs.
Table 3.4.3.7 Demand supplied (for customers charged on this basis) – MVA measure Ausgrid is only required to complete this table if it charges customers for demand supplied. If Ausgrid does not charge customers on this basis then Ausgrid must enter '0'. Ausgrid must report Maximum Demand amounts for customers that are charged based upon their Maximum Demand as measured in MVA. Where Ausgrid cannot distinguish between contracted and measured Maximum Demand, demand supplied must be allocated to contracted Maximum Demand.	Ausgrid does not charge customers for "contracted" maximum demand. Ausgrid has reported the "measured" maximum demand for 2014 which underlies the 2014 revenues reported in Worksheet 2 of the RIN. Due to financial year end reporting deadlines the 2014 revenues necessarily rely on estimates of accrued demand. Accordingly measured maximum demand has been reported in the "Estimated information" RIN template. This will be the case in all future benchmarking RINs.

Source of information

Tables 3.4.3.1 to 3.4.3.4

Ausgrid Basis of Preparation

Data provided in Table 3.4.3.1, 3.4.3.2, 3.4.3.3, and 3.4.3.4 is obtained from Ausgrid's Spatial Demand Forecast System.

Table 3.4.3.5

The following data sources were used for the estimation of Power Factor (PF):

I.   SCADA data

Real and reactive power from zone substations from SCADA data sourced from PI Historian database. For the 2014 Regulatory Year, 41 Zone and Sub Transmission substations provided valid aggregated real and reactive power flow data.

II.   SAS data

Real and reactive power from transformers or feeders in zones in the SAS database.

The SAS database holds, among others, metering data from individual transformers and feeders in substations. About 100 sites had data that was viable for calculation of the PF.

III.   Low Voltage (LV) Power Quality (PQ) meter data

Real and reactive power from distribution transformers.

There was limited data available for the PF assessment at LV level as only data from PQ surveys (usually covering only one or two weeks) at distribution transformers were deemed to be acceptable for calculating a network wide PF. 17 sites were used for the 2014 Regulatory Year.

> Note: (a) Ausgrid has deployed a large number of Distribution Monitoring & Control (DM&C) equipment in Distribution Transformers, however they cannot accurately report Power Factor Data.
>
> (b) Due to the limited coverage (17 sites in 2013/14), the Power Factor data will be expected to show high variability and is not expected to show a true figure for the LV network as a whole.

Data was extracted and analysed for the Regulatory Year (RY) 2014 (where the Regulatory Year 2014 covers the Period July 2013 to June 2014).

Tables 3.4.3.6 to 3.4.3.7

The demand supplied data is sourced from SAP via the Business Warehouse which collates customer volume consumption for billing purposes. The reported demand is a combination of actual and estimated (accrued) information. The reported demand formed the basis for declared revenue for 2014, which will be subjected to the normal financial accounts audit process.

Table 5.3.6 requests data for customers charged on a MW basis. In 2014 there was one such tariff (EA302). Customers on this tariff generally have Type 5 meters installed.

Table 5.3.7 requests data for customers charged on a MVA basis. In 2014 there were 32 such tariffs. Customers on these tariffs generally have Type 4 or higher meters installed.

Methodology and Assumptions

Tables 3.4.3.1 to 3.4.3.4

Ausgrid performs weather normalisation at 10% and 50% POE using simulation technique at the zone substation level on a yearly basis. Power factors and diversity factors are measured and calculated as close to the system peak as possible to enable conversion between MW and MVA and calculation of coincident system maximum demand. Key assumptions include:

- All load data is obtained from Ausgrid's SCADA system or metering points. All weather data is obtained from Bureau of Meteorology weather stations.

- Maximum demand for the financial year includes period 1 May – 30 June from the previous financial year. Ausgrid's winter season covers period 1 May – 31 August and Ausgrid believes it is impractical to divide the winter season across two financial years.

- Ausgrid interprets "transmission connection point" as any "subtransmission substation", "zone substation", or "High Voltage Customer" connected at 132kV. Further to this definition, there are Ausgrid substations not connected at 132kV supplied from Endeavour Energy, which are Epping 66/11kV, Leightonfield 33/11kV and Hunters Hill 66/11kV zone substations. These are not considered

transmission connection points since Endeavour Energy does not have a transmission licence. However, they are part of Ausgrid's supply area and <u>must</u> be included in any aggregation to determine Ausgrid's coincident maximum demand forecast.

- Tables 3.4.3.1 and 3.4.3.3 are the summation of individual zone substation maximum demands, irrespective of the primary voltage of the zone substation.

- 10% and 50% POE maximum demand is obtained by selecting the corresponding percentile of the maximum demand from 2000 simulated summer & winter seasons. Simulation is based on the daily maximum load and average temperature relationship observed for the corresponding season.

- Where a particular substation is not weather dependent, then no weather adjustment is applied and therefore their 10% and 50% POE maximum demand will be the same as their raw maximum demand.

- All HVCs do not have weather adjustment applied and therefore their 10% and 50% POE maximum demand will be the same as their raw maximum demand.

- The values for the Non-coincident Summated Raw System Annual Maximum Demand in Tables 3.4.3.1, 3.4.3.2, 3.4.3.3 and 3.4.3.4 are based on the greater of the summer or winter raw MW for the individual substations and HVCs. Therefore, these values will be comprised of individual summer and winter raw MW from individual substations and HVCs summated together (ie. summation of demand from different seasons).

- The values for the Coincident Summated Raw System Annual Maximum Demand in Tables 3.4.3.1, 3.4.3.2, 3.4.3.3 and 3.4.3.4 are based on the season where the overall Ausgrid network maximum demand was greater. Therefore, these coincident summated raw totals will summate together the individual MW from individual substations and HVCs from the same season.

<u>Table 3.4.3.5</u>

Power Factor derivation method:

As specified in the instructions and definitions guide, 10min average PF was calculated from 10min average real (MW = P) and reactive (MVAr = Q) power readings using the following formula:

$$PF = \frac{abs(P)}{\sqrt{P^2 + Q^2}}$$

The total site PF of an individual site for a given Regulatory Year was calculated as the 50th percentile of all available data.

The network wide PF of a voltage level is the average of the PF of all sites where a total site PF value is available for that voltage level.

Although some sites have PQ meters installed that provide PF values in the range of -1 to 1, the above formulae was applied to provide a better measure of the relative amplitude of the reactive power on the network when aggregating PF network wide.

Note: The data has been sourced from various databases some of which are implemented for purposes other than power quality (Revenue metering etc). Due to the data volume and time constraints, it has not been possible to carry out detailed checking for incorrect or 'bad' data. As stated above, a simple 50th percentile figure has been calculated and used for the report. A more rigorous analysis would consider statistical compliance with the relevant rules and standards.

Note: Power Factor was calculated for all levels of power (i.e. not at system peak) and no correction was made for weather.

DOPSD0301 is set equal to DOPSD0104 divided by DOPSD0204.

Note: In Zone and Sub Transmission Substations, the aggregated Power Factor for the substation was calculated and reported against both the primary and secondary voltage. No adjustment was made for possible impact of the transformer impedances. Where a substation has two transformation stages, the aggregated data was reported for the end secondary voltage (11kV) only.

Ausgrid maintains a legacy 5kV distribution network out of two Zone Substations (Camperdown and Blackwattle Bay). Camperdown Zone is being converted to 11kV distribution network with planned completion by December 2014. Blackwattle Bay Zone is planned for conversion to an 11kV distribution network in the period 2016-2018.

Ausgrid Basis of Preparation

Neither zone records MW so it is not possible to provide Power Factor for the 5kV level. If an estimation of Power Factor for 5kV was required, figures for 11kV would be used as the aggregated load types would be broadly similar.

Tables 3.4.3.6 to 3.4.3.7

The volumes which are relevant to Tables 3.4.3.6 and 3.4.3.7 are the sum of the twelve individually monthly billed kW or kVA (depending on the tariff structure) volumes for each tariff. For the purposes of completing this Notice, the value entered is the WAPC volume divided by twelve. This is done to put the "chargeable maximum demand" amounts reported in the same context as the rest of the Tables in Table 5.3, which deal with maximum demand at various levels of the network.

Use of estimated information

All data provided as estimated values in this section below is based on the best possible estimates available to Ausgrid at the time of preparation for this economic benchmarking RIN.

Tables 3.4.3.1 to 3.4.3.4

Data required in populating Tables 3.4.3.1 to 3.4.3.4 is based on actual information.

Tables 3.4.3.5

For table 3.4.3.5, Ausgrid has used estimated information for the following data points:

Voltage Level	Reason
22kV	Historical data not available
SWER	Historical data not available

The basis for the estimate:

For 22kV and SWER, a PF value of 0.90 was used as this is the same value used by Ausgrid distribution planning. Based on research done for SWER lines, the value chosen is the best estimate available at the time of preparing the RIN information.

Tables 3.4.3.6 to 3.4.3.7

Due to financial year end reporting deadlines the reported energy delivery includes estimates of accrued (or yet to be meter-read) energy pertaining to the 2014 financial year. The estimation process involves a long standing consultative approach between Ausgrid's Network Pricing and Network Revenue functions which for internal reporting purposes is undertaken at the end of each month. This process is considered to provide the best estimate of accrued or yet to be read energy.

Worksheet 3.5 – Physical assets

3.5.1 Network capacities variables

Compliance with requirements of the notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Source of information

Tables 3.5.1.1 and 3.5.1.2

The data for table 3.5.1.1 and table 3.5.1.2 is sourced from Ausgrid's Geographical Information System (GIS) – the repository for spatial asset data. Extracts are run at 6 monthly intervals providing a variety of different summaries of the asset information held within the system. Data for 2014 financial year is sourced from the "Network Age" extract. This report contains lengths of mains by conductor/cable code. Specifically, the original source file used is located at:

U:\GIS\IPART\01_07_2014\ODRC_NETWORK_AGE_01_07_2014\ODRC_FINYEAR_2014_NETWORK_AGE_0 1_07_2014.csv

Tables 3.5.1.3 and 3.5.1.4

The data for tables 3.5.1.3 and 3.5.1.4 are sourced from different locations depending on voltage, as the data requested is not retained by Ausgrid in the format required. Specifically, the original sources are:

Overhead and Underground Low Voltage

Using cable length extracts from GIS held in file:

U:\GIS\IPART\01_07_2014\ODRC_NETWORK_AGE_01_07_2014\ODRC_FINYEAR_2014_NETWORK_AGE_0 1_07_2014.csv

Additional GIS data was used to provide the proportions, by cable code, of direct and duct laid LV cables.

Overhead 11kV, SWER and 22kV, and Underground 11kV and 5kV

The data is sourced from the 'Sincal' modelling tool used by the Distribution Planning section. This data has been stored in MS Access file named "Sincal Extract 2014.mdb", containing tables named 'ea_sincal_heads',' ea_sincal_sects' and 'zone_reference_list'.

Overhead and Underground 33kV, 66kV and 132kV

This data is sourced from 'RIC' the Ratings and Impedance Calculator, which in turn sources its data from GIS and SAP PM (Plant Maintenance).

The ratings information was obtained from the standard report "R03" for feeder ratings, particularly the file U:\RIC\Rating_Reports\R03_FEEDER_Ratings\R03_2014-07-06_Detailed.xls

Length information was obtained from an extract from RIC (originally sourced from GIS). This file has been saved as "production_feeder_lengths_28July2014.xls"

Methodology and Assumptions

Tables 3.5.1.1 and 3.5.1.2

Using the source data, different filters are applied based on the different voltages required. The below table shows the different filters used for the different RIN variables, and the length field summated to acquire the overall total length.

RIN	Data extract file filters		Data used
Variable	Asset Category	Primary Operation Voltage	Length field used
Overhead Low Voltage Distribution	LV line	LV	Length Total ODRC (kms)
Overhead 11kV	HV line	11kV	Length Total ODRC (kms)
Overhead SWER	HV line	12.7kV	Length Total ODRC (kms)
Overhead 22kV	HV line	22kV	Length Total ODRC (kms)
Overhead 33kV	HV line	33kV	Length Total ODRC (kms)
Overhead 66kV	HV line	66kV	Length Total ODRC (kms)
Overhead 132kV	HV line	132kV	Length Total ODRC (kms)
Underground Low Voltage Distribution	LV cable	LV	Length Total ODRC (kms)
Underground 5kV	HV cable	5kV	Length Total ODRC (kms)
Underground 11kV	HV cable	11kV	Length Total ODRC (kms)
Underground 22kV	HV cable	22kV	Length Total ODRC (kms)
Underground 33kV	HV cable	33kV	Length Total ODRC (kms)
Underground 66kV	HV cable	66kV	Length Total ODRC (kms)
Underground 132kV	HV cable	132kV	Length Total ODRC (kms)

Table 3.5.1.3 and Table 3.5.1.4 Global Assumptions

All voltages used in MVA calculations are nominal voltages.

All ratings are based on normal summer day ratings.

Unless inherent in rating data supplied, all limitations are thermal. Voltage drop considerations are not contained within the data sets available for use in these calculations

Variable DPA0301 – Overhead low voltage distribution

Due to the absence of a data set with both cable length and rating information, the basic methodology applied is to use the extract that has cable length by cable code and match this with cable ratings data.

Using the GIS "Network Age" report as the original source (specified above), the required data set is selected by applying a filter of "LV line" on field 'Asset Category', and "LV" on 'Primary Operating Voltage'.

Each row of data is then manually given a 'Conductor Material' attribute based on the description of the cable code. Using this field and the 'Cable Size' field, the data is then summarised to give the total laid length by Conductor Material and Cable Size.

The corresponding ratings are then assigned to each of these summarised records, using data sourced from Ausgrid's Network Engineering Guideline - Low Voltage Planning Manual LV Cable Ratings. Where the Material is unknown, these records are ignored. If there is a direct mapping to the data held in the guideline lookup tables, the corresponding normal summer day rating is used. If there is no direct mapping and the total length installed is greater than 1km, the corresponding ratings are obtained using the rating held in the Sincal data for the same cable code, or estimated using the ratings for the same material.

These values are then used to calculate the weighted average MVA across all cable codes, with the assumption that all conductors are multi-phase and the standard single phase voltage is 240V.

[For 2014, the previous RIN working sheets were used as a source for ratings to avoid having to calculate ratings from scratch. This was achieved by using a 'lookup' based on cable code.]

Variable DPA0401 – Underground low voltage distribution

Due to the absence of a data set with both cable length and rating information, the basic methodology applied is to use the extract that has cable length by cable code and match this with cable ratings data. As cable ratings are different for duct laid and direct laid cable, a second data extraction from GIS was used to provide a split by cable code of the proportions that are direct laid and duct laid.

Using the GIS "Network Age" report as the original source (specified above), the required data set is selected by applying a filter of "LV cable" on field 'Asset Category', and "LV" on 'Primary Operating Voltage'. The duct and direct laid percentages are then inserted for each row based on a lookup from the GIS sourced data, and the total length for the row then split into a duct laid length and direct laid length using the given proportions. Each row of data is then manually given an 'Insulation Type' and 'Conductor Material' attribute based on the description of the cable code. Using these two fields and the 'Cable Size' field, the data is then summarised to give the total, direct laid and duct laid lengths by Insulation Type, Conductor Material and Cable Size.

The direct and duct laid ratings are then assigned to each of these summarised records, using data sourced from Ausgrid's Network Engineering Guideline - Low Voltage Planning Manual LV Cable Ratings. Where the Insulation Type or Material is unknown, these records were ignored. If there is a direct mapping to the data held in the guideline lookup tables, the corresponding summer rating for soil thermal resistivity of 1.2 K.m/W is used. If there is no direct mapping and the total length installed is greater than 1km, the corresponding ratings for direct laid and duct laid were calculated, again using the instructions in Ausgrid's Network Engineering Guideline - Low Voltage Planning Manual LV Cable Ratings.

These values are then used to calculate the weighted average MVA across all cable codes, with the assumption that all cables are multi-phase and the standard single phase voltage is 240V.

[For 2014, the previous RIN working sheets were used as a source for ratings to avoid having to calculate ratings from scratch. This was achieved by using a 'lookup' based on cable code.]

Variables DPA0304, DPA0305 and DPA0306 - Overhead 11 kV, SWER and 22kV & Variables DPA0402 and DPA0405 Underground 5kV and 11kV

Data has been extracted from the 'Sincal Extract' database for all sections with a length > 0m. The data has been split into 5 different sets for the five different variables. Records were split between Overhead and Underground based on overhead sections having a 'section_lay' = 5, and underground sections having a 'oh_const_code' = 0.

Within the underground data, the 'feeder_volts' field was used to split between 5kV and 11kV.

Within the overhead data, the SWER records were selected using the 'zone_number'/'panel_group' information for the known SWER feeder, and the known cable codes represented on that feeder. The 22kV records were selected using the 'zone_number'/'panel_group' information for the known 22kV feeder, and the known cable codes represented on that feeder. Where the total section lengths for each cable code exceeded the known lengths for that code at that voltage, records were assigned to make up the known length.

In calculating the MVA rating, the normal summer rating was used for underground sections and the normal summer day rating was used for overhead sections. Within the data set there is no information available to indicate whether a section is single phase or multiple phase, as such all calculations are based on multiple phase with the exception of SWER. The additional assumption is that circuit voltage is the nominal voltage, i.e. 5kV, 12.7kV, 11kV or 22kV.

Variables DPA0307, DPA0309, and DPA0311 – Overhead 33kV, 66kV and 132kV & Variables DPA0409, DPA0410 and DPA0412 – Underground 33kV, 66kV and 132kV

Using the R03 report sourced from RIC, the data is filtered selecting RTNG TYPE (Rating Type) = DAY. These data records are then merged with the feeder length data (from file "production_feeder_lengths_28July2014.xls") and an overhead and underground length is assigned to each feeder record. This merged data set is contained in file "ST feeder rating and lengths for WA MVA calcs.xlsx". Where the feeder summer normal current rating is 0, 1, 99999 or blank the record is marked as to be ignored. Where the ampere rating is populated, yet the MVA is not, the MVA is calculated using the assumption that all feeders are 3 phase and at nominal voltage. The weighted average MVA is then calculated for each voltage for overhead and underground, with the assumption that the rating for the 'feeder' is the same for both the overhead and underground portions.

Use of estimated information

Tables 3.5.1.1 and 3.5.1.2

No estimates were used in the completion of these tables.

Tables 3.5.1.3 and 3.5.1.4

Data for variable DPA0403 has been entered as 0. This is because there is no information on the conductor to calculate an MVA rating, and as the total length of 22kV underground mains is recorded as 10m the data is of little value in benchmarking calculations.

3.5.2 Transformer capacities variables

Compliance with requirements of the notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Source of information

Table 3.5.2.1

Variable DPA0501 - Distribution transformer capacity owned by utility

The information used for this variable is sourced from data in SAP PM (Plant Maintenance).

Variable DPA0502 - Distribution transformer capacity owned by High Voltage Customers

As transformer capacity owned by HV customers is not stored by Ausgrid, the secondary method of using the summation of individual customer maximum demands has been used. This data is sourced from the Meter Data Warehouse (MDW), using a list of known HV Customer NMIs.

Variable DPA0503 - Cold spare capacity included in DPA0501

Data for this variable has been sourced from SAP MM (Materials Management).

Table 3.5.2.2

Variables DPA0601, DPA0602 and DPA0603 - Total installed capacity for first step transformation where there are two steps to reach distribution voltage, Total installed capacity for second step transformation where there are two steps to reach distribution voltage & Total zone substation transformer capacity where there is only a single step transformation to reach distribution voltage

The information used for this variable is sourced from data in SAP PM (Plant Maintenance).

Variable DPA0604 - Total zone substation transformer capacity

Sum of variables DPA0601, DPA0602, DPA0603 and DPA0605.

Variable DPA0605 - Cold spare capacity of zone substation transformers included in DPA0604

The information used for this variable is sourced from data in SAP PM (Plant Maintenance).

Methodology and Assumptions

Table 3.5.2.1

Variable DPA0501 - Distribution transformer capacity owned by utility

Distribution transformer data has been extracted from SAP PM via Business Objects, and stored in file "Dist Txs.xlsx". Filters are applied during the extraction to select only distribution transformers with an Owner = Ausgrid or blank. The data in the file has then been processed to highlight records for transformers that were in commission as of 1 July 2014 ('Include' = Y). The 'Rated Power Nameplate (kVA)' value is then summated for all of these transformers, and converted to MVA.

Variable DPA0502 - Distribution transformer capacity owned by High Voltage Customers

A list of NMIs representing HV customers has been compiled for each year using network tariff codes for High Voltage (EA350, EA360, EA370, EA380, EA390) and CRNP customers current at the end of each respective regulatory year. These NMIs were then provided to TCA MDA and the "Extended Billing Format (monthly)" query/ extraction was run for these NMIs for each year. This extracted information has been stored in file "HV_Capacity_FY14.xlsx".

The maximum monthly maximum demand is selected for each meter point in all NMIs. These values are then summated to give a total kVA value for the respective regulatory year. This figure is then converted to a total MVA by dividing through by 1000.

Variable DPA0503 - Cold spare capacity included in DPA0501

The method to retrieve the figure for 2014 was to extract all distribution transformers held within SAP MM storage locations. This was done using SAP transaction IQ09 with the selection criteria 'Object Type' = "TX_DIST" and 'Storage Location' <> "". The Rated Power Nameplate (kVA) data was then summed. This data is stored in file "Dist Txs in Storage Location 20140718.xlsx".

Table 3.5.2.2

Variable DPA0601 - Total installed capacity for first step transformation where there are two steps to reach distribution voltage

Data has been extracted from SAP PM via Business Objects, and stored in file "Major Txs.xlsx". Filters are applied during the extraction to select only transformers with an Owner = Ausgrid or blank. The data in the file has then been processed to highlight records for transformers that were in commission as of 1 July 2014 ('Include' = Y).

Equipment with an 'Object Type' = TX_SUBTRAN are then selected, and the maximum MVA rating then summated to produce the overall figure for DPA0601.

Variable DPA0602 - Total installed capacity for second step transformation where there are two steps to reach distribution voltage

Data has been extracted from SAP PM via Business Objects, and stored in file "Major Txs.xlsx". Filters are applied during the extraction to select only transformers with an Owner = Ausgrid or blank. The data in the file has then been processed to highlight records for transformers that were in commission as of 1 July 2014 ('Include' = Y).

Equipment with an 'Object Type' = TX_ZONE and 'Operating Voltage' = 66000 or 33000 are then selected, and the maximum MVA rating then summated to produce the overall figure for DPA0602.

Variable DPA0603 - Total zone substation transformer capacity where there is only a single step transformation to reach distribution voltage

Data has been extracted from SAP PM via Business Objects, and stored in file "Major Txs.xlsx". Filters are applied during the extraction to select only transformers with an Owner = Ausgrid or blank. The data in the file has then been processed to highlight records for transformers that were in commission as of 1 July 2014 ('Include' = Y).

Equipment with an 'Object Type' = TX_ZONE and 'Operating Voltage' = 132000 are then selected, and the maximum MVA rating then summated to produce the overall figure for DPA0603.

Variable DPA0604 - Total zone substation transformer capacity

As specified, the summation of variables DPA0601, DPA0602, DPA0603 and DPA0605.

Variable DPA0605 - Cold spare capacity of zone substation transformers included in DPA0604

Data has been extracted from SAP PM via Business Objects, and stored in file "Major Txs.xlsx". Filters are applied during the extraction to select only transformers with an Owner = Ausgrid or blank. The data in the file has then been processed to highlight records for transformers that were spare as of 1 July 2014 ('Include' = Spare).

The maximum MVA rating for these records is then summated to produce the overall figure for DPA0605.

Use of estimated information

Variable DPA0501 - Distribution transformer capacity owned by utility

No estimations have been used for this variable.

Variable DPA0502 - Distribution transformer capacity owned by High Voltage Customers

No estimations have been used for this variable, beyond the option given in the RIN instructions as below:

"If the transformer capacity owned by customers connected at high voltage is not available, report summation of individual Maximum Demands of high voltage customers whenever they occur (i.e. the summation of single annual Maximum Demand for each customer) as a proxy for delivery capacity within the high voltage customers."

Variable DPA0503, Variable DPA0601, Variable DPA0602, Variable DPA0603 and Variable DPA0605

No estimations have been used for these variables.

3.5.3   Public lighting

Compliance with requirements of the notice

The information in this section is compliant in that actual values are used where possible, and best estimates are provided where actual data is not available.

Source of information

Data for this section is obtained from SAP PM, extracted via Business Objects using reports built specifically for this request and completion of the Category Analysis RIN.

Methodology and Assumptions

Variable DPA0701 – Public lighting luminaires

The query used in the extraction of this data from SAP PM contains the following logic:

Object Type = LIGHT; AND

SL Rate = 1 or 2; AND

Creation Error = N; AND

Date First Commissioned <= 'End of Regulatory Year Date'; AND

(Status = Commissioned OR Date Decommissioned > 'End of Regulatory Year Date')

This is to ensure that only valid records for Ausgrid maintained luminaires that were in commission at the end of the respective regulatory year are counted. As this data is back calculated off the current data set, master data attribute changes made affect all historical data. As such it is assumed that the current master data against these assets is to be considered accurate for all historical years.

The data is stored in file "Streetlight Asset Data.xlsx".

Variable DPA0702 – Public lighting poles

The query used in the extraction of this data from SAP PM (for regulatory years 2012 and 2013) contains the following logic:

Object Type = POLE; AND

Creation Error = N; AND

Owner = Ausgrid OR Rural Subsidy Scheme OR 'blank'

Asset Group = Distribution Mains Streetlighting

Date First Commissioned <= 'End of Regulatory Year Date'; AND

(Status = Commissioned OR Date Retired > 'End of Regulatory Year Date')

This is to ensure that only valid records for Ausgrid owned poles exclusively used for public lighting in commission at the end of the respective regulatory year are counted. As this data is back calculated off the current data set, master data attribute changes made affect all historical data. As such it is assumed that the current master data against these assets is to be considered accurate for all historical years.

The data is stored in file "SL Poles for Age Profile.xlsx".

Use of estimated information

No estimations have been used for these variables.

Worksheet 3.6 – Quality of services

3.6.1 Reliability

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice unless specified in the methodology and assumptions.

Source of information

Data used to populate Tables 3.6.1.1 and 3.6.1.2 has been taken from outage event records located in Ausgrid's Outage Management System (OMS) and its related reporting environment.

Final outage event records are manually entered into OMS after outage events. Fields within each record are entered both automatically and manually and are subject to quality assurance checks.

Information for interruptions affecting single premises is sourced from Ausgrid's Customer Aided Service System (CASS). For other network events, supply restoration and other information is recorded by System Operators in the Sydney control room on Interruption Report Forms (blue forms), or by System Operators in the Newcastle control room on Line Impedance Data (LID) system reports, and on switching sheets. This information is reconciled into OMS post event. Following an outage, an Ausgrid officer validates the existing OMS record against the blue form or LID system report and customer call data. If the existing outage event record can be made to accurately reflect interruption details it is completed. Otherwise, the event is recreated in OMS based on switching details such that the record accurately reflects the restoration switching.

OMS outage event records include the following fields:

- Date of event
- Time of interruption
- Time of restoration[3]
- Event trigger
- Number of Customers Interrupted (CI)
- Number of Customer Minutes Interrupted (CMI)
- Feeder ID
- Event Hierarchy
- Exclusion Flag
- Exclusion Reason.

OMS automatically calculates CI and CMI by combining the following information:

- Electrical connectivity details from Ausgrid's Graphical Information System (GIS)
- Interruption and restoration steps as recorded by System Operators
- National Metering Identifier (NMI) information from SAP, Customer Care Solution (CCS) and Business to Business (B2B).

The automatic calculation of CI and CMI is based on NMIs and therefore excludes all unmetered supplies. CI and CMI calculations are automatic on the basis of manually entered interruption and switching steps. SAP, CCS and B2B are used to exclude inactive customers (permanently disconnected) from the calculation of CI and CMI.

The reporting environment contains data extracted from OMS that has been cleansed to remove redundant data. Relevant calculations such as SAIDI and SAIFI are also added to records within the reporting environment. The reporting environment facilitates the extraction of information into to a range of Business Objects reports.

A report (*AER RIN 2013 – 14 Sustained Interruption to Supply V1.0*) for the 2013/14 regulatory year was generated from the reporting environment on 21/07/2014. Each report contains a list of outage events with the following key attributes:

- Event ID
- Reporting date

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[3] There may be multiple restoration times for customer groups within a single outage event due to staged restoration works.

- Feeder ID
- Feeder Category
- Event Trigger
- Event Hierarchy
- CI
- CMI
- Global SAIDI[4]
- Global SAIFI[2]
- Feeder Category SAIDI[2]
- Feeder Category SAIFI[2]

Separate entries appear in the list if a single event affected multiple feeders. The report contains separate sections for unplanned, planned and excluded outage events. The report does not contain momentary interruptions of duration one minute or less.

Methodology and Assumptions

Key elements of the methodology:

1. A Business Objects report (*AER RIN 2013 – 14 Sustained Interruption to Supply V1.0*) is extracted from the reporting environment (on 21/07/2014) for the 2014 regulatory year. The report contains the following key information (Events are classified as "excluded" in accordance with Clause 3.3 of the STPIS which aligns with the definitions in the Instructions and Definitions):

    a. An unplanned event list that details the CI, CMI and whole of network SAIDI / SAIFI contribution for each event

    b. An excluded event list that details the CI, CMI and whole of network SAIDI / SAIFI contribution for each event (The exclusion reason of each event is verified against STPIS clause 3.3 (a))

2. The table below details the calculation of each of the variables in Table 3.6.1.1 (Inclusive of MEDs):

Variable_Code	Variable	Calculation
DQS0101	Whole of network unplanned SAIDI	For each regulatory year: 1. Calculate the sum of whole of network SAIDI for unplanned events (**a**) 2. Calculate the sum of whole of network SAIDI for excluded events (**b**) 3. Calculate the sum of steps 1 and 2
DQS0102	Whole of network unplanned SAIDI excluding excluded outages	For each regulatory year: 1. Calculate the sum of whole of network SAIDI for unplanned events (**a**)
DQS0103	Whole of network unplanned SAIFI	For each regulatory year: 1. Calculate the sum of whole of network SAIFI for unplanned events (**a**) 2. Calculate the sum of whole of network SAIFI for excluded events (**b**) 3. Calculate the sum of steps 1 and 2
DQS0104	Whole of network unplanned SAIFI excluding excluded outages	For each regulatory year: 1. Calculate the sum of whole of network SAIFI for unplanned events (**a**)

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[4] Verified to be calculated in accordance with the assumptions below.

3. Calculate the daily unplanned whole of network SAIDI for each day in the 2014 regulatory year.

4. In order to calculate the variables in Table 3.6.1.2 it is first necessary to calculate the 2013 T_{MED}. The T_{MED} is calculated for 2013 in accordance with Appendix D of the STPIS. Data as provided in the Reset RIN in April 2014 from step 3 above is used in the calculation.

5. Flag all events in the Reset RIN in April 2014 that occur on a day where the daily SAIDI from step 3 is greater than the T_{MED} calculated in step 4 (MED).

6. The table below details the calculation of each of the variables in Table 3.6.1.2 (Exclusive of MEDs):

Variable_Code	Variable	Calculation
DQS0105	Whole of network unplanned SAIDI	For each regulatory year: 1. Calculate the sum of whole of network SAIDI for unplanned events (**a**) (Excluding events occurring on a day flagged as a MED in step 5) 2. Calculate the sum of whole of network SAIDI for excluded events (**b**) (Excluding events occurring on a day flagged as a MED in step 5) 3. Calculate the sum of steps 1 and 2
DQS0106	Whole of network unplanned SAIDI excluding excluded outages	For each regulatory year: 1. Calculate the sum of whole of network SAIDI for unplanned events (**a**) (Excluding events occurring on a day flagged as a MED in step 5)
DQS0107	Whole of network unplanned SAIFI	For each regulatory year: 1. Calculate the sum of whole of network SAIFI for unplanned events (**a**) (Excluding events occurring on a day flagged as a MED in step 5) 2. Calculate the sum of whole of network SAIFI for excluded events (**b**) (Excluding events occurring on a day flagged as a MED in step 5) 3. Calculate the sum of steps 1 and 2
DQS0108	Whole of network unplanned SAIFI excluding excluded outages	For each regulatory year: 1. Calculate the sum of whole of network SAIFI for unplanned events (**a**) (Excluding events occurring on a day flagged as a MED in step 5)

Key assumptions used in the methodology:

1. All outage event attributes are correctly entered in OMS.

2. The NMI connectivity details in GIS are correct at the time of outages, or that any errors are managed through manual processes to determine the actual customers affected by an event, or by holding out outage event records in the OUTAGES_NOT_IN_OMS table until GIS updates are received.

3. Ausgrid calculates reliability metrics differently from Appendix A of the STPIS due to technical constraints. Reliability metrics are calculated as follows:

   STPIS Appendix A, Note 1: All reliability metrics are calculated using daily customer counts. Ausgrid has consistently adopted this approach because average customer counts do not result in stable metrics suitable for trend analysis due to the constant adding, removing and reconfiguring of feeders. (Different)

   STPIS Appendix A, Note 2: All unmetered supplies are excluded from the calculation of reliability metrics. (Compliant)

   STPIS Appendix A, Note 3: All active customers are included in the calculation of reliability metrics. All inactive customers are excluded in the calculation of reliability metrics. The following assumptions regarding customer counting have been made:

   Active = Energised + De-energised

   Inactive = Extinct = Deactivated

   De-energised $_{(AER)}$ = Temporary disconnection $_{(AUSGRID)}$

   Inactive $_{(AER)}$ = Permanent disconnection $_{(AUSGRID)}$

   (Compliant)

4. All customers connected to a three phase low voltage supply are interrupted for the entire duration of an event. This approach is adopted because the accurate determination of customers connected to each phase of a low voltage supply is currently not possible.

5. The reliability metrics reported in this worksheet differ from previous metrics provided to the AER for the following reasons:

   - The 2014 T_{MED} has been applied to 2014 regulatory year in Table 3.6.1.2 as per the requirements of this notice.

Use of estimated information

Nil.

3.6.2   Energy not supplied

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice unless specified in the methodology and assumptions.

Source of information

Data used to complete Table 3.6.2 has been taken from outage event records located in Ausgrid's Outage Management System (OMS) and the related reporting extracts and reference tables. See section 3.6.1 for further information about the OMS system.

All other data separation required for this notice (i.e. reporting category) is determined from the attributes of each OMS outage event record.

Ausgrid installs meters on our network to measure consumption. Each meter is assigned a Network Meter Identifier (NMI). For reporting purposes, each NMI is considered as a customer. Ausgrid uses the Business Warehouse Billing Data system to obtain annual consumption data for each NMI by regulatory year measured in kilowatt-hours (kWh). This system also provides the total days connected for each NMI.

Planned outages are entered into DAROS for the Sydney Control Room and LID for the Newcastle Control Room.

Methodology and Assumptions

Key elements of the Methodology

1. A Business Objects report (*NMI Data Unplanned Outages by Region v0.6 with MEDs.xls*) is extracted from the reporting environment for the 2014 regulatory year for each of the regions North, Central, South and nil (nil means there is no region assigned to the NMI because the NMI is for a high voltage customer). Each report contains the following key information (Events are classified as "excluded" in accordance with Clause 3.3 of the STPIS – which aligns with the Instructions and Definitions):

   a. Whole of region **unplanned** customer duration by NMI excluding excluded interruptions for the regulatory year (Including MEDs)

   b. Accompanying data for each NMI instance that details the region, event time, outage job number and reporting category (planned, unplanned, momentary, excluded).

2. A Business Objects report (*NMI Data Planned Outages by Region v0.3.xls*) is extracted from the reporting environment for the 2014 regulatory years for each of the regions North, Central, South and nil (nil means there is no region assigned to the NMI because the NMi is for a high voltage customer). Each report contains the following key information (Events are classified as "excluded" in accordance with Clause 3.3 of the STPIS – which aligns with the Instructions and Definitions):

   a. Whole of region **planned** customer duration by NMI for the regulatory year

   b. Accompanying data for each NMI instance that details the region, event time, outage job number and reporting category (planned, unplanned, momentary, excluded).

3. For any outage event a set of NMIs will be affected. A single NMI can be affected multiple times in any one regulatory year due to unique outage events and as such the Business Objects reports include multiple entries for some NMIs. For each set of planned or unplanned data for each region and regulatory year, the NMI data is consolidated by summing all the unique outage events and their duration for each NMI. The result is a data set of all NMIs and their total time not supplied for the regulatory year by region.

4. The full set of NMI data for each regulatory year is consolidated into one spreadsheet with the following columns:

   a. NMI

   b. Total outage duration for the year in minutes

   c. Annual measured consumption (kWh)

   d. Days connected

   e. Minutes connected

   f. Energy Not Supplied.

This data is provided separately for planned and unplanned data.

5. The table below details the calculation of each of the variables in Table 3.6.2 – Actual Information:

Variable_Code	Variable	Calculation
DQS0201	Energy not supplied (planned)	For each NMI: 1. Calculate minutes connected per NMI $\quad$ **e.** = **d.** x 24 x 60 2. Calculate Energy not supplied per NMI $\quad$ **f.** = **c.** x. (**b.** / **e.**) 3. Summate column **f.** to calculate the energy not supplied for the year and divide this summation by 1,000,000 to present in GWh
DQS0202	Energy not supplied (unplanned)	For each NMI: 1. Calculate minutes connected per NMI $\quad$ **e.** = **d.** x 24 x 60 2. Calculate Energy not supplied per NMI

| | | **f.** = **c.** x. (**b.** / **e.**) |
| | | 3. Summate column **f.** to calculate the energy not supplied for the year and divide this summation by 1,000,000 to present in GWh |

Use of estimated information

Not Applicable

3.6.3   System losses

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice.

Source of information

The data within this table is calculated based on energy data provided in tables 3.4.1, 3.4.1.2 and 3.4.1.3 of the Notice.

Methodology and Assumptions

Ausgrid use the formula provided in the Economic Benchmarking RIN for distribution network service providers – Instructions and Definitions section 7.3

Equation 2 Calculation of system losses

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

Electricity imported is the total electricity inflow into Ausgrid'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 Ausgrid'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.

Use of estimated information

The data in this table is based on data from other tables of the Notice that are estimates, therefore data in this table is also estimated.

3.6.4   Capacity utilisation

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice.

Source of information

There are three key inputs to the capacity utilisation calculation:

1. Non-Coincident Maximum Demand

This value is sourced from RIN table section 3.4.3.3 - Annual system maximum demand characteristics at the zone substation level - DOPSD0201 - Non-coincident summated raw system annual maximum demand.

2. Zone Throughput Capacity

Ausgrid's SAP based asset management system contains details on substation assets, such as transformers, circuit breakers, current transformers, etc. Along with the lifecycle status and functional location of these assets, they contain stored characteristics which include information relating to the asset thermal rating. This data is used

by an Ausgrid IT system known as the Ratings and Impedance Calculator (RIC) to perform ratings calculations based on ratings rules. RIC generates a report known as "R01 – Present Zone and STS Firm Ratings". This report is used as the base data for the zone substation transformer thermal capacity calculation for each year.

The RIC system was introduced 3 years ago. Prior to 2011 similar reports known as TF45 were available from a mainframe application known as TIS. The substation capacity information used to calculate capacity is sourced from archived R01 and TF45 reports dating back to 2006.

3. Zone Feeder Exit Capacity

Due to historical differences regarding work practices across Ausgrid, data systems and data storage this data was extracted differently in the Sydney and Hunter areas. This is being addressed by the creation of a common feeder forecasting methodology, business practice/process and storage mechanism.

Sydney Data – Network models for each year were created based on archived connectivity data as at the end of December of each calendar year. This connectivity data was used to create SINCAL (load flow and connectivity analysis software package) models of all zone's distribution networks. Data was extracted for the trunk section Summer Day, Summer Night, Winter Day and Winter Night ratings for the distribution network feeders. The lowest of these values was selected as the 11kV capacity.

Hunter Data –The trunk rating is sourced for the Hunter area from well established distribution feeder forecasts which date back to 2006. Data was extracted for the trunk section Summer ratings for the distribution network feeders.

Additionally, zone substation commissioning and decommissioning dates were provided by the Subtransmission planning section.

Methodology and Assumptions

Capacity utilisation (DQS04) is a measure of the capacity of zone substation transformers that is utilised each year.

The overall utilisation is calculated from the sum of non-coincident Maximum Demand at the zone substation level divided by the summation of zone substation capacity.

Individual zone substation capacity is determined by comparing the feeder exit capacity to the zone substation throughput (thermal) capacity and selecting the lower value of the two.

For ease of data collection and in order to avoid splitting summer or winter seasons over two different years an adjusted review period was used. In the case of 2014, the year review period starts on 1 May 2013 and continues through to 30 April 2014.

Zone substations are included in the calculations for a particular year if they have been commissioned before or during the yearly review period and have not yet been decommissioned. Decommissioned zones are not removed from calculations in the yearly review period in which the zone was decommissioned but are removed from the following year.

In the event that there was only one of the capacity values (throughput or exit) available for a particular zone for a particular yearly review period then the known value was used as default.

Specific Data Collection Methodologies:

1. Non-Coincident Maximum Demand

Ausgrid use the formula and methodology provided in the Economic Benchmarking RIN for distribution network service providers – Instructions and Definitions Section 5.3.

2. Zone Throughput Capacity

For the purpose of this measure, thermal capacity is the rated continuous load capacity of the zone substation (with forced cooling or other capacity improving factors included if relevant). This must be the lowest of either the transformer capacity or feeder exit capacity of the zone substation. Feeder exit capacity should similarly be the continuous rating.

Ausgrid has assumed through the inclusion of the "capacity improving factors" wording in the above statement that the AER is interested in the normal cyclic rating of the transformer, as opposed to the transformer nameplate rating.

The normal cyclic rating is based on the individual transformer thermal performance from temperature rise tests and the transformers load cycle which will generally not be continuous (constant load), however once the typical load cycle has been allocated to the transformer the normal cyclic rating is available every day of the year, but not every hour of the day.

Ausgrid does not use nameplate ratings for operational or planning purpose. Ausgrid zone transformers have a summer normal rating, summer maintenance rating, summer emergency rating, winter normal rating, winter maintenance rating and a winter emergency rating. These are all cyclic ratings.

As the AER has requested that the capacity be the lowest of either the transformer capacity or the feeder exit capacity, Ausgrid has assumed that the AER is actually interested in the transformer throughput rating which considers the rateable equipment such as circuit breakers and other equipment that is in series with the transformer and limits its load carrying capability. Ausgrid has therefore capped the transformer ratings to the applicable throughput rating.

Where a substation has a missing zone throughput capacity data for 2014, the available capacity value from the previous year was used.

3. Zone Feeder Exit Capacity

Sydney Data – the total zone substation distribution feeder exit capacity was based on the summation of the trunk section ratings of the feeders that supply network load connected to a zone substation. Due to the data availability and quantity of zones to check, efforts were put into the validation of feeders where it was known that the exit capacity was the limitation not the Zone transformer throughputs.

The following was taken into account in providing for the simulation:

- Trunk section limitation was based on the minimum rating to the first tee-off of load on the feeder.
- All feeders were limited to 400A to match switchgear/protection systems.
- Thermal ratings are cyclic ratings based on cable type, load cycle, thermal resistivity, mutual heating, OH construction operating temperature.
- Where a substation has missing feeder exit capacity data for 2014, data was sourced from the current system diagram.
- Conversion from 11kV amps to MVA used the following formula based on nominal voltages:
$MVA = \sqrt{3} \ x \ 0.011 \ x \ AMPS_{11kV}$
- Conversion from 5kV amps to MVA used the following formula based on nominal voltages:
$MVA = \sqrt{3} \ x \ 0.005 \ x \ AMPS_{5kV}$
- Where possible, double banked feeders were captured as 2 feeders.
- Feeders that were normally open at the circuit breaker and connected to feeders supplying the network were included.
- Network models for each year were created based on archived connectivity data as at the end of December of each calendar year. It was assumed that the December model snapshot represented that summer's configuration and the previous winter's configuration.
- Ausgrid owned feeders that exited the zone substation were only summated. Feeders that did not exit the zone such as ones supplying only FIU, Aux subs, capacitor banks, or inter group ties were excluded.
- Where HV customers own the cables connected to our substations, they have been excluded such as Graving Dock, ANSTO, CALTEX etc.
- All city CBD zone substations have complex triplex feeder configurations and as such no data could be captured from our existing systems in the time frames available.
- Connectivity data was not available for Bankstown Zone Substation. This effects review year 2014 as the substation was commissioned in November 2010.

Hunter Data – the total zone substation distribution feeder exit capacity was based on the summation of the trunk section ratings of the feeders that supply network load connected to a zone substation.

The following was taken into account when running the simulation:

- Feeders are included if they normally supply load or could be used to supply load.

- The trunk ratings of 11kV feeders for the Hunter area are based on the section of feeder that carries 90% or more of the total feeder load.
- The trunk ratings for the Hunter are recorded on a yearly basis in an 11kV feeder forecast which exists to 2004.
- Where ratings were unavailable for a certain year the ratings from the previous year and subsequent year were used.
- Throughout the period many new zones were commissioned with several commissioned in stages. As a zone is commissioned in stages the zone exit capacity changes on a regular basis as new 11kV feeders are connected.

Use of estimated information

Unless specifically mentioned in the methodology, the information provided was actual data. However, due to the vast amount of data required to populate Table 3.6.4, it was likely that each year contained some estimated data and therefore it was decided to enter the data into the estimated spreadsheet.

Worksheet 3.7 – Operating environment factors

3.7.1 Density factors

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice.

Source of information

Customer Density

Customer numbers were used from Table 3.4.2. See related basis of preparation section.

Route Line length utilised the Route Line Lengths calculated in DOEF0301. Basis of preparation 3.7.2 defines the source of this information.

Demand Density

Refer Tables 3.4.3.3 - DOPSD0201 (for demand) and 3.4.2.1 - DOPCN01 (for total customer numbers).

Energy Density

Energy density information was sourced from Tables 3.4.1 (for energy) and 3.4.2 (for customer numbers).

Methodology and Assumptions

Customer Density is a direct calculation from the results of DOEF0301 and Customer numbers in Table 3.4.2 (Number of customers divided by Route km) therefore all assumptions defined for this data are applicable to Customer Density.

The Demand Density is the total kVA non-coincident demand data (summed at zone substation level) from Table 3.4.3.3 divided by the total customer numbers from Table 3.4.2.1 of the benchmarking RIN.

The Energy Density is the energy delivered from Table 3.4.1 divided by the customer numbers from Table 3.4.2.1.

Use of estimated information

For Customer Density and Demand Density there is no estimated information.

For Energy Density, as noted under Table 3.4.1, the reported energy delivered is estimated (accrued) information. The reported energy delivered formed the basis for reported revenue for 2014.

3.7.2 Terrain factors

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice.

Source of information

DOEF0205 Total Number of Spans was calculated using Ausgrid's Geographical Information System (GIS) data. Ausgrid's GIS data is not represented as spans or singular routes, but represents the network as individual circuits; therefore significant manipulation of the existing data model was required defined in Methodology and Assumptions.

The above data was used as a basis for providing;

- DOEF0204 Total Vegetation Maintenance Spans
- DOEF0202 Urban and CBD Vegetation Maintenance Spans
    - Combined with 2013 reliability feeder classifications.
- DOEF0203 Rural Vegetation Maintenance Spans
    - Combined with 2013 reliability feeder classifications.
- DOEF0201 Rural Proportion

- - Combined with 2013 reliability feeder classifications.
  - DOEF0212 Tropical Proportion
    - Combined with Bureau of Meteorology Climate Classification Maps based on standard 30 year climatology (1961 -1990).
  - DOEF0213 Standard Vehicle Access
    - Combined with current (Feb 2014) road corridor data from the Land and Property Information,
    - 2013 Australian Bureau of Statistics land zoning data.
  - DOEF0214 Bushfire Risk
    - Combined with Rural Fire Service 2014 Bushfire Prone Land data.
  - DOEF0210 Average Number of Defects per Urban and CBD Vegetation Maintenance Span
    - Combined with 2013 reliability feeder classifications,
    - Ausgrid acquired 2012 and 2013 Light Detection And Ranging (LiDAR) vegetation defect data.
  - DOEF0211 Average Number of Defects per Rural Vegetation Maintenance Span
    - Combined with 2013 reliability feeder classifications,
    - Ausgrid acquired 2012 and 2013 LiDAR vegetation defect data.
  - DOEF0208 Average Number of trees per Urban and CBD Vegetation Maintenance Span
    - Combined with 2013 reliability feeder classifications,
    - Ausgrid acquired 2012 and 2013 LiDAR vegetation defect data.
  - DOEF0209 Average Number of trees per Rural Vegetation Maintenance Span
    - Combined with 2013 reliability feeder classifications,
    - Ausgrid acquired 2012 and 2013 LiDAR vegetation defect data.
  - DOEF0206 and DOEF0207
    - Was obtained from the Contract Operations group in Ausgrid and is based on the typical network maintenance cycle.

Methodology and Assumptions

Span Calculation and Feeder Classification

Ausgrid assessed the Australian Energy Regulator's (AER) recommendation to use number of poles minus one to calculate the number of spans. Further analysis found this methodology to be fundamentally flawed where the overhead network was not linear in nature. For example if the spans created a closed loop the number of spans equals the number of poles, however if the spans formed a grid (adjoining loops sharing a span) the number of poles has no relationship on the number of spans.

In Figure 8.2.1 (below) the numbers represent the count of spans, black lines represent actual network span data in an area west of Sydney, and black circles represent poles.

For simplicity poles in-between main vertices and the small line segments teeing off the main line have been ignored. This has no impact on the formula or result.

- Red numbered spans (1-5) – this is a simple loop (common in residential areas which are not densely populated).
  - The span count equals the number of poles. (20% error using pole count minus one)
- Combining the red and blue numbered spans (1-8) – this is the simplest form of a grid (common in residential areas which are not densely populated).
  - The span count equals the number of poles plus one. (33% error using pole count minus one)
- Combining the red, blue, and green numbered spans (1-11) – this is a larger grid (common in residential areas).
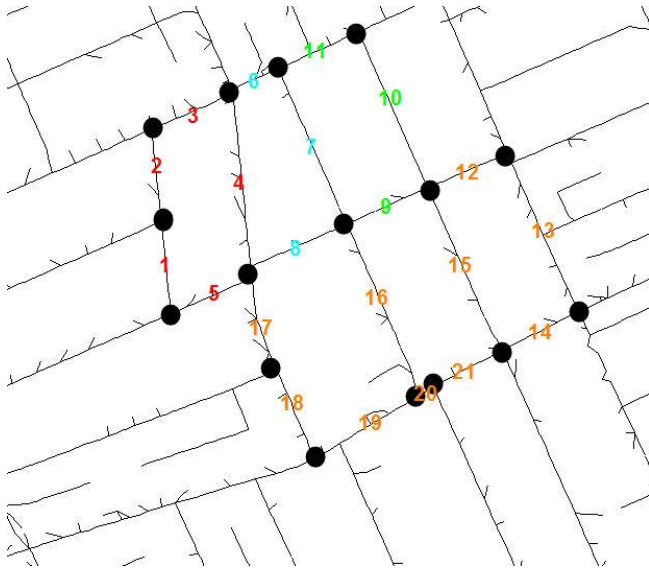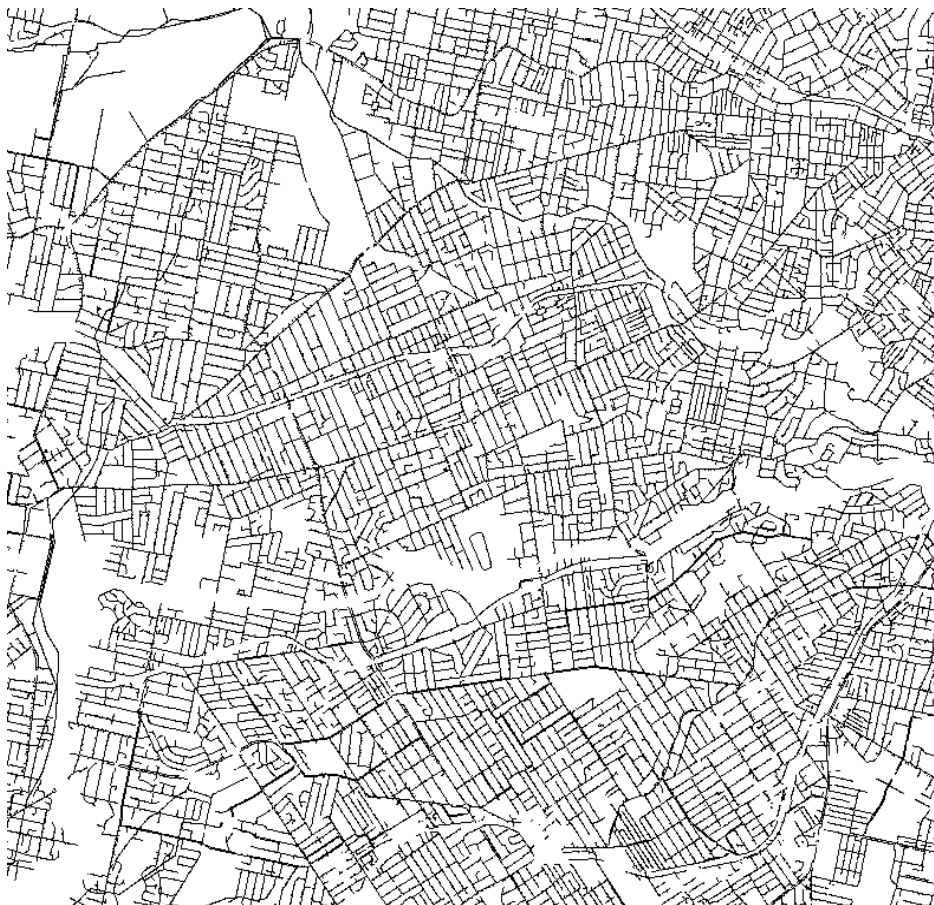
Ausgrid Basis of Preparation

- o The span count equals the number of poles plus two. (22% error using pole count minus one)
- Combining red, blue, green, and orange numbered spans (1-21) – this forms a grid consisting of multiple rows and columns (this is the most common span configuration throughout residential, urban, and CBD areas).
    - o The span count equals the number of poles plus five. (31% error using pole count minus one)

Figure 8.2.1

Figure 8.2.2 - a larger sample area showing that these areas are not insignificant.

Additionally, an overhead service is part of Ausgrid's network, which may or may not be between poles, increasing the error in the AER's pole minus one methodology.

Ausgrid calculated the number of spans for 2013 to be 1,340,583 but only consists of 603,410 poles.

These errors are exacerbated further when calculating the number of spans with bushfire risk. The nature of the Rural Fire Services bushfire prone land dataset results in cases where the span crosses an at risk area, but the poles at either end of the span fall outside. This results in the span not being counted as at risk.

The span connected to Ausgrid's network where it is connected to the point of attachment, or the first span to a private pole is considered part of Ausgrid's network therefore it has been counted as one span. The LiDAR data used to calculate average number of trees and defects did not cover service lines or their related defects. For this reason, services have been excluded in these calculations for DOEF0208, DOEF0209, DOEF0210, and DOEF0211, otherwise it would result in a lower result.

To calculate the number of spans Ausgrid spatially manipulated the data using the following methodology:

- The circuit data was split into line segments at every pole.

- Where the line segments ran parallel they were snapped together.

- For spans which contained multiple conductors with different feeder classifications (Rural portion, Urban, and CBD), the highest voltage's classification was attributed to the span, with all others removed. If the span represented conductors with different feeder classifications and of the same voltage the following priority was applied to the span:

    1. CBD

    2. Urban

    3. Rural.

- Ausgrid does not give Transmission feeders (feeders > 22kV) a feeder classification of CBD, Urban or Rural. A transmission feeder typically supplies multiple HV feeder classifications. As a consequence, spans made up of transmission only feeders are not assigned a CBD, Urban or Rural category. If a span only consisted of transmission it received a classification of transmission, however if there was also a conductor of lesser voltage in the span, transmission voltage was ignored and the classification of the lower voltage was applied.

- The RIN templates only show spans associated with low voltage and high voltage mains. Transmission only spans were not included in the RIN Template. The transmission results are as follows;

    Transmission vegetation maintenance spans (number of spans)
2010	17970
2011	18419
2012	18386
2013	18468
2014	17666

    The decrease in 2014 transmission vegetation maintenance spans can be explained by the transferral of ownership of feeders to Transgrid from Ausgrid.

Average Number of Trees and Defects

Ausgrid utilised LiDAR acquired data for 2012/13 and 2013/14 to calculate vegetation within the vicinity of its network covered by vegetation management activities. The spread or coverage of the LiDAR data and tree identification was up to 8 meters from the network. Trees and vegetation outside of this corridor were ignored and deemed not to be within the vicinity of the network for vegetation management activities.

The source data extent did not fully cover the Ausgrid's network, nor was it an equal sample of construction types, environmental, and demographic variations within its supply area. The LiDAR data acquired in 2012/13 did not encompass low voltage network and related defects. The coverage area for LiDAR acquisition was increased in 2013/14 to include low voltage (excluding services) and coverage area was increased. This results in a difference in sample data used between 2012/13 and 2013/14 shown in Table 8.2.1.

Sample Data Representation of Total Network

Feeder Classification	2012/13	2013/14
Transmission	66%	63%
Rural	34%	94%
Urban/CBD	1%	10%

Table 8.2.1

Ausgrid does not give Transmission feeders (feeders > 22kV) a feeder classification of CBD, Urban or Rural. A transmission feeder typically supplies multiple HV feeder classifications. As a consequence, spans made up of transmission only feeders are not assigned a CBD, Urban or Rural category. If a span only consisted of transmission it received a classification of transmission, however if there was also a conductor of lesser voltage in the span, transmission voltage was ignored and the classification of the lower voltage was applied.

The RIN templates only show spans associated with low voltage and high voltage mains. Transmission only trees and defects were not included in the RIN Template. The transmission results are as follows;

Year	Trees	Defects
2012/13	0.34	0.04
2013/14	0.30	0.06

The AER Instructions and Definitions for the Economic Benchmarking RIN outlined a number of data sources that Ausgrid was required to use to underpin estimates, including using Normalised Difference Vegetation Index (NDVI) grids and maps available from the Bureau of Meteorology, or data from the National Vegetation Information System (NVIS) overlaid with GIS data to calculate the average number of trees per span.

The Bureau of Meteorology provide the following description of the NDVI[5]:

> *"The NDVI is calculated from the red and near-infrared reflectances rRed and rNIR. Its value is always between -1 and +1. Vegetation NDVI in Australia typically ranges from 0.1 up to 0.7, with higher values associated with greater density and greenness of the plant canopy. NDVI decreases as leaves come under water stress, become diseased or die. Bare soil and snow values are close to zero, while water bodies have negative values."*

NVIS is orientated towards native vegetation and NVIS data was partially updated in NSW with 2001-09 data, with extensive areas of 1997 data remaining from the earlier version of NVIS.

Both of these data sources do not contain any spatial or a-spatial data regarding vegetation density or number of trees, they consist of vegetation health and native species data. Additionally, both are represented at a resolution which far exceeds the area covered by vegetation management activities to comply with Ausgrid's vegetation obligations.

Vegetation Maintenance Spans

Vegetation maintenance spans includes the first service span connected to Ausgrid's network in some regions where vegetation clearing on service lines are carried out, it also includes overhead street lighting spans. Due to the source data structure used to calculate the feeder classifications, street lighting data was not able to be assigned a classification and therefore omitted from the feeder category split results in DOEF0202, and DOEF0203, but included in total DOEF0204 and DOEF0205.

The larger than expected increase in Total number of spans in 2014 is due to recent capture and data improvement work by Ausgrid to ensure that all services have been properly recorded.

Tropical Proportion

Service lines have been excluded.

Standard Vehicle Access

It was assumed that Standard Vehicle Access DOEF0213 is length of spans not accessed by a standard vehicle as defined in the definition.

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[5] For more information, see http://www.bom.gov.au/climate/austmaps/about-ndvi-maps.shtml

Standard Vehicle Access is defined by the AER in the RIN Instructions and Definitions (page 50) as:

"Distribution route Line Length that does not have Standard Vehicle Access. Areas with Standard Vehicle Access are serviced through main roads, gravel roads and open paddocks (including gated and fenced paddocks). An area with no standard Vehicle Access would not be accessible by a two wheel drive vehicle."

Ausgrid does not record information with regard to length of network accessible in relation to vehicular capability or terrain.

The estimated values for Standard Vehicle Access have been calculated as follows: Spans which are not within a 10 meter buffer of a designated road corridor formed or unformed were identified using GIS spatial analytical software. The spans output of this query were then removed if the continuous line segment length was less than 100m, thus removing small segments which in most cases run parallel with the road corridor (assumed to be also accessible via a standard vehicle). Ausgrid was unable to identify open paddocks which are, or are not, accessible via a standard two wheel drive vehicle. In order to provide a best estimate Ausgrid utilised the 2013 Australian Bureau of Statistics data which contained agriculturally zoned land, assumed to largely be open paddocks which would be accessible via a two wheel drive vehicle. Where the spans fell inside the agricultural areas they were removed from the length calculation.

The "mesh block" data from the Australian Bureau of Statistics for the agricultural land "The Mesh Block Category (MB_Category) attribute is a field based on planning/zoning scheme data provided by each state/territory" link: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1209.0.55.002Main+Features12006?OpenDocument.

Service lines have been excluded because they are an arbitrary length of 10 meters towards the centre of the supplied land parcel. Actual lengths could extend much further than 10 meters and Ausgrid has no way of determining this length. Using an arbitrary length would compromise the validity of the actual route length calculated.

Bushfire Risk

Includes service lines where they are subject to vegetation management.

Rural proportion

Services line lengths are an arbitrary length of 10m towards the centre of the supplied land parcel, therefore they have been excluded. Results in the table have been provided as per definition "Distribution line route length classified as short rural or long rural in km / total network Line", rather than km as noted in table 3.7.2.

Underground cables are excluded for calculating the Route length classified as short or long rural in km, and the Total network Line. Therefore the figures reporting the Rural proportion excludes underground network cables.

Average Vegetation Management Cycles

Ausgrid ensures vegetation management activities are executed under a contract arrangement whereby the contractor is required to maintain clearances throughout the term of the contract.

The frequency in which the contractor carries out activities to fulfil their responsibilities is not known by Ausgrid and would vary depending on the vegetation type, area, and contractor.

There is no clause or requirement in the contract to carry out vegetation maintenance activities in a cyclic manner. However, the typical maintenance review cycle is 1 year.

Use of estimated information

- DOEF0213 - Standard vehicle access

    Ausgrid does not record information with regard to length of network accessible in relation to vehicular capability or terrain.

    The estimated values for Standard Vehicle Access have been calculated as follows: Spans which are not within a 10 meter buffer of a designated road corridor formed or unformed were identified using GIS spatial analytical software. The spans output of this query were then removed if the continuous line segment length was less than 100m, thus removing small segments which in most cases run parallel with the road corridor (assumed to be also accessible via a standard vehicle). Ausgrid was unable to identify open paddocks which are, or are not, accessible via a standard two wheel drive vehicle. In order to provide a best estimate Ausgrid utilised the 2013 Australian Bureau of Statistics data which contained agriculturally zoned land, assumed to largely be open paddocks which would be accessible via a two

wheel drive vehicle. Where the spans fell inside the agricultural areas they were removed from the length calculation.

The "mesh block" data from the Australian Bureau of Statistics for the agricultural land "The Mesh Block Category (MB_Category) attribute is a field based on planning/zoning scheme data provided by each state/territory" link: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/1209.0.55.002Main+Features12006?OpenDocument.

- DOEF0206 - Average urban and CBD vegetation maintenance span cycle, and

- DOEF0207 - Average rural vegetation maintenance span cycle

There is no clause or requirement in the contract to carry out vegetation maintenance activities in a cyclic manner. However, the typical maintenance review cycle is 1 year.

3.7.3　Service area factors

Compliance with requirements of the notice

The information provided is consistent with the requirements of this Notice.

Source of information
DOEF0301 Route Line Length was calculated using Ausgrid's Geographical Information System (GIS) data. Ausgrid's GIS data is not represented as spans or singular routes, but represents the network as individual circuits; therefore significant manipulation of the existing data model was required defined in Methodology and Assumptions.

Methodology and Assumptions

In this section we explain the methodology Ausgrid applied to provide the required information, including any assumptions Ausgrid made.

To calculate the route line length Ausgrid spatially manipulated the data using the following methodology;

- The circuit data was split into line segments at every pole.
- Where the line segments ran parallel they were snapped together.
- For spans which contained multiple conductors duplicates were removed and the length calculated.

Services line lengths are an arbitrary length of 10m towards the centre of the supplied land parcel, therefore they have been excluded.

The definition of Route Line Length (DOEF0301) as defined by the AER to include underground cables has been accommodated.

> "*This email concerns the "Route Line Length" variable (DOEF0301)*
> *We have received a question as to whether Route Line Length captures the length of underground cables. We confirm that the intention of this variable is to capture the length of both underground cables and overhead lines. However we note that the wording of the definition in the economic benchmarking RIN isn't clear regarding this.*
> *We request that you include the route length of underground cables in route line length. This will ensure that this measure is consistent across NSPs and will appropriately account for the route length of all conductors should this be used as a benchmarking metric.*"
>   email from the AER titled "EBT RIN – Route Line Length" on 07/04/2014 at 02:50pm,

The original definition of Route Line Length to be "measured as the length of each span between poles and/or towers" is not relevant to underground cables; therefore length for each underground conductor circuit was added to the overhead route line length which was calculated in accordance with the original definition. That is; "each span is considered only once irrespective of how many circuits it contains".

Use of estimated information
There is no estimated information.

3.7.4　Weather stations

Compliance with requirements of the notice

Of the 573 weather stations within the Ausgrid area, 19 are used to assist in the operation of Ausgrid's network. 2 weather stations outside of Ausgrid's area (067117 Holsworthy control range and 066124 Parramatta North) are used by Ausgrid to assist in the operation of the network.

Of the total 573 weather stations within the Ausgrid area 206 are no longer operational. Two weather stations not currently in operation are paired with a newly commissioned weather station in close proximity to form a complete historical weather data set. There 204 of the 206 weather stations currently not operated by the Bureau of Meteorology (BOM) are not usable by Ausgrid.

The remaining 350 weather stations are unsuitable for use by Ausgrid as these weather stations do not measure the desired climate observation at the appropriate frequency to be used to assist in network operations. For example, the weather station may only exclusively record rainfall, wind, or peak temperature only.

Additionally to BOM weather stations, substations in the Newcastle and Hunter regions can have weather data available for the Hunter Control Room to use and an Ausgrid weather station at Bass Hill is available for the Sydney Control Room.

System Control will also use independent weather reports and data from MetraWeather, WeatherZone and the Bureau of Meteorology to assist in the operation of Ausgrid's Network.

Source of information

A list of Bureau of Meteorology weather stations was obtained from the www.bom.gov.au website.

Methodology and Assumptions

This list of weather stations obtained from the BOM contained Latitude and Longitude coordinates which were then matched to Ausgrid's Geographical Information System to determine the suburb and location of all weather stations within the Ausgrid network area.

It is assumed by Ausgrid that the list of BOM weather stations extracted from the www.bom.gov.au website on 21 January 2014 is complete and position coordinates contained within both the BOM data and Ausgrid's GIS are accurate.

Use of estimated information

Ausgrid has used estimated information for Suburb and Postcodes of weather stations which fall under the jurisdiction of the Sydney Harbour Foreshore Authority

- A number of islands in Sydney Harbour and harbour foreshore locations in Sydney are assigned to the Sydney Harbour Foreshore Authority within Ausgrid's GIS and therefore no suburb or post code could be derived from aligning BOM data with GIS
- The positions of all weather stations within the Sydney Harbour Foreshore Authority local government area were located in GIS. A nearby electrical asset was then queried to determine the nearest suburb where appropriate and a post code derived using http://auspost.com.au/apps/postcode.html

- The relative spatial proximity of the weather station to a nearby electrical asset, considering the weather station requires power and this is very close, is deemed Ausgrid's best estimate in calculating a postcode for the weather stations assigned to the Sydney Harbour Foreshore Authority.