Jemena Electricity Networks (Vic) Ltd

Response to the economic benchmarking Regulatory Information Notice for the 2015 regulatory year

Basis of preparation for the 2015 regulatory year

Public

29 April 2016

An appropriate citation for this paper is:

Response to the economic benchmarking Regulatory Information Notice for the 2015 regulatory year - Basis of preparation

Contact Person

Robert McMillan
GM Regulation
Ph: 03 9173 7000
robert.mcmillan@jemena.com.au

Jemena Electricity Networks (Vic) Ltd

ABN 82 064 651 083
Level 16, 567 Collins Street
Melbourne VIC 3000

Postal Address

PO Box 16182
Melbourne VIC 3000
Ph: (03) 9713 7000
Fax: (03) 9173 7516

TABLE OF CONTENTS

Glossary .... **iv**

1. Business & Other Details **6**

Process requirements 7

3. Economic Benchmarking **9**

3.1 Revenue 9
- 3.1.1 Revenue grouping by a chargeable quantity 9
- 3.1.2 Revenue grouping by customer type or class 12
- 3.1.3 Revenue (penalties) allowed (deducted) through incentive schemes 13

3.2 Operating expenditure 16
- 3.2.1 Opex categories 16
- 3.2.2 Opex consistency 24
- 3.2.3 Provisions 27

3.3 Assets (RAB) 29
- 3.3.1 Regulatory asset base values 32
- 3.3.2 Asset value roll forward 33
- 3.3.3 Total disaggregated RAB asset values 42
- 3.3.4 Asset lives 44

3.4 Operational data 49
- 3.4.1 Energy delivery 49
- 3.4.2 Customer numbers 52
- 3.4.3 System demand 54

3.5 Physical assets 65
- 3.5.1 Network capacities 65
- 3.5.2 Transformer capacities 73
- 3.5.3 Public lighting 75

3.6 Quality of service data 76
- 3.6.1 Reliability 76
- 3.6.2 Energy not supplied 78
- 3.6.3 System losses 79
- 3.6.4 Capacity utilisation 81

3.7 Operating environment factors 82
- 3.7.1 Density factors 82
- 3.7.2 Terrain factors 84
- 3.7.3 Service area factors 88

4. ATTACHMENT 1 .... **90**

GLOSSARY

ACS	Alternative Control Service
AER	Australian Energy Regulator
BOM	Bureau of Meteorology
CAM	Cost Allocation Method
CFA	Country Fire Authority
CIS	Customer Information System
CMOS	Customer Minutes Off Supply
CPI	Consumer Price Index
CY	Calendar Year
DLF	Distribution Loss Factor
DNSP	Distribution Network Service Providers
DRC	Depreciated Replacement Cost
DUoS	Distribution Use of System
EBSS	Efficiency Benefit Sharing Scheme
EBT	Economic benchmarking asset categories
EDPR	Electricity Distribution Price Review
ERP	Enterprise Resource Planning
ESC	Essential Services Commission
FQ	Fee and quote based services
FY	Financial Year
GIS	Geospatial Information System
GL	General Ledger
HV	High Voltage
IMS	Interval Meter Store
JAM	Jemena Asset Management Pty Ltd
JAM6	Jemena Asset Management 6 Pty Ltd
JEN	Jemena Electricity Networks (Vic) Limited
KPI	Key Performance Indicators
LV	Low Voltage
MD	Maximum Demand
MED	Major Event Day
MVA	Megavolt Amperes
MVAr	Megavolt Ampere Reactive
MW	Mega Watts

NEL	National Electricity Law
NMI	National Meter Identifiers
NPV	Net Present Value
NS	Network Services
OH	Overhead
OMS	Outage Management System
ORG	Office of the Regulator General
P&L	Profit and Loss
PF	Power Factor
RAB	Regulated Asset Base
RAS	Regulatory Accounting Statements
RFM	Roll-forward model
RIN	Regulatory Information Notice
SCS	Standard Control Services
STPIS	Service Target Performance Incentive Scheme
TNSP	Transmission Network Service Provider
TT	Thomastown Terminal
UG	Underground
VMS	Vegetation Management System
WACC	Weighted Average Cost of Capital
WBS	Work Breakdown Structure

1. BUSINESS & OTHER DETAILS

1. Jemena Electricity Networks (Vic) Ltd (**JEN**) is required to respond to an economic benchmarking Regulatory Information Notice (**RIN**), with information relating to the 2015 regulatory year. RIN data templates and a statutory declaration providing assurance for all data and accompanying documents is due by 29 April 2016. The RIN was served upon JEN by the AER under the National Electricity Law (**NEL**) on 28 November 2013.

2. Section 2.2 of Schedule 2 of the RIN requires JEN to prepare a 'basis of preparation' in accordance with the requirements specified in Schedule 1. This document—JEN's basis of preparation (for each variable and any other information):

    1. demonstrates how the information provided is consistent with the requirements of the RIN;
    2. explains the source from which JEN obtained the information provided;
    3. explains the methodology JEN applied to provide the required information, including the assumptions (if any) JEN made;
    4. explains, in circumstances permitted in the RIN, where JEN cannot provide input for a variable using actual information and therefore must provide input using estimated information:
        a) why an estimate is required, including why it is not possible for JEN to use actual financial Information or actual non-financial information (as the case may be, depending on the variable);
        b) the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is JEN's best estimate, given the information sought in the RIN.

3. The RIN requires that the basis of preparation—for every variable in the Excel templates—explains the basis upon which JEN prepared information to populate the input cells. JEN notes that the AER intends to publish JEN's basis of preparation along with the RIN Excel templates.

4. JEN considers this basis of preparation complies with the AER requirement that the basis of preparation must follow a logical structure that enables auditors, assurance practitioners and the AER to clearly understand how JEN has complied with the requirements of the RIN. JEN has structured this basis of preparation to align with sections of the same numerical template reference in the Excel templates (i.e. section 2. Revenue of this basis of preparation document refers to Excel template 2. revenue).

5. JEN has included in its basis of preparation, all other information JEN prepared in accordance with the requirements of the RIN. For example, where JEN chose to disaggregate its Regulated Asset Base (**RAB**) using its own approach in addition to the AER's standard approach, JEN has explained its approach in detail in its basis of preparation. The procedure documents and supporting models attached to JEN's CY2013 RIN response still stand as explanation to how we disaggregated the RAB.

6. The actual financial information has been reconciled to the current year regulatory accounting statements, and the principles underpinning the figures in revenue and opex are in line with JEN's statutory accounting policies. There are no material departures from the recognition and measurement aspects of JEN's statutory accounting policies, for the purposes of regulatory reporting, with the exception of customer contributions, which are captured and included within property, plant and equipment in the statutory accounts, but are excluded from the RAB disclosure of regulatory accounts.

PROCESS REQUIREMENTS

7. JEN's basis of preparation is verified by statutory declaration by 29 April 2016, as part of the audit or review of the economic benchmarking data templates. The auditor ***reviewed*** JEN's basis of preparation when conducting their audit of actual information and issuing their review conclusion on estimated information.

BEST ESTIMATES

8. Where JEN cannot populate an input cell in the Excel templates with actual information, it has provided its best estimate.

9. Where JEN provides an estimate, it has, in its basis of preparation, explained:

   1. why it could not use actual information
   2. the basis upon which the estimate was made including detail of the methodology applied, and
   3. why it is JEN's best estimate.

DEFINITIONS OF ACTUAL INFORMATION

10. JEN has adopted the AER's definition of 'actual information' in its response to the RIN. The RIN and explanatory statement define actual information as:

> *"Information presented in response to the Notice whose presentation is Materially dependent on information recorded in JEN's historical accounting records or other records used in the normal course of business, and whose presentation for the purposes of the Notice is not contingent on judgments and assumptions for which there are valid alternatives, which could lead to a Materially different presentation in the response to the Notice.*
>
> *"Accounting records" include trial balances, the general ledger, subsidiary accounting ledgers, journal entries and documentation to support journal entries. Actual financial information may include accounting estimates, such as accruals and provisions, and any adjustments made to the accounting records to populate JEN's regulatory accounts and responses to the Notice.*
>
> *'Records used in the normal course of business', for the purposes of non-financial information, includes asset registers, geographical information systems, outage analysis systems, and so on."*

11. The AER's requirement, applicable to the current regulatory year, is to report all variables as actual information, unless a variable is expressly allowed to be an estimate under the RIN guidelines. Interpretation of the AER's definition of actual and estimated information, including the additional guidance provided by the AER in Attachment 7 of JEN's preliminary determination in October 2015, requires judgements to be made as to the appropriate classification of information including:

   - the extent to which the information is materially dependent on information recorded in JEN's business records; and

- the degree of estimation involved and whether the information is contingent upon judgements and assumptions for which there are valid alternatives, which could lead to a materially different presentation.

12. The methodologies, assumptions and judgements made in respect of variables are described in the relevant sections throughout this Basis of Preparation.

BLACKED OUT CELLS

13. For each variable which the RIN and the Excel templates (through orange or blue shading) identify as potentially not applicable to JEN, JEN has considered whether the variable is actually applicable to it.

14. Where the variable is actually applicable to JEN, JEN has completed the variable in accordance with the RIN and its explanatory statement.

HOW JEN'S RESPONSE TO EACH VARIABLE MEETS THE REQUIREMENTS OF THE RIN

15. JEN considers that all information provided in this response, for each variable and any other information, is consistent with the requirements of the RIN. This is evident in that:

- JEN has provided complete Microsoft Excel workbooks attached at Appendix A of the RIN that accord to the RIN and the instructions and definitions in Appendix B of the RIN
- JEN has provided a basis of preparation that demonstrates JEN's compliance with each of the information requirements. JEN's basis of preparation, for each variable and any other information:
  - Explains the source from which JEN obtained the information provided
  - Explains the methodology JEN applied to provide the required information, including any assumptions made
  - Where JEN has estimated information, its basis of preparation explains why an estimate was required, including why it was not possible for JEN to use actual information, explains the basis of the estimate, including the approach used, assumptions made and why JEN considers the estimate to be JEN's best estimate
- JEN has provided supporting information or documentation used to comply with the requirements of the RIN
- JEN will provide the audit and review reports in accordance with the requirements of the RIN by 29 April 2016.

3. ECONOMIC BENCHMARKING

3.1 REVENUE

3.1.1 REVENUE GROUPING BY A CHARGEABLE QUANTITY

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DREV0101 – DREV0109	The data is sourced from JEN's two billing systems. The data is then captured in the Excel Line Charge file LC2015.xls on a monthly basis and is summated in worksheet "Year to date". The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect information for Economic Benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet "Year to date".	**DREV0101 TO DREV0109** is categorised as Standard Control Services. Data provided relates to DUoS revenue + F-factor. This is in line with section 3.2 of the Explanatory Statement - Economic Benchmarking RIN that requires revenues to be reported inclusive of the effect of incentive schemes. The tariff codes listed below are incorporated in JEN's approved annual tariffs which are published by the AER. **DREV0101**: Comprises of Standing charge revenue for all tariff codes. **DREV0102:** Comprises of Peak revenue for A100 and A200 tariff codes. **DREV0103:** Comprises of Peak revenue except for A100, A200 and A290 tariff codes. **DREV0104**: Comprises of Shoulder revenue for all tariff codes **DREV0105**: Comprises of All Off-Peak revenue except for A180 and A290 tariff codes.

Variable	Source and why actual	Methodology	Assumptions
			DREV0106: Comprises of Peak and Off Peak revenue for A180 tariff code. **DREV0107**: Comprises of Peak and Off Peak revenue for A290 tariff code. **DREV0108:** Demand charge captured under variable code DREV0109. **DREV0109:** Comprises of Billed Maximum demand revenue for all tariff codes.
DREV0110	Prescribed metering is defined as a metering charge pre 2010. Therefore, no prescribed metering charges reported for 2015. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect information for Economic Benchmarking November 2013.	n/a	n/a
DREV0111	The data is sourced from JEN's annual RIN tab 14 "Alternative Control Services and Other Services" The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect	Data obtained from JEN's annual RIN tab 14. This information is initially extracted from the GL. Only product codes relating to Routine New connections are summated. **DREV0111** is categorised as Alternative control Services.	Routine connections are the sum of the Routine connections - customers below 100 amps and Routine connections, for customers > 100amps.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	information for Economic Benchmarking November 2013.		
DREV0112	The data is sourced from JEN's annual RIN tab 14 "Alternative Control Services and Other Services". The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect information for Economic Benchmarking November 2013.	Data obtained from JEN's annual RIN tab 14. This data was originally extracted from the GL accounts which were initially extracted from JEN's billing systems. Only product codes relating to Alternative Control Services Public Lighting are summated.	**DREV0112** is categorised as Alternative Control services.
DREV0113	The data is sourced from JEN's annual RIN tab 14 "Alternative Control Services and Other Services". The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect information for Economic Benchmarking November 2013.	Data obtained from JEN's annual RIN tab 14. This information is initially extracted from the GL. Only product codes relating to Routine New connections are summated. The total of the fee based and quoted based charges are summated, once summated the routine new connections charge (DREV0111) is subtracted for each calendar year to derive DREV0113.	**DREV0113** is categorised as Alternative Control services.

Estimated Information

16. No estimated information is provided.

3.1.2 REVENUE GROUPING BY CUSTOMER TYPE OR CLASS

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DREV0201 – DREV0205	The data is sourced from JEN's two billing systems. The data is then captured in the Excel Line Charge file LC2015.xls on a monthly basis and is summated in worksheet Year to date. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date.	**DREV0201 TO DREV0205** is categorised as Standard Control Services, only relates to DUoS revenue. The tariff codes listed below are incorporated in JEN's approved annual tariffs which are published by the AER. **DREV0201:** Comprises of DUoS revenue for A100 to A180 tariff codes. **DREV0202:** Comprises of DUoS revenue for A200, A210 and A250 tariff codes. **DREV0203:** Comprises of DUoS revenue for A230, A250, and A300 to A37R tariff codes. **DREV0204:** Comprises of DUoS revenue for A400 to A50E tariff codes. **DREV0205:** Comprises of DUoS revenue for A290 tariff code.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DREV0206 Alternative Control Service	The data is sourced from JEN's annual RIN tab 14 "Alternative Control Services and Other Services". The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of Better Regulation Explanatory Statement: regulatory information notices to collect information for Economic Benchmarking November 2013.	Summation of DREV0111, DREV0112 & DREV0113 The data is classified as "revenue from other customers" as there is no report to capture this information by customer type or class.	n/a

Estimated Information

17. No estimated information is provided.

3.1.3 REVENUE (PENALTIES) ALLOWED (DEDUCTED) THROUGH INCENTIVE SCHEMES

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DREV0301	The EBSS forms part of the building block revenue determined at the beginning of each regulatory period. This particular variable is derived from other records used in ordinary course of business, and so is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice are not contingent on judgement and assumptions for which there are valid	Step 1: Replicate the ESC and AER's calculations to calculate the NPV of the building block revenues and the smoothed revenues using a nominal WACC for the period 2011-15. Step 2: Calculate the relative share of the building block components that contribute to the NPV calculations. Step 3: Re-state the building block and smoothed revenues to nominal dollars using actual CPI	Actual CPI for 2015 is the weighted average for the eight capital cities for the September quarter of 2015. L factor treated as part of actual revenue earned, as it is immaterial at $18k p.a.

Variable	Source and why actual	Methodology	Assumptions
	alternatives, which could lead to a materially different presentation in the response to the Notice.	instead of the AER CPI forecast. Step 4: Notionally break down the smoothed revenue into building block components (using the relative share calculated in step 2). Step 5: Apply the EBSS relative share from the building block for the Regulatory period 2011-2015 to the actual revenue earned for each calendar year. Where; actual revenue earned = actual revenue reported net of any incentive mechanism schemes, and EBSS relative share is an average for each regulatory period.	
DREV0302	STPIS component forms part of the DUoS tariff: DUoS price path is (1+CPI)*(1-X)*(1+S")*(1+L). This particular variables is derived from other records used in ordinary course of business and so is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives, which could lead to a materially different presentation in the response to the Notice.	S factor = actual revenue earned – actual revenue earned/ **(1+ S")** Where; actual revenue earned = actual revenue reported net of F-factor incentive mechanism schemes	Actual CPI for 2015 is the weighted average for the eight capital cities for the September quarter of 2015. L factor treated as part of actual revenue earned, as it is immaterial at $18k p.a.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DREV0303	This is the AER approved F-factor amount as per the pricing submission. The number is sourced from the Attachment 1 - JEN 2015 Tariff Approval Model.xls of the AER model.	n/a	The amount provided is the F-factor amount that JEN was allowed to collect (as per the submission to the AER) not the amount that JEN has actually collected as per the GL account.
DREV0304	The S factor true-up forms part of the building block revenue determined at the beginning of each regulatory period. This particular variable is derived from other records used in ordinary course of business and so is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives, which could lead to a materially different presentation in the response to the Notice.	Step 1: Replicate the ESC and AER's calculations to calculate the NPV of the building block revenues and the smoothed revenues using a nominal WACC for the period 2011-15. Step 2: Calculate the relative share of the building block components that contribute to the NPV calculations. Step 3: Re-state the building block and smoothed revenues to nominal dollars using actual CPI instead of the AER CPI forecast. Step 4: Notionally break down the smoothed revenue into building block components (using the relative share calculated in step 2). Step 5: Apply the S factor true up relative share from the building block for the Regulatory period 2011-2015 to the actual revenue earned for each calendar year. Where: S true factor relative share is an average for the regulatory period	Actual CPI for 2015 is the weighted average for the eight capital cities for the September quarter of 2015.

Estimated Information

No estimated information is provided.

3.2 OPERATING EXPENDITURE

3.2.1 OPEX CATEGORIES

3.2.1.1 Current Opex categories and cost allocations

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPEX01 Table 3.2.1.1 – Current opex categories and cost allocations (SCS & ACS)	JEN has no changes to current opex categories and cost allocations.	n/a	n/a

3.2.1.2A Current Opex categories and cost allocations

Actual Information

Variable	Source and why actual	Methodology	Assumptions
SCS DOPEX0102A (Condition based) DOPEX0104A	Data (Maintenance and opex) is sourced from Appendix B of JEN's CY 2015 Annual RIN response. The information obtained in the reports is consistent with the AER's definition of actual	Maintenance items disclosed in Appendix B of JEN's CY 2015 annual RIN are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. JEN partially upgraded its SAP	The Activities/PM Orders in SAP are setup to aggregate to regulatory categories but where there are legacy items that do not have an assigned category, an experienced Senior Engineer using professional judgement

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
(Emergency - Fault)	information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	system during CY 2015 to provide better system capability to capture and report data at more detailed categories. Cost collectors such as cost and profit centres are utilised within SAP to collect costs at a macro level. Activities or PM Orders are set up to collect costs at a micro level and roll up to projects or Work Breakdown Structures (**WBS)**. These activities/PM Orders are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity. (e.g. Faults, Emergencies, Standards and Procedures, etc.). Note that the SAP PM Orders codes are also designed to identify the regulatory service categories. (i.e. SCS, Public Lighting, ACS, etc.). JEN uses time writing to capture internal labour costs. Where practical and appropriate all employees time write to an activity/network or to a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**).	provides advice on how the activities should be allocated. (Based on a percentage of total cost of each activity) into these categories (routine, condition based and emergency). This allocation methodology is also applied in JEN's annual RIN response for CY15.
SCS DOPEX0101A (Routine) DOPEX0103A (Vegetation control) DOPEX0105A (Inspection)	Data is sourced directly from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement:	Maintenance items disclosed in Appendix B of JEN's CY 2015 annual RIN are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information. JEN partially upgraded its SAP system during CY 2015 to provide better system capability to capture and report data at more detailed categories. Cost collectors such	The Activities/PM Orders in SAP are setup to aggregate to regulatory categories but where there are legacy items that does not have an assigned category, an experienced Senior Engineer using professional judgement provides advice on how the activities should be allocated. (Based on a percentage of total cost of each activity) into these categories (routine,

Variable	Source and why actual	Methodology	Assumptions
	regulatory information notices to collect information for economic benchmarking November 2013.	as cost and profit centres are utilised within SAP to collect costs at a macro level. Activities or PM Orders are set up to collect costs at a micro level and roll up to projects or WBS Elements. These activities/PM Orders are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity. (e.g. Faults, Emergencies, Standards and Procedures, etc.). Note that the SAP PM Orders codes are also designed to identify the regulatory service categories. (i.e. SCS, Public Lighting, ACS, etc.). JEN uses time writing to capture internal labour costs. Where practical and appropriate all employees time write to an activity/network or to a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**). For CY15 JEN's Annual RIN response discloses the Total Routine expenditure, therefore data for the purposes of RIN B (CY15) is disclosed by first isolating the Vegetation and Inspection expenditure within the Total Routine expenditure for CY15 and then reporting the remaining costs as Routine expenditure within (DOPEX0101A).	condition based and emergency). This allocation methodology is also applied in JEN's annual RIN response for CY15.
SCS DOPEX0106A (SCADA)	Appendix B of the JEN's Annual RIN response for CY 2015. The information obtained in the reports is	The information is sourced directly from SAP which delivers a report for this activity. This activity is mapped to the specific regulatory	n/a

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	category. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved CAM.	
SCS DOPEX0107A (Other - Standard Control Services (a))	Appendix B of the JEN's Annual RIN response for CY 2015. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	Information is sourced from JEN's related parties. (Jemena Asset Management Pty Ltd (**JAM**) and Jemena Ltd (**JEM**). CY15 data is based on data collected by the Work Breakdown Structure (**WBS**) codes.	n/a
ACS DOPEX0109A (Public Lighting)	Appendix B of the JEN's Annual RIN response for CY 2015. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	SAP network codes are also designed to identify the regulatory service category (i.e. Standard Control Services (SCS), Public Lighting, ACS, etc.) The costs are collected into activities which align with the Alternative Control Service - Public Lighting regulatory category. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved CAM.	n/a
ACS DOPEX0110A (Alternative control – other Feeder)	JEN's Annual RIN response for CY 2015. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The methodology applied to derive reserve feeder costs is explained below. Activities were identified in JEN's operational works program which are related to the provision of operational and maintenance ('O&M') service for distributing electricity to customers. This included reserve feeder service customers.	n/a

Variable	Source and why actual	Methodology	Assumptions
		These activities were proportioned for high voltage distribution, which is where reserve feeder services are normally provided. The high voltage distribution proportion is then applied to the costs of the activities to derive the cost of the O&M service for high voltage distribution. These costs were then divided by the system demand forecast (in kW) to derive the estimated $ cost per kW unit for the O&M service for high voltage distribution. This $/kW rate was then multiplied by the billed demand (in kW) associated with customers receiving a reserve feeder service.	
SCS DO'PEX0113A–DOPEX0125A except DOPEX0120A & DOPEX0121A	JEN's Annual RIN response for CY 2015. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	"Activities" disclosed in Appendix B of JEN's annual RIN response are sourced from SAP the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and some operational information. JEN partially upgraded its SAP system during CY 2015 to provide better system capability to capture and report data at more detailed categories. Cost collectors such as cost and profit centres are utilised within SAP to collect costs at a macro level. Activities or PM Orders are set up to collect costs at a micro level and roll up to projects or Work Breakdown Structures (**WBS)**. These activities/PM Orders are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity. (e.g. Faults, Emergencies, Standards and Procedures,	n/a

Variable	Source and why actual	Methodology	Assumptions
		etc.). Note that the SAP PM Orders codes are also designed to identify the regulatory service categories. (i.e. SCS, Public Lighting, ACS, etc.). JEN uses time writing to capture internal labour costs. Where practical and appropriate all employees time write to an activity/network or to a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**). JEN has a comprehensive model which underpins the maintenance costs disclosed in Appendix B of the RIN responses.	
SCS DOPEX0120A (Licence fee)	Data specific to a GL account is sourced from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is extracted from the relevant General Ledger account.	n/a
SCS DOPEX0121A (GSL Payment)	Data specific to a GL account is sourced from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information.	The data is extracted from the relevant General Ledger account.	n/a
ACS DOPEX0119A	JEN's Annual RIN response for CY 2015. The information obtained in the reports is	The Activities disclosed in Appendix B of JEN's annual RIN response are sourced from SAP.	n/a

Variable	Source and why actual	Methodology	Assumptions
(Information Technology), (DOPEX0125A) Other - Alternative Control Services - Public Lighting, DOPEX0126A (Public Lighting incl. IT) & DOPEX0127A (Alternative control – other)	consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	ACS related activities are mapped to the appropriate service offered. Where practical and appropriate, all employees time write to an activity/network or a client, these then form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER-approved CAM. JEN separately disclosed the loss on scrapping of non-energy efficient lighting under variable DOPEX0125A. The write off coincided with the energy efficient public lighting roll out.	

3.2.1.2B Historical opex categories and cost allocations

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPEX01B Table 3.2.1.2B - Historical opex categories and cost allocations (SCS & ACS)	JEN has no changes to historical opex categories and cost allocations.	n/a	n/a

3.2.1.2C Historical opex categories and cost allocations

Actual Information

Variable	Source and why actual	Methodology	Assumptions

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DOPEX01C Table 3.2.1.2C - Historical opex categories and cost allocations (SCS & ACS)	JEN has no changes to historical opex categories and cost allocations.	n/a	n/a

3.2.2 OPEX CONSISTENCY

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPEX0203A (Opex for connection services)	Data is sourced directly from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information, specific to set of activities, captured within projects. The data is considered actual as it is extracted from the relevant project (WBS) that is set up to capture costs relating to Faults & Emergencies for Premises activity. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	From the total costs extracted, data pertaining to a specific contractor, together with costs relating to the internal crew is isolated and disclosed in the template.	n/a
DOPEX0204A (Public Lighting)	Sum of DOPEX0109A and DOPEX0126A	n/a	n/a
DOPEX0201A Opex for network services	DOPEX0201A is a result of DOPEX01A less DOPEX0203A and DOPEX0206A.	The method being, Opex for network services is the residual amount after reducing the Total DOPEX01A (SCS) by DOPEX0203A (Opex for connection services) and DOPEX0206A (Opex for Transmission connection point planning). The latter representing an immaterial estimated component.	None
DOPEX0206A (opex for transmission connection point	Data is sourced directly from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information, specific to set of activities,	Maintenance items disclosed in Appendix B of JEN's CY 2015 annual RIN are sourced from SAP, the ERP system that JEN uses to capture its financial and some operational information.	None

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
planning)	captured within projects. The data is considered actual as it is extracted from the relevant PM order (activity based costing). Staff timewrite directly to a PM order corresponding with transmission connection point planning activities.	JEN partially upgraded its SAP system during CY 2015 and expect these upgrades to provide better system capability to capture data at more detailed cost categories. Cost collectors such as cost and profit centres are utilised within SAP to collect costs at a macro level. Activities or PM Orders are set up to collect costs at a micro level and roll up to projects or WBS Elements. These activities/PM Orders are designed to collect costs based on the activity on which an individual works and to accept any external costs associated with that activity. JEN uses time writing to capture internal labour costs. Where practical and appropriate all employees time write to an activity/network or to a client e.g. JEN. These form the direct costs incurred for a respective activity. JEN allocates overheads to these activities based on its internal policies and in accordance with the AER approved Cost Allocation Method (**CAM**).	

Estimated Information

Variable	Why estimate, not actual	Basis for estimate
DOPEX0401 (Opex for high voltage customers)	This is an estimate as the costs are not incurred by JEN and are therefore not maintained within JEN's internal systems.	The engineering team provided an estimate of activities and their costs that may have been incurred over a block of 4 years. This cost is divided by 4 to arrive at an estimated cost per annum. For CY15, the costs estimated for CY14, was reviewed by the engineer and escalated by the applicable percentage to arrive at the total cost estimate for CY15. The number of High Voltage Customers was reviewed and updated by the engineer to reflect the right level applicable for CY15. The number of High Voltage Customers for CY15 is then multiplied by the updated cost estimate for CY15, to then arrive at the total cost estimate for CY15. This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

3.2.3 PROVISIONS

Actual Information

Variable	Source and why actual	Methodology
All variables (DOPEX0301A – DOPEX0314A) Provision for doubtful debts	The data is considered actual as it is extracted from the relevant General Ledger from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. The information obtained in the General Ledger is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	JEN provides for two provisions, i.e. Provision for Doubtful Debts and Provision for Claims/Compensation. When JEN write-offs the Bad Debt from its customers, these are recognised in the Profit & Loss Statement. JEN adjusts these provisions in accordance with its internal policies to ensure that the provisions are recognised, measured and disclosed in the Special Purpose Financial Report (**SPFR**) in accordance with Australian Accounting Standards. The total of monthly routine accruals is disclosed under "Provisions made in the period, resulting in increases to the existing provisions". Similarly the total of monthly routine reversals is disclosed under "Unused amounts reversed during the period". Due to the nature of doubtful debt and claim provisions, expenses incurred are OPEX in nature. There is no impact to CAPEX, therefore no disclosure in the CAPEX subsections of Table 3.2.3 For CY15 there is no provision balance being utilised, per relevant General Ledger from SAP.
All variables (DOPEX0301B to DOPEX0314B) Provision for claims from customers	The data is considered actual as it is extracted from the relevant General Ledger from SAP, the Enterprise Resource Planning (ERP) system that JEN uses to capture its financial and other information. The information obtained in the General Ledger is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	JEN receives claims from its customers for damages to their property as a result of an incident on our network. Some of the claims are estimated by the customers when submitted to JEN. When JEN provides for potential claims, this is carried to variable DOPEX0302B. The provision increases or decreases against a database where the customer service manager tracks the claims. These changes are recorded in the Profit & Loss Statement, in conjunction with being recognised, measured and disclosed in the Special Purpose Financial Report (**SPFR**) in accordance with Australian Accounting Standards. When JEN accepts a claim from its customers, the provision is used

Variable	Source and why actual	Methodology
		and this is also recorded in the Profit & Loss Statement. JEN has functionality within its ERP system to extract data from its Profit & Loss Statement and distinguish between usage of and changes in the provision. The total of monthly routine accruals is disclosed under “Provisions made in the period, resulting in increases to the existing provisions”. Similarly the total of monthly routine reversals is disclosed under “Unused amounts reversed during the period”. Amounts paid to customers are disclosed in “amount used”. Due to the nature of the claim provisions, expenses incurred are OPEX in nature. There is no impact to CAPEX, therefore no disclosure in the CAPEX subsections of Table 3.2.3.

Estimated Information

18. No estimated information is provided.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

3.3 ASSETS (RAB)

19. JEN submitted its first economic benchmarking RIN (EB RIN) to the AER on 30 April 2014. This document explains our approach to prepare the information required under excel tab 3.3 RAB and demonstrates that the approach to prepare this information for our current RIN response—due on 29 April 2016—is the same approach used in our response over the last two years.

JEN adopted the AER's standard approach to disaggregate its 2015 RAB

20. JEN have rolled-forward the RAB from CY2014 to CY2015 using the AER's prescribed standard approach outlined in the EB RIN.

21. To disaggregate the RAB using the AER's prescribed standard approach—refer to *section 3.3* for more detail—JEN is required to allocate its RAB, in direct proportion to the relevant EB RIN category's share of either:

- total estimated depreciated replacement cost (**DRC**) for 2013, or
- total book value for the regulatory year 2013.

JEN has maintained a consistent methodology to disaggregate its 2015 RAB as we applied in our response to the EB RIN on 30 April 2014 (and 2015)

22. To ensure consistency, we have used the 2013 splits[1] to disaggregate the 2015 RAB, which aligns to our methodology for disaggregating the 2006 to 2013 RAB, where we also used the 2013 splits (as per the AER's guidance).

JEN notes that the information relating to the RAB are estimates rather than actuals

23. Consistent with our previous submission, we note that these RAB variables are estimates rather than actual as the regulatory asset bases are not final.

24. The AER approves JEN's standard control services and alternative control services RAB every five years, with the next iteration expected in April 2016 (through the 2016-20 Electricity Distribution Price Review (**EDPR**)). We note that there may be potential differences between the RABs within the EB RIN and our EDPR regulatory proposal.

STANDARD CONTROL ASSET BASE

Since our EB RIN submission, we made some minor, but key changes

25. In our last EB RIN submission relating to 2014 we made three (3) changes to our RAB estimates, namely:

- update to SCS 2010 actual information
- further adjustment in the AER's SCS RAB roll-forward model, and
- update to public lighting capex additions by asset categories for 2010 to 2013.

1 The 'splits' refer to the direct proportion to the relevant EB RIN category's share of either total estimated DRC or total book value.

26. Please refer to the prior 30 April 2015 submission for more detail on these amendments.

27. In this EB RIN submission we make further four (4) changes to our SCS RAB estimates including:

- Excluding capitalised finance charges to the CY2011 actual gross capex
- Setting the nominal 2010 WACC to zero
- Incorporating the AER's application of the 2005 WACC true up for the net capex difference
- Updating CY15 gross capex, asset disposals and customer contributions

28. The first three (3) changes combine to increase the opening RAB balance for 2015. The opening balance increased by $9.26m from $1,106.31m to $1,115.57m, primarily driven by lower regulatory depreciation.

29. The following section describes each change in more detail.

Excluding capitalised finance charges to the CY2011 actual gross capex

30. In their preliminary determination, the AER argued that JEN is compensated for financing charges through the WACC. As such capitalised finance changes should be (rightly) excluded from regulated gross capex.

31. Following the AER's conclusions from its preliminary determination, JEN agreed with the AER and excluded $2.67m of capitalised finance charges from gross capital expenditure in 2011. A pro rata method was applied to spread the impact across each asset class.

32. The change can be identified in cells U40:U47 on the worksheet called "Input" of the RAB roll forward model submitted to the AER on 4 Feb 2016. These values flow into the formulas within H40:H47 on the same worksheet.

Setting the nominal 2010 WACC to zero

33. Under the old ESC regime WACC was calculated based on end of year timing. From 2011 a methodology change was introduced to calculate WACC using mid-year timing.

34. The AER highlighted an issue within JEN's initial proposal during its preliminary determination, where JEN retained a WACC adjustment assumption to recognise the value of half a year of returns which was no longer required based on changes made to the RAB RFM.

35. As a result the AER zeroed out the previous vanilla WACC in "Inputs G184" of "AER - Preliminary decision Jemena - Roll forward model - October 2015". JEN agreed with this change.

Incorporating the AER's application of the 2005 net capex difference and return on that difference

36. In the previous EB RIN submissions, JEN—in its application of the 2005 net capex difference and the associated return on that difference—'correctly' excluded the amount of $42.71m in the opening 2011 RAB balance (as a result of an under-spend in 2005) through adjusting the AER's RFM, but 'incorrectly' estimated the depreciation calculations because the $42.71m was not being depreciated over 2011 to 2015 (i.e. the opening 2016 RAB was being over-stated).

37. The AER—through its preliminary determination—highlighted the issue and rectified it by including the $42.71m amount in the 'Input' sheet of its RAB RFM, and amended the labels "prudent capex adjustment" to "difference in final year capex".

38. JEN agreed with this change.

Updating CY15 gross capex, asset disposals and customer contributions

39. This EB RIN submission is based on the latest RAB RFM which was submitted to the AER on 4 February 2016.

40. The AER—through an information request (during its consultation process prior to releasing its final determination in Apr 16—asked JEN to update its CY15 forecast (included in its proposal) information for gross capex, capital contributions and asset disposals with actual information.

41. JEN agreed with this change (which would reduce or potentially set the RAB adjustment in 2020, which accounts for the 2015 net capex difference and any associated return on that difference to zero) and considered this to be a more accurate estimate.

42. JEN further recognises that the values in this EB RIN are likely to change next year as the AER is yet to provide a final determination which is due in April 2016. Although the numbers in this RIN are not final, they are either AER approved or compliant with the AER RAB roll forward framework.

JEN disagrees with AER's application of historical inflation assumptions

43. In its preliminary determination, the AER substituted JEN's historical inflation assumptions, where it applied an 'unlagged' methodology rather than a 'lagged' one. For instance, to calculate the 2011 inflation rate, the AER used the CPI indexes of 'Sep 2011 / Sep 2010' quarters, compared to the 'Sep 2010/Sep 2009' that JEN proposed.

44. JEN maintained its position in its revised proposal, arguing the 'lagged' methodology should (and is) aligned with the annual tariff setting approach.

PUBLIC LIGHING ASSET BASE

The Public Lighting RAB has also been updated during the latest JEN price review

45. This submission includes two (2) changes to the Public Lighting RAB estimates including:

- Revised nominal capital expenditure between 2009 and 2015 by category
- An amendment to 2004 volumes associated with Mercury Vapour 80 Watt luminaires

Revised nominal capital expenditure between 2009 and 2015 by category

46. During the most 2016-20 EDPR, JEN aligned to the AER preliminary decision using the AER public lighting model which includes a calculation to roll forward the Public Lighting RAB.

47. As part of the process the *net* capex actuals between 2009 and 2015 were updated to refine the amounts allocated to categories including poles and brackets, existing lights and energy efficient lights.

48. The 2015 capital expenditure amounts fluctuate as a significant number of public customers chose to replace existing luminaries in favour of energy efficient luminaries. When public customers prematurely replace the luminaires, they pay out the written down value of the luminaires determined by the AER – hence the Public Lighting RAB of 'Existing Lights' was adjusted by the payment received form the public lighting customers on a rate determined by the AER.

    a) Jemena's ability to transparently report the $1.514m of public lighting asset disposals is limited as a result of using the AER public lighting model and aligning to the AER framework for public lighting

i) There is no place to transparently enter asset disposals in the public lighting model as the input is embedded within the net capex line.

ii) Jemena has prioritised the alignment of the RAB values reported within the public lighting model and the RIN B process. Jemena recognises adjustments are required when reconciling the relevant values reported in RIN A and RIN B templates.

An amendment to 2004 volumes associated with Mercury Vapour 80 Watt luminaries

49. An adjustment was made to cell C55 in the "RAB 2001 to 2004" worksheet in our revised EDPR proposal (Attachment 10-02, JEN ACS Public Lighting - Forecast Charges Model) which reduced the assumed 2004 volumes for Mercury Vapour 80 watt luminaries from 46,046 to 45,764.

50. This amendment reduced the opening 2015 RAB by $9,611 (Nominal) as the depreciation profile is impacted by the 2004 volume split.

51. The CY15 depreciation is also reduced as a result of the lower opening RAB.

3.3.1 REGULATORY ASSET BASE VALUES

Actual Information

52. No actual information is provided.

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DRAB0101 – DRAB0107	These variables are estimated as they are the summation of a series of estimated inputs set out in Table 3.3.2.	Table 3.3.1 is the summation of the individual asset categories in table 3.3.2	None	This is JEN's best estimate as these variables are simply the summation of a series of JEN's best estimates of individual asset categories in table 3.3.2

3.3.2 ASSET VALUE ROLL FORWARD

Actual Information

53. No actual information is provided.

Estimated Information

54. For more detail relating to the variables explained in section 3.3.2 Asset value roll forward and section 3.3.3 Total disaggregated RAB values, please refer to **Attachment 1—JEN EBT allocation model**.

Explain why the variable is estimated and why actual information could not be provided

55. JEN notes that the information relating to the regulatory asset base are estimates rather than actuals.

56. The variables are estimates rather than actual information for three main reasons:

- The information relating to the RAB does not meet the AER's definition of actual because this information is not recorded within JEN's financial system and cannot be reconciled to. JEN does not report this information in the normal course of business. As such, this is consistent with the AER's definition of 'estimates'.
- JEN was unable to directly allocate the asset categories within the AER's approved RAB for JEN (hereafter referred to as **regulatory categories**) to the AER's economic benchmarking asset categories (hereafter referred to as **EBT categories**). Therefore, an allocation methodology was applied. Also note that JEN does not capture RAB data within its financial systems.
- The AER has never approved a network services RAB and therefore it had to be estimated.

57. The sections below provide further detail.

Allocation of regulatory categories to EBT categories

58. The regulatory categories that were able to be directly allocated to EBT categories are set out in table A below.

Table A: Direct allocation of regulatory categories to EBT categories

Regulatory category	EBT category
Standard metering	Meters

Regulatory category	EBT category
Public lighting	Other assets with long lives
SCADA/Network control	Other assets with short lives
Non-network general assets - IT	Other assets with short lives

59. The regulatory categories that were allocated to a group of EBT categories are set out in table B below.

Table B: Allocation of regulatory categories to group of EBT categories

Regulatory category	Group of EBT categories
Sub-transmission	Overhead network assets 33kV and above (wires and towers / poles etc.)
	Underground network assets 33kV and above (cables, ducts etc.)
	Zone substations and transformers
Distribution system assets	Overhead network assets less than 33kV (wires and poles)
	Underground network assets less than 33kV (cables)
	Distribution substations including transformers
Non-network general assets - Other	Other assets with long lives
	Other assets with short lives

60. JEN does not capture data for easements. JEN did not report any values for easements and were intentionally left blank in the template.

Explain the basis upon which the estimate was made and the methodology used

61. JEN rolled forward its SCS RAB by applying the AER's RAB framework. For the regulatory years 2006 to 2010, the SCS RAB reconciles back to the AER's approved roll-forward model (**RFM**).[2] For the regulatory years 2011 to 2013, the AER has not yet approved JEN's RAB as this review process will occur during the next EDPR.

62. To roll-forward its SCS RAB for the next regulatory period, JEN applied the AER's final decision relating to the RFM to be used by the distribution network service providers (**DNSPs**).[3]

63. In doing so, two adjustments were made to the RFM:

- Adjustment made within the "*total actual RAB roll forward*" sheet to take into account the difference between forecast capex and actual capex for the regulatory year 2005 as well as the return on the difference.
- Adjustment made within the "*Input*" sheet to amend the CPI index (one year lagged) to ensure the nominal capex spent in the regulatory year 2011 is deflated to real 2009-10 dollars using an index of 1.0279 (using a year on year Dec-quarter inflation of 2.79%) instead of 1.26%.

JEN rolled forward its ACS RAB in accordance to the AER's approved public lighting model

64. JEN rolled forward its SCS RAB by applying the AER's RAB framework. For the regulatory years 2006 to 2010, the SCS RAB reconciles back to the AER's approved roll-forward model (**RFM**).[4] For

[2] *AER, Jemena Electricity Networks (Victoria) Ltd, distribution determination, Pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (No 2) [2012] ACompT 8, September 2012.*

[3] *AER, electricity distribution network service providers, roll forward model, June 2008.*

[4] *AER, Jemena Electricity Networks (Victoria) Ltd, distribution determination, Pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (No 2) [2012] ACompT 8, September 2012.*

the regulatory years 2011 to 2013, the AER has not yet approved JEN's RAB as this review process will occur during the next EDPR.

65. To roll-forward its SCS RAB for the next regulatory period, JEN applied the AER's final decision relating to the RFM to be used by the distribution network service providers (**DNSPs**).[5]

66. In doing so, two adjustments were made to the RFM:

- Adjustment made within the "*total actual RAB roll forward*" sheet to take into account the difference between forecast capex and actual capex for the regulatory year 2005 as well as the return on the difference.
- Adjustment made within the "*Input*" sheet to amend the CPI index (one year lagged) to ensure the nominal capex spent in the regulatory year 2011 is deflated to real 2009-10 dollars using an index of 1.0279 (using a year on year Dec-quarter inflation of 2.79%) instead of 1.26%.

JEN adopted the AER's standard approach to disaggregate its RAB

67. JEN disaggregated its RAB into the EBT categories using the AER's prescribed standard approach, where JEN is required to allocate its RAB, in direct proportion to the relevant EBT category's share of either:

- total estimated depreciated replacement cost (**DRC**) for 2013, or
- total book value for the regulatory year 2013.

68. The DRC was used to estimate the following EBT categories:

- Overhead network assets less than 33kV (wires and poles)
- Underground network assets less than 33kV (cables)
- Distribution substations including transformers
- Overhead network assets 33kV and above (wires and towers / poles etc.)
- Underground network assets 33kV and above (cables, ducts etc.)
- Zone substations and transformers.

69. The book value within JEN's statutory asset register has been used to estimate the following EBT categories:

- Other assets with long lives
- Other assets with short lives.

70. The EBT category 'meters' was populated as a direct allocation from the RAB category 'standard metering'.

JEN has used estimated depreciated replacement costs to allocate its network assets

71. Consistent with the AER instructions, the DRC for each EBT Category was estimated by the following formula using data available in 2013:

[5] *AER, electricity distribution network service providers, roll forward model, June 2008.*

***DRC** = Estimated weighted average unit rate replacement costs x physical asset data x weighted average remaining asset lives (existing assets) / weighted average service lives (existing assets), where:*

- The estimated weighted average unit rate replacement costs were estimated using best endeavours, based on most recent project estimates. Due to lack of information, the project sample includes both (a) partially completed and (b) completed projects. The projects within the sample were assigned physical characteristics such as (a) line length in kms and (b) capacity in MVA, based on engineering judgement. The estimated weighted average unit rate is then calculated as the project cost estimates ($) / length line (kms) x capacity (MVA). Importantly, JEN assumed that the same unit replacement costs for both overhead and underground network assets 33kV.
- Physical asset data is sourced from RIN sheet 6 (Physical assets).
- The weighted average remaining asset lives (existing assets) are sourced from table 4.4.2 of RIN sheet 4 (RAB assets).
- The weighted average service lives (existing assets) are based on the lives in table 4.4.1 of RIN sheet 4 (RAB assets), but amended to reflect the service lives of existing assets rather than new assets installed in the relevant year.

72. The estimated DRCs for the regulatory year 2013 were used to allocate the RAB categories to EBT categories for the whole period (2006 to 2013), as per the AER's instructions. The same allocations are being applied to subsequent periods on an ongoing basis.

73. **Table C** sets out the DRC that is calculated by applying the prescribed DRC formula. The estimated DRC is explicitly used to derive the percentage allocation for the RAB, and is not indicative of the actual network replacement costs. **Table D** sets out the allocation of RAB categories to EBT Categories based on 2013 DRC.

Table C: 2013 depreciated replacement costs by EBT category

EBT Category	Unit	CY13
Overhead network assets less than 33kV (wires and poles)	$000/km^2/MVA	9,152
Underground network assets less than 33kV (cables)	$000/km^2/MVA	659
Distribution substations including transformers	$000/km/MVA^2	495
Overhead network assets 33kV and above (wires and towers / poles etc.)	$000/km^2/MVA	190
Underground network assets 33kV and above (cables, ducts etc.)	$000/km^2/MVA	7
Zone substations and transformers	$000/km/MVA^2	178

Table D.**:** Percentage allocations of RAB categories to EBT categories based on 2013 DRC

RAB category	Allocation to EBT categories	
Sub-transmission	Overhead network assets 33kV and above (wires and towers / poles etc.)	50.56%
	Underground network assets 33kV and above (cables, ducts etc.)	1.94%
	Zone substations and transformers	47.50%
	Total	100.00%
Distribution system assets	Overhead network assets less than 33kV (wires and poles)	88.81%
	Underground network assets less than 33kV (cables)	6.39%
	Distribution substations including transformers	4.80%
	Total	100.00%

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

JEN used the relative share of book value to allocate its non-network assets

74. JEN mapped each regulatory category to an EBT category. The relative share of book value was only used to allocate the regulatory category 'non-network general assets – other' to the two EBT categories 'other assets with short lives' and 'other assets with long lives'.

75. **Table E** sets out the resulting allocation of 2013 book value.

Table E. Percentage allocations of regulatory categories to EBT categories based on 2013 book value

Regulatory category	Allocation to EBT categories	
Non-network general assets - Other	Other assets with long lives	6.93%
	Other assets with short lives	93.07%
	Total	100.00%

JEN estimated a network services RAB

76. The AER approved a standard control services (**SCS**) and alternative control services (**ACS**) RAB for JEN during the 2010 electricity distribution price review, but did not approve network services (**NS**) or fee & quote based services (**FQ**) RABs.

77. JEN notes the AER's guidance that the NS RAB is a subset of the SCS RAB. The NS RAB was estimated by removing any portion of assets from the SCS RAB, which relate to the provision of:

- connection services
- standard metering
- public lighting
- fee & quoted based services.

78. JEN faced difficulties identifying assets related to connection services because—unlike standard metering and public lighting—JEN does not have a separate regulatory category for connection services assets.

79. Faced with this difficulty, JEN estimated the NS RAB by:

- step 1—estimating the proportion of total capital contributions related to connection services over 2010 to 2013, where data was available
- step 2—multiplying gross (net) demand connection capex over 2006 to 2013 by this proportion to estimate the gross (net) capex related to connection services
- step 3—using this net capex to estimate the share of the opening 2006 RAB related to connections.

80. No assets were deducted for fee and quote based services because the AER did not approve any FQ RAB.

81. Further detail follows.

82. **Step 1.** The approach starts with total capital contributions for the regulatory years 2010 to 2013 by activity (e.g. medium density housing, dual and multiple occupancy, business supply projects, etc.). Because JEN does not have a connection services RAB, it assumed that all contributions relating to

business supply projects and low density & small business supplies <10kvA are associated with connection services.

83. This represented an average of 43% over the four years, calculated using the following:

84. **Portion of connection services** = (CC1 + CC2) / total capital contributions, where:

    85. ***CC1 =** capital contributions relating to business supply projects*

    86. ***CC2 =** capital contributions relating to low density & small business supplies <10kvA.*

87. **Step 2.** To then determine the gross capex and capital contributions amounts (relating to connection services) for the whole period (2006 to 2013), JEN applied the above percentage to the gross demand connection capex and total contributions to the regulatory years 2006 to 2009.

88. **Step 3**. JEN also identified an estimated portion of the opening distribution system assets RAB (2006), that relates to connection services based on the relative proportion of net connection services capex to net distribution system assets capex for the whole period.

89. The formula used is set out below:

90. **Opening 2006 RAB (connection services)** = Cp:Dp x opening 2006 RAB, where:

> ***Cp:Dp*** *= Ratio of net connection services capex to ratio of net distribution system assets capex*
>
> ***Net capex*** *= gross capex less capital contributions*
>
> ***Opening 2006 RAB*** *= AER approved 2006 opening RAB for distribution system assets.*

91. The identified opening connection services RAB was then rolled-forward in accordance with the AER's RAB framework, using connection services capex, customer contributions and asset disposals. The regulatory depreciation for the connection services net capex was assumed to be a portion (calculated above) of the regulatory depreciation for distribution system assets.

Explain the assumptions made when applying the chosen methodology

JEN interpreted the AER's guidance to use DRC for the regulatory year 2013 retrospectively

- When calculating depreciated replacement costs, JEN interprets the AER's instruction "*where disaggregation is required for the whole period then this will be the 2013 regulatory year*" to mean that the DRC estimates for the regulatory year 2013 are used to allocate the regulatory categories to the network-related EBT categories for the regulatory years 2006 to 2013. The same approach was used to allocate regulatory categories to non network-related EBT categories based book values.
- When calculating the DRC estimates, JEN applied the weighted average service lives of *existing assets*, rather than *new assets*.

JEN made assumptions to estimate a notional NS RAB

- The 2006 opening RAB for connection services was assumed to equal the historical (2006 to 2013) cumulative share of connection related net capex, multiplied by the opening RAB of distribution system assets.
- The proportion of capital contributions related to connection services over 2006 to 2009 equals the average proportion over 2010 to 2013.
- The activities that relate to connection services are assumed to be business supply projects and low density & small business projects <10kvA.
- The proportion of gross connection services capex over 2006 to 2013 related to connection services is the same as the equivalent proportion for capital contributions over this period.
- RAB escalation and straight line depreciation for connection services equals the equivalent value for the SCS RAB multiplied by the share of the opening SCS RAB related to connection services.

JEN made other general assumptions to estimate the RABs

- All information is presented in nominal dollars.
- All information is presented to the nearest thousand ($000), rounded to the nearest dollar.
- Straight line depreciation and regulatory depreciation are expressed as positive values.
- Actual additions are assumed to equal gross capex less customer contributions.

- The same allocation percentages were used to allocate RAB categories to EBT categories for each of the RABs (SCS, NS, ACS).
- The AER approved adjustments to the SCS RAB in the regulatory year 2010 (accounting for the difference between forecast and actual capex incurred in the regulatory year 2005) has been incorporated as an addition to the closing asset value in that year. This explains why the closing value does not equal the opening value plus actual additions less disposals less regulatory depreciation in the regulatory year 2010.

92. The assets that were added to the AER approved ACS RAB in 2010 was incorporated as an addition to the closing asset value in that year. This explains why the closing value does not equal the opening value plus actual additions less disposals less regulatory depreciation in the regulatory year 2010.

Explain why the estimate is JEN's best estimate given the information sought

93. JEN uses, where possible, data that are within its financial system, AER approved data and its best endeavours when estimating the relevant RABs.

94. JEN's best estimate follows, as close as possible, the AER's explanatory statement, instruction and definition document or the AER's preferred methodology for rolling forward RABs, such as:

- using ABS data to estimate actual CPI
- applying the RAB framework to roll-forward its RAB, and
- adopting the standard allocation approach to disaggregate its RAB.

For financial information only: Identify whether accounting policies materially changed during any of the years covered within the Notice

No

Only if response to above was yes: Explain the nature of the change identified in e. and the impact of that change

Not Applicable

3.3.3 TOTAL DISAGGREGATED RAB ASSET VALUES

Actual Information

95. No actual information is provided.

Estimated Information

96. Variable DRAB1201 – 1210 - These variables are assumed to equal the average of the opening and closing value (for each asset category) in Table 3.3.2. This is consistent with the AER's guidance in its explanatory statement.

97. Variable DRAB13 - AER approved actual values for Standard Control Services and Alternative Control Services. Network Services values are allocated in the same way as described above for variables DRAB0201 – DRAB1107.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DRAB1201 - 1210	JEN considers these variables to be estimates as they are a function of estimated variables.	These variables are the summation of variables DRAB0201 – DRAB1107	n/a	Refer to section 3.3.2
DRAB13	Refer to page 39 above 'JEN made assumptions to estimate a network services RAB'	Refer to page 39 above 'JEN made assumptions to estimate a network services RAB'	Refer to page 39 above 'JEN made assumptions to estimate a network services RAB'	Refer to page 39 above 'JEN made assumptions to estimate a network services RAB'. This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.

3.3.4 ASSET LIVES

Actual Information

1. Assets applicable to ACS are public lighting only. These apply to the long asset lives category (DRAB1408, DRAB1508).
2. All assets for SCS have the same estimated service life for network services because connection fees in SCS does not affect the estimated average life of the assets, except for DRAB1401, DRAB 1402, DRAB1501, DRAB1502. Services assets apply to the category of DRAB1401, DRAB1402, DRAB 1501, DRAB1502 and are only included in SCS Section.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DRAB1401, DRAB1402, DRAB1403, DRAB1404, DRAB1405, DRAB1406, DRAB1407 DRAB1408, DRAB1409	JEN considers this information to be actual as it is captured in the following internal business records: JEN's Geographical Information System (**GIS**) and SAP Plant Maintenance Module (PM) is the source of actual volume data. The actual data was obtained by extracting data directly from GIS and SAP at the end of 2015. The unit rate is obtained from projects completed in 2015. The unit rates have been determined from the project costs and have been extracted from the Plant Maintenance and Project systems Modules of SAP, JEN's Works Management system.	Refer to Economic Benchmarking RIN – Instructions and Definitions: JEN reported asset lives for all RAB Assets in accordance with the category definitions provided in chapter 9. Find $ proportion for each asset: Asset A Proportion = (Unit Rate * Total Installed in 2015) / SUM of total spent per Asset Category X in 2015 as per RAB Asset A = Asset A Proportion * Total Expenditure in 2015 for Asset Category X Asset B Proportion = (Unit Rate * Total Installed in 2015) / SUM of total spent per Asset Category X in 2015 as per RAB Asset B = Asset B Proportion * Total Expenditure in 2015 for Asset Category X Please note Asset A and Asset B are in the group of Asset Category X. Find weighted average life for each asset: Weighted average asset life calculation for assets: $\text{category } j = \sum_{i=1}^{n} \frac{x_{i,j}}{RC_j} . EL_{i,j}$	Nil

Variable	Source and why actual	Methodology	Assumptions
		Where: n is the number of assets in category j $x_{i,j}$ is the value of asset in i in category j $El_{i,j}$ is the expected life of asset i in category j RC_j is the sum of the value of all assets in category j As the weightings are all based on RAB share, this approach is used: If Asset Category X contains 2 assets and Asset A has a useful life of 50 years and a value of $3 million and Asset B has a useful life of 20 years and a value of $2 million, then the weighted average asset life of assets in this category is 38 years: [(3/5) x 50] + [(2/5) x 20] = 38. The asset useful life for each asset is obtained from ELE PR 0012 – Network Asset Useful Lives procedure. The asset volume installed in 2015 is obtained from GIS and SAP and the methodology to obtain the asset volumes is outlined in ELE PR 0011 Asset Age Profiling Methodology.	
DRAB1501, DRAB1502, DRAB1503, DRAB1504, DRAB1505, DRAB1506, DRAB1507,	JEN considers this information to be actual as it is captured in the following internal business records: JEN's Geographical Information System (**GIS**) and SAP Plant Maintenance Module (PM) is the source of actual volume data.	Refer to Economic Benchmarking RIN – Instructions and Definitions: JEN reported a current estimation of the weighted average remaining time expected that an asset class (as per DRAB1401 to DRAB1409) will deliver the same effective service as that asset class did at its installation date.	Nil

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DRAB1508, DRAB1509	The actual data was obtained by extracting data directly from GIS and SAP at the end of 2015. The unit rate is obtained from projects completed in 2015 as what reported in SAP.	Find weighted average life for each of the assets in one asset category. For each year -> calculate remaining years * total installed (from 1910 – 2014, note we exclude 2015 here because 2015 asset is calculated in previous section as it is being treated as new asset installed). Sum of all total installed Asset A * remaining years. Calculate weighted average life for an Asset A = Sum of all (total installed Asset A * remaining year) / Total asset installed. Once each asset's weighted average life is obtained, we applied this formula to calculate the asset category's weighted average remaining life: $\text{category } j = \sum_{i=1}^{n} \frac{x_{i,j}}{RC_j} . EL_{i,j}$ Where: *n* is the number of assets in category *j* $x_{i,j}$ is the value of asset in *i* in category *j* $El_{i,j}$ is the expected life of asset *i* in category *j* RC_j is the sum of the value of all assets in category *j* As the weightings are all based on RAB share, this approach is used: If Category X contains 2 assets and Asset A has an expected life of 50 years and a value of $3	

Variable	Source and why actual	Methodology	Assumptions
		million and Asset B has an expected life of 20 years and a value of $2 million, then the weighted average asset life of assets in this category is 38 years: [(3/5) x 50] + [(2/5) x 20] = 38. Please note: the asset value for each asset category is the total RAB value of that asset category up to year 2014. The asset useful life for each asset is obtained from ELE PR 0012 – Network Asset Useful Lives procedure. The asset volume installed in 2015 is obtained from GIS and SAP and the methodology to obtain the asset volumes is outlined in ELE PR 0011 Asset Age Profiling Methodology.	

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
Network services and alternative control services	JEN has intentionally left variables DRAB1407 and DRAB1507 blank. This is consistent with the AER's explanatory statement where network services are defined as a subset of standard control services—i.e. network services excludes metering, connection services, public lighting and fee based and quoted services. Consequently, JEN has excluded metering asset service and residual lives from the network services section and included asset service and residual lives for public lighting within the ACS section (under the category "Other" assets with long lives—DRAB 1408 and DRAB1508). JEN has also not reported any asset service and residual asset lives for the following variables (DRAB1401-DRAB1406, DRAB1409 and DRAB1501-DRAB1506, DRAB1509) within the ACS section because the only asset that resides within JEN's ACS RAB is public lighting. This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.			

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

3.4 OPERATIONAL DATA

3.4.1 ENERGY DELIVERY

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPED01	The data is sourced from JEN's two billing systems. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date.	The tariff codes listed below are incorporated in JEN's approved annual tariffs which are published by the AER. **DOPED01**: Sum of Peak energy, Off Peak energy and Shoulder energy all tariff codes.
DOPED0201 – DOPED0206	The data is sourced from JEN's two billing systems. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date.	The tariff codes listed below are incorporated in JEN's approved annual tariffs which are published by the AER. **DOPED0201:** Comprises of peak energy for A100 and A200 tariff codes. **DOPED0202:** Comprises of Peak energy for all tariff codes with the exception of A100, A200 and A290. **DOPED0203:** Comprises of Shoulder energy for all tariff codes. **DOPED0204:** Comprises of all Off-Peak energy for all tariff codes with the exception of A180 and A290.

Variable	Source and why actual	Methodology	Assumptions
			DOPED205: Comprises of Off Peak energy for A180 tariff code **DOPED206**: Comprises of Peak energy and off peak energy for A290 tariff code.
DOPED0404	JEN considers this information an actual as energy received into JEN from embedded generation is extracted from the JEN system called Interval Meter Store (**IMS**).	The generation data for each embedded generators is obtained from IMS and then provided the summation. The data includes the energy received from non-residential embedded generation on an accumulation basis. Embedded generator excluded is: Somerton Power Station	The data is embedded generation data only; it does not include the energy consumed by embedded generation.
DOPED0501- DOPED0505	The data is sourced from JEN's two billing systems. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date. The information obtained in the reports is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet Year to date.	The tariff codes listed below are incorporated in JEN's approved annual tariffs which are published by the AER. **DOPED0501**: Comprises of peak energy, off peak energy and shoulder energy for A100 to A180 tariff codes. **DOPED502:** Comprises of peak energy, off peak energy for A200, A210 and A250 tariff codes. **DOPED503:** Comprises of peak energy, off peak energy for A230, A250, and A300 to A37R tariff codes. **DOPED504**: Comprises of peak energy, off peak energy for A400 to A50E tariff codes. **DOPED505:** Comprises of peak energy and off peak energy for A290 tariff code.
DOPED0301 -	The TNSP data obtained by JEN as a monthly value from the wholesale metering database.	JEN extracts the actual total TNSP data for the	We assume that the peak/off-peak break down of the system losses follows the same peak/off-

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DOPED0304	This is the actual data that determines the total energy received. To determine the split of the total TNSP data between peak and off-peak the following sources are used: - Billing data that is sourced from JEN's two billing systems. The data is then captured in the LC2015.xls on a monthly basis and is summated in worksheet – for A210 customers and above - Interval meter readings (IMS data) for all Residential customers and A200 small business customers The information is considered to be actual: - the total energy received from TNSP is the actual data obtained as a monthly value - the break down of the actual energy received from TNSP between peak and off-peak is based on the 93% the actual data (from billing system and IMS). There is not reliable way to receive the actual data split between peak and off peak energy for the 7% difference (attributable to the system losses and manually read meters) - we calculated 2015 value using the estimated methodology we applied for 2014 RIN which used to explain only 69% of the peak/off-peak energy break down by actuals. The difference between the estimated and the actual methodology (93% of the energy break down is explained by the actual data) is only 1.27%.	calendar year. We use the peak and off peak break down for using the actual billing information available for all time of use tariffs (billing data is separated by peak and off-peak). For the tariffs where peak off peak are not available (anytime tariffs A100 and A200) we use 30 min interval readings (IMS data) to split the load between peak and off peak. Billing data + IMS data for anytime tariffs explains 93% of the total energy received from TNSP. The difference The difference of 7% is attributable to the system losses and to the manually read meters. We assume that the peak/off-peak break down of the system losses follows the same peak/off-peak profile as the billed energy We assume that the manually read meters follow the same peak/off-peak break down as the AMI meters	peak profile as the billed energy We assume that the manually read meters follow the same peak/off-peak break down as the AMI meters

Variable	Source and why actual	Methodology	Assumptions
	Therefore, obtaining additional 24% of the actual data vs estimated only resulted in 1.27% variation, which is immaterial. Therefore, we conclude that the remaining 7% of the estimated data has immaterial impact and, therefore, the information is actual.		

3.4.2 CUSTOMER NUMBERS

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPCN0101 - DOPCN0104	JEN's CIS Plus and SAP ISU systems are the source of actual data for network customer numbers. The above systems do not split customer numbers by tariff types. Customer accounts by tariff type are based on the billing system (CIS Plus and SAP ISU) The difference of total average customer numbers from CIS Plus and SAP ISU excluded unmetered customer numbers against the weighted average number from the billing system is 1.7% which is not material and therefore the calculated customer number by tariff type is considered as actual.	Data collection and verification procedures JEN PR 0017 is the procedure to extract distribution customer numbers for the whole network as defined in the RIN definition of Distribution customers – all active NMIs including unmetered supply points; disconnected and abolished NMI are excluded. The percentage split of customers by tariff type is provided by Commercial Performance based on information from the billing system. The percentage split is then applied to the total network customers to calculate customer numbers by tariff type.	No assumptions have been made.
DOPCN0105	Jemena's Customer Information System (CIS	The data is extracted from CIS Plus by running a	No assumptions have been made.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	Plus) and SAP ISU systems are the source of actual data for customer numbers.	system query.	
DOPCN0106	Jemena does not have any customers which fit into the "Other Customer Numbers" category and is therefore entered as zero.		
DOPCN0202 - DOPCN0203	JEN's CIS Plus and SAP ISU systems are the source of actual data for customer numbers. The definition of urban and rural short feeders has been used to determine the categorisation of each feeder and adjusted based on the nature of use of the feeder. Urban and rural short feeder customer numbers are extracted from the network model which is generated by the Geographic Information System (GIS). Although the total number of customers from the Geographic Information System (GIS) network model does not exactly match the total network customer numbers extracted from SAP ISU and CIS Plus (SAS) systems, the discrepancy is only 0.66% and is not material. Therefore the calculated urban and rural short customer numbers are considered as Actual	Data collection and verification procedures JEN PR 0017 is the procedure to extract distribution customer numbers for the whole network as defined in the RIN definition of Distribution customers – all active NMIs including unmetered supply points; disconnected and abolished NMI are excluded. Customer numbers by feeder is extracted directly from the network model built in OMS at the first business day of each month. Customers at the start of the period = customer numbers at the first business day of January in the current reporting year and Customers at the end of the period = customer numbers at the first business day of January in the following reporting year. The definition of urban and rural short feeders has been used to determine the categorisation of each feeder and adjusted based on the nature of use of the feeder at the end of the year JEN PR 0502 Section 3.2.3.1 outlined the methodology that JEN has applied to calculate urban and rural customer numbers which basically derives the urban/rural short customer split ratio from the categorised feeder customer numbers at the start of the period and at the end of the period.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
		The ratios are then applied to the actual network customer numbers respectively to calculate the number of urban and rural short customers.	
DOPCN0201and DOPCN0204	JEN has no customers of this type on its network and is therefore entered as zero.		JEN has no customers of this type on its network and is therefore entered as zero.
DOPCN0301 to DOPCN0303	Aurora only, not applicable for JEN	N/A	N/A.

Estimated Information

98. No estimated information is provided.

3.4.3 SYSTEM DEMAND

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOPSD0101	JEN considers this information is actual as it can be directly drawn from the internal business records. The information is obtained from SCADA metering data. Throughout the JEN network there is a significant number of measurements (voltage and current), predominantly at JEN zone sub-stations, being provided to the Real Time Systems. All historical SCADA data (2008 onwards) can be interrogated using PI (user interface developed by OSIsoft) JEN has referred to the following report to obtain the data.	This is derived from metered actual zone substation data, adjusted for abnormal changes—un-anticipated temporary load changes due to transfers, interruption caused for network contingencies—but excludes any embedded generation. $$MD = \sum_{1}^{n} MD_{ZSSn}$$ Where MD = non-coincident summed raw unadjusted annual maximum demand at ZSS level (MW) n = number of JEN zone substations MD_{ZSSn} = non-coincident raw unadjusted	The data includes JEN owned zone substations only (i.e. it does not include the customer substation and other DNSP owned zone substations).

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	JEN maximum demand forecast excel spread sheet 2015. Note: The PI System is a proprietary software developed by OSIsoft for the management of real-time data and events. JEN uses this software to store (and retrieve) real-time meter data, in which the real-time meter data comes from the field via the SCADA system.	annual maximum demand at ZSS n (Mega Watts (MW))	
DOPSD0104	JEN considers this information is actual as it can be directly drawn from the internal business records. The source of actual information is PI system which stores the historical SCADA metering data. JEN has referred to the following report to obtain the data. JEN maximum demand forecast excel spread sheet model 2015.	The coincident maximum demand data for each zone substation is extracted from PI at the time of coincident system peak demand at the transmission network connection points and provided the summation. $$MD = \sum_{1}^{n} MD_{ZSSnt}$$ Where MD= coincident summated raw system annual maximum demand at Zone Substation level (MW) n = number of JEN Zone Substations t = time of system coincident maximum demand as determined at the transmission connection point level. MD_{ZSSnt} = coincident raw unadjusted annual maximum demand at Zone Substation n (MW) at time t.	JEN assumed that the summation of actual raw demands for the zone substation is the greatest at the time of coincident peak system demand. Time of system coincident maximum demand is recorded in average 15 minute intervals using wholesale market meters. It is assumed that the difference in demand between the 15 minute interval and the precise time of the MD is negligible.
DOPSD0107	JEN considers this information is actual as it can be directly drawn from wholesale market	This is derived from metered actual (transmission network connection point 15 min-	This includes JEN load flowing on JEN's subtransmission network only. E.g.

Variable	Source and why actual	Methodology	Assumptions
	meter data.	data excluding any embedded generation adjustment. $$MD = \sum_{1}^{n} MD_{TCPn}$$ Where MD = non-coincident summed raw system annual maximum demand at Transmission Connection Point level (MW) n = number of JEN Transmission Connection Points MD_{TCPn} = non-coincident raw unadjusted annual maximum demand at Transmission Connection Point n (MW)	Thomastown zone substation (TT) station load is excluded as TT load is supplied by non-JEN subtransmission lines.
DOPSD0110	JEN considers this information is actual as it can be directly drawn from wholesale market meter data.	Time of system coincident maximum demand is recorded in average 15 minute intervals using wholesale market meters. This is the actual, unadjusted (i.e. not weather normalised) summation of actual raw demands for the transmission connection points at the time when this summation is greatest. The Maximum Demand (MD) does not include Embedded Generation. $$MD = \sum_{1}^{n} MD_{TCPnt}$$ Where MD = coincident summed raw system annual maximum demand at Transmission Connection	This includes JEN load flowing on JEN subtransmission network only. E.g. TT station load is excluded as TT load is supplied by non-JEN subtransmission lines.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
		Point level (MW) n = number of JEN Transmission Connection Points t = time of system coincident maximum demand as determined at the transmission connection point level. MD_{TCPnt} = coincident raw unadjusted annual maximum demand at Transmission Connection Point n (MW) at time t	
DOPSD0201	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. The source of actual information is PI system which stores the historical SCADA metering data.	The MVA MD is calculated from MW MD and MVAr at the time of MW MD. Therefore, MVA MD is the same date and time as MW MD. $$MD = \sum_{1}^{n} MD_{ZSSn}$$ Where MD = non-coincident summated raw system annual maximum demand at Zone Substation level (MVA) n = number of JEN Zone Substations MD_{ZSSn} = non-coincident raw unadjusted annual maximum demand at Zone Substation n (MVA) The MVA MD is calculated from MW MD and MVAr via the Pythagorean Theorem: $$MVA = \sqrt{(MW^2 + MVAr^2)}$$ The source of MW and MVAr information is PI system and JEN maximum demand forecast excel spread sheet model 2015.	The MVAr comes after the application of power factor correction measures at zone substation (e.g. capacitor bank), where applicable. The data includes JEN owned zone substations only (i.e. it does not include the customer substation and other DNSP owned zone substations).

Variable	Source and why actual	Methodology	Assumptions
DOPSD0204	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. The source of actual information is PI system which stores the historical SCADA metering data.	The zone substation MW MD and MVAr from PI at the time of system peak are utilised to estimate the data as per the definition of this variable. The MVA MD is calculated from MW MD and MVAr at the time of MW MD. Therefore, MVA MD is the same date and time as MW MD. $$MD = \sum_{1}^{n} MD_{ZSSnt}$$ Where MD = coincident summed raw system annual maximum demand at ZSS level (MVA) n = number of JEN zone substations t = time of system coincident maximum demand at transmission connection point level MD_{ZSSnt} = coincident raw annual maximum demand at ZSS n (MVA) at time t The MVA MD is calculated from MW MD and MVAr via the Pythagorean Theorem: $$MVA = \sqrt{(MW^2 + MVAr^2)}$$	JEN assumed that the summation of actual raw demands for the zone substation is the greatest at the time of coincident peak system demand. Time of system coincident maximum demand is recorded in average 15 minute intervals using wholesale market meters. It is assumed that the difference in demand between the 15 minute interval and the precise time of the MD is negligible.
DOPSD0207	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. Wholesale market meter data and JEN maximum demand forecast excel spread sheet model 2015 are the sources of actual	The MVA MD is calculated from metered actual (transmission connection point 15 min-data) MW MD and MVAr at the time of MW MD. Therefore, MVA MD is the same date and time as MW MD.	Time of system coincident maximum demand is recorded in average 15 minute intervals using wholesale market meters. It is assumed that the difference in demand between the 15 minute interval and the precise time of the MD is negligible.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	data.	$$MD = \sum_{1}^{n} MD_{TCPn}$$ Where MD = non-coincident summed raw system annual maximum demand at Transmission Connection Point level (MVA) n = number of JEN Transmission Connection Points MD_{TCPn} = non-coincident raw unadjusted annual maximum demand at Transmission Connection Point n (MVA) The MVA MD is calculated from MW MD and MVAr via the Pythagorean Theorem: $$MVA = \sqrt{(MW^2 + MVAr^2)}$$ Wholesale market meter data and JEN maximum demand forecast excel spread sheet model are the sources of MW and MVAr data.	MVA MD is assumed to occur at the same date and time as MW MD
DOPSD0210	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. Wholesale market meter data and JEN maximum demand forecast excel spread sheet model 2015 are the sources of actual data.	MW MD is derived by summation of metered actual raw demands for the transmission connection points (terminal station average 15-min data) at the time when this summation is greatest. The MVA MD is calculated from metered actual of MW MD and MVAr at the time of MW MD therefore MVA MD is the same date and time as MW MD. $$MD = \sum_{1}^{n} MD_{TCPnt}$$ Where	Time of system coincident maximum demand is recorded in average 15 minute intervals using wholesale market meters. It is assumed that the difference in demand between the 15 minute interval and the precise time of the MD is negligible. MVA MD is assumed to occur at the same date and time as MW MD.

Variable	Source and why actual	Methodology	Assumptions
		MD = coincident summated raw system annual maximum demand at Transmission Connection Point level (MVA) n = number of JEN transmission connection points t = time of system coincident maximum demand as determined at the transmission connection point level. MD_{TCPnt} = coincident raw unadjusted annual maximum demand at Transmission Connection Point n (MVA) at time t The MVA MD is calculated from MW MD and MVAr via the Pythagorean Theorem: $MVA = \sqrt{(MW^2 + MVAr^2)}$ Wholesale market meter data and JEN maximum demand forecast excel spread sheet model are the sources of MW and MVAr data.	
DOPSD0301	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. Wholesale market meter data is the sources of actual MW and MVAr data.	As per the Economic Benchmarking RIN definition of power factor $\text{The average overall network power factor} = \frac{\sum_{x=1}^{x=n} MW_x}{\sum_{x=1}^{x=n} MVA_x}$ MW_x =Sum of MW measured in every 15 minute average interval by wholesale market meters in JEN sub transmission connection points MVA_x= Sum of MVA calculated from MW_x and corresponding MVAr measured in every 15 minute average interval by wholesale market meters in JEN sub transmission connection	None.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
		points	
DOPSD0311	JEN considers this information is actual as it is calculated from actual metered MW MD and MVAr drawn from the internal business records. Wholesale market meter data is the sources of actual MW and MVAr data.	As per the Economic Benchmarking RIN the definition of power factor $\text{The average overall network power factor} = \frac{\sum_{x=1}^{x=n} MW_x}{\sum_{x=1}^{x=n} MVA_x}$ MW_x =Sum of MW measured in every 15 minute average interval by wholesale market meters in JEN 66kV sub transmission connection points MVA_x= Sum of MVA calculated from MW_x and corresponding average MVAr measured in every 15 minute average interval by wholesale market meters in JEN 66kVsub transmission connection points	The data for this variable is different from DOPSD0301 as DOPSD0301 includes both 66kV and 22kV sub transmission connection points.
DOPSD0102, DOPSD0103, DOPSD0105, DOPSD0106, DOPSD0108, DOPSD0109, DOPSD0111, DOPSD0112, DOPSD0202, DOPSD0203, DOPSD0205, DOPSD0206, DOPSD0208, DOPSD0209, DOPSD0211, DOPSD0212,	These particular variables are derived from other records used in ordinary course of business, and are categorised as actual information on the basis that they are materially dependent on information recorded in JEN's business records and their presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. These variables include a temperature sensitivity assumption in order to provide weather corrected data. To derive this	Coincident/Non-coincident summated weather adjusted MW MD at zone substation level / transmission connection point are derived by summation of respective weather adjusted MW MDs of individual zone substation / transmission connection point $Weather\ adjusted\ MW\ MD = \sum_{1}^{n} MD_b$ Where: n = number of JEN transmission connection points/JEN owned zone substations $MD_b = MD_a \times \frac{A.t_b{}^2 + B.t_b + C}{A.t_a{}^2 + B.t_a + C}$	It is assumed that the 10% POE and 50% POE average daily temperatures and MD temperature sensitivity relationship is consistent for 2015.

Variable	Source and why actual	Methodology	Assumptions
	method, we used a recorded sample of actual historical weather and demand data to determine the temperature sensitivity relationship. The data source of actual weather unadjusted MW and MVAr for transmission connection points is Wholesale market meter data. The data source of actual weather unadjusted MW and MVAr for JEN zone substations is the PI system.	$A, B, C =$ coefficients determined based on historical data for each station. These values are as recorded in the load demand forecast. MD_b = MW MD after temperature adjustment MD_a = actual unadjusted MW MD t_b = average daily temperature to adjust to (32.9°C for 10% POE or 29.4°C for 50% POE) t_a = average daily temperature on day of actual unadjusted MW MD Average daily temperature is calculated as follows: $t = \frac{(t_{max} - t_{min})}{2}$ Where: t = average daily temperature t_{max} = maximum temperature of the day (24 hour period) (data sourced from PI) t_{min} = minimum temperature of the day (24 hour period) (data sourced from PI) Weather corrected values are assumed to have the same MW/MVA ratio as raw adjusted data. Therefore weather corrected MVA is calculated as: $\mathrm{MVA_{adjusted}} = \frac{\mathrm{MVA_{raw}}}{\mathrm{MW_{raw}}} \times \mathrm{MW_{adjusted}}$	
DOPSD0304, DOPSD0306,	These particular variables are derived from other records used in ordinary course of	As per RIN requirement the Total MW and	The data provided excludes customer substations and other DNSP owned zone

Variable	Source and why actual	Methodology	Assumptions
DOPSD0308	business, and so they are categorised as actual information on the basis that they are materially dependent on information recorded in JEN's business records and their presentation for the purposes of the Notice are not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. These variables include assumptions of nominal voltage (ie. 6.6kV, 11kV and 22kV) rather than actual measured voltage at each zone substation every 15 minutes. We consider these voltages to be a reasonable proxy for actual voltage. This assumption is based on the fact that on average, JEN's historical actual voltage is regulated/targeted to equal the nominal voltage value. The data source for JEN zone substation average MW and average feeders MVA is PI system.	MVA are calculated as below. $\text{Total MVA} = \sum_{x=t1}^{tn} a_x + \cdots \sum_{x=t1}^{tn} n_x$ Where t1 … tn are 15 minute time intervals from 1 January to 31 December. The feeder currents are recorded in every 15 minute interval in OSI PI. $a_x \ldots n_x$= Feeder MVA at time interval x =$\sqrt{3}$ X nominal voltage of the feeder X Feeder current at time interval $\text{Total MW} = \sum_{x=t1}^{tn} A_x + \cdots \sum_{x=t1}^{tn} N_x$ Where, $A_x \ldots N_x$= Feeder MW at time interval x Average power factor = $\frac{\text{Total MW}}{\text{Total MVA}}$ = $\frac{\sum_{x=t1}^{tn} a_x + \cdots \sum_{x=t1}^{tn} n_x}{\sum_{x=t1}^{tn} A_x + \cdots \sum_{x=t1}^{tn} N_x}$ Since only the historical interval data for zone substation MW and Feeder currents are available, the above equation is simplified as below by dividing the numerator and denominator by the number of time intervals Average power factor = $\frac{\text{Total MW}}{\text{Total MVA}}$ = $\frac{\text{Average MW of zone substation } 1 + \cdots + \text{Average MW of zone sub}}{\text{Average MVA of Feeder } 1 + \cdots + \text{Average MVA of feeder}}$ The zone substations and the feeders in above	substations for HV feeders

Variable	Source and why actual	Methodology	Assumptions
		equation are at same voltage level	
DOPSD0401	JEN's billing is based on measured maximum demand, not on an assumed contracted rate. JEN can therefore not currently provide this information.		
DOPSD0402	The data is sourced from JEN's two billing systems. The data is then captured in the LC2015.xls on a monthly basis and is summed in worksheet Year to date. The information obtained in the reports is actual information as it is consistent with the AER's definition of actual information as per section 2.2.2 of the Better Regulation Explanatory Statement: regulatory information notices to collect information for economic benchmarking November 2013.	The data is obtained from JEN's billing systems where a monthly report is produced from each billing system to record quantities and revenue by tariff component. The data is then captured in the LC2015.xls on a monthly basis and is summed in worksheet Year to date.	None.
DOPSD0403-DOPSD0404	JEN does not currently record maximum demand as MVA.		

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DOPSD0302	The variable is estimated due to the assumptions made and that it could not be directly drawn from JEN's internal business records.	MW and MVA data measured during 2015 for 9 distribution substations (3 commercial, 3 industrial and 3 domestic loads) are utilised to estimate this variable. The data were captured via power quality meters in every 1 minute interval for around 7 days in each substation. The power quality meters were installed at different	In the normal course of business JEN does not record power factor of each individual LV lines. It is assumed that the average power factor of this sample of 9 distribution substations (3 domestic, 3 commercial and 3	This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		dates and time. $$\text{The average power factor for the LV network} = \frac{\sum_{x=1}^{n} MW_x}{\sum_{x=1}^{n} MVA_x}$$ MW_x = MW measured in every 1 minute for a week in substation x. MVA_x= MVA measured in every intervals as MW measured in substation x	industrial loads) gives fair estimate of LV power factor.	
DOPSD0303, DOPSD0305, DOPSD0307, DOPSD0309, DOPSD0310, DOPSD0312, DOPSD0313, DOPSD0314	These variables are not applicable to JEN as JEN does not have any lines with these voltage levels.			

3.5 PHYSICAL ASSETS

3.5.1 NETWORK CAPACITIES

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DPA0101-DPA0114	JEN's Geographical Information System (**GIS**) is the source of actual data for	The GIS is the key source of the network connectivity model. The overhead conductors	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
	network length.	have the voltage and length as attributes and therefore we allocate the conductors into the required categories. The actual data was obtained by extracting data directly from GIS at the end of 2015. 22kV subtransmission has been included in the Overhead 22kV categorisation.	
DPA0201-DPA0212	As above.	The GIS is the key source of the network connectivity model. The underground cables have the voltage and length as attributes and therefore we are able to allocate the conductors into the required categories. The actual data was obtained by extracting data directly from GIS at the end of 2015. 22kV subtransmission has been included in the Underground 22kV categorisation.	As above
DPA0102, DPA0104, DPA0106, DPA0108, DPA0109, DPA0111-DPA0114, DPA0202, DPA0204, DPA0206, DPA0208, DPA0210-DPA0212	JEN does not have any 2.2kV, 7.6kV, SWER, 33kV, 44kV, 110kV, 132kV, 220kV or “Other” lines, therefore the data in the relevant cells are zero.		

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
DPA0301	This particular variable is derived from other records used in ordinary course of business, and so it is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. JEN's GIS is the source of actual data for length, size and type of conductor. This variable is dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers. Note: GIS system is a geographical information systems (GIS) designed for the management of complex utility or telecommunications networks. JEN uses this software to capture and store its distribution assets for the management of its network.	$Weighted\ average\ Capacity\ of\ LV\ OH\ \ line\ in\ year = \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of LV conductor in service on JEN network s_n= MVA rating of section n of LV OH conductor l_n= length of section n of LV OH conductor.	As per the size and type of conductor recorded in GIS, the ratings of overhead conductors are obtained from historical construction and design manuals used by JEN / its predecessors and current standards If the conductor type and size are unknown in GIS records, those sections are not included in calculation. As JEN is summer peaking network, the summer ratings of overhead line have been utilised to calculate the MVA capacity. The data provided covers 61% of total length (as of 31/12/2015) of OH LV recorded in GIS. It is assumed that this sample is a fair representation of the population of LV overhead conductors on the JEN. Service lines are not included in the calculation. Please note other DBs have reported this variable differently in previous years RIN reporting.

Variable	Source and why actual	Methodology	Assumptions
DPA0302, DPA0304, DPA0306	These particular variables are drawn from other records used in ordinary course of business, they are categorised as actual information on the basis that they are materially dependent on information recorded in JEN's business records and their presentation for the purposes of the Notice are not contingent on judgement and assumptions which could lead to a materially different presentation in the response to the Notice. JEN's GIS is the source for length, size and type of conductor. These variables are dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers. Note: GIS system is a geographical information systems (GIS) designed for the management of complex utility or telecommunications networks. JEN uses this software to capture and store its distribution assets for the management of its network.	$Weighted\ average\ Capacity\ of\ HV\ OH\ line = \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of HV conductor in service on JEN network s_n= MVA rating of section n of HV OH conductor l_n= length of section n of HV OH conductor	As per the size and type of conductor recorded in GIS, the ratings of overhead conductors are obtained from historical construction and design manuals used by JEN/ its predecessors and current standards. If the conductor type and size are unknown in GIS records, those sections are not included in the calculations. The data provided covers 99% of total length (as of 31/12/2015) of OH HV recorded in GIS. It is assumed that this sample is a fair representation of the population of HV OH conductors on the JEN. Conductor ratings in manuals/standards are given in Amps, therefore nominal voltage of the line is used to convert to MVA. Variable DPA0306 also includes the data for 22kV OH sub transmission. As JEN is summer peaking network, the summer ratings of OH conductors have been utilised to calculate the MVA capacity. Please note other DBs have reported these variables differently in previous years RIN reporting.

Variable	Source and why actual	Methodology	Assumptions
DPA0309	This particular variable is derived from other records used in the ordinary course of business and so it is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions which could lead to a materially different presentation in the response to the Notice. Line Circuit Data Sheets (CDS) are the source for length and ratings of the 66kV line sections. This variable is dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers.	$Weighted\ average\ Capacity\ of\ 66kV\ subtransmiss$ $OH\ \ line\ \ = \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of 66kV overhead conductor in service on JEN network s_n= Summer MVA rating of section n of 66kV OH conductor l_n= length of section n of the 66kV OH conductor	Only JEN owned 66kV subtransmission lines are included in the calculation. As JEN is summer peaking network, the summer ratings of OH conductors have been utilised to calculate the MVA capacity. Please note other DBs have reported this variable differently in previous years RIN reporting.

Variable	Source and why actual	Methodology	Assumptions
DPA0401	This particular variable is derived from other records used in ordinary course of business, it is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. JEN's GIS is the source for underground cable length, size and construction type. This variable is dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers. Note: GIS system is a geographical information systems (GIS) designed for the management of complex utility or telecommunications networks. JEN uses this software to capture and store its distribution assets for the management of its network.	$Weighted\ average\ Capacity\ of\ LV\ UG\ line = \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of LV cable existing on JEN network s_n= MVA rating of section n of LVUG cable l_n= length of section n of LV UG cable	For the ratings of LV Underground (**UG**) cables, current and historical construction and design manuals used by JEN/its predecessors and current standards have been used. Ratings are based on standard design depth, temperature, proximity to other cables etc and do not allow for any variations from this which may exist in the field. This is due to the absence of this data in GIS. The unknown type and size of cables are not included in the calculations. The data provided covers almost 91% of total length (as at 31/12/2015) of LV UG recorded in GIS. It is assumed that this sample is a fair representation of the population of LV UG cables on the JEN. Underground service cables are not included in the calculation. Please note other DBs have reported this variable differently in previous years RIN reporting.

Variable	Source and why actual	Methodology	Assumptions
DPA0403, DPA0405, DPA0408	These particular variables are derived from other records used in ordinary course of business, they are categorised as actual information on the basis that they are materially dependent on information recorded in JEN's business records and their presentation for the purposes of the Notice are not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. JEN's GIS is the source for underground cable length, size and construction type. These variables are dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers. Note: GIS system is a geographical information systems (GIS) designed for the management of complex utility or telecommunications networks. JEN uses this software to capture and store its distribution assets for the management of its network.	$Weighted\ average\ Capacity\ of\ HV\ UG\ \ line = \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of HV UG cable in service on JEN network s_n= MVA rating of section n of HV UG cable l_n= length of section n of HV UG cable	For the ratings of HV UG cables, current and historical construction and design manuals used by JEN/its predecessors and current standards have been used. Ratings are based on standard design depth, temperature, proximity to other cables etc and do not allow for any variations from this which may exist in the field. This is due to the absence of this data in GIS. Cable ratings in manuals/standards are provided in Amps, therefore nominal voltage of the line is used to convert to MVA. The unknown type and cross section of conductors are not included in the calculations. The data provided covers 96% of total length (as of 31/12/2015) of HV UG recorded in GIS. It is assumed that this sample is a fair representation of the population of HV UG cables on the JEN network. Variable DPA0408 also includes the data for 22kV UG subtransmission lines. Please note other DBs have reported these variable differently in previous years RIN reporting.

Variable	Source and why actual	Methodology	Assumptions
DPA0410	This particular variable is derived from other records used in ordinary course of business, it is categorised as actual information on the basis that it is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives which could lead to a materially different presentation in the response to the Notice. Line Circuit Data Sheets (CDS) are the source for length and ratings of the 66kV underground cable sections. This variable is dependent upon assumptions that actual capacity is equal to the design standard of each type of conductor. These design standards are recorded and provided by JEN's conductor manufacturers. Note: Circuit Data Sheet (CDS) is an AutoCAD drawing that is used to capture and store the engineering data (such as circuit length, ratings, conductors spacing, and line impedances) for the sub-transmission network.	$Weighted\ average\ Capacity\ of\ 66kV\ subtransmiss$ $UG\ line\ =\ \frac{\sum_1^n (s_n l_n)}{\sum_1^n (l_n)}$ Where: n = number of sections of 66kV UG cable in service on JEN network. s_n= Summer MVA rating of section n of 66kV UG cable l_n= length of section n of the 66kV UG cable	Only JEN owned 66kV subtransmission lines are included in the calculation. Please note other DBs have reported this variable differently in previous years RIN reporting.

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DPA0303, DPA0305, DPA0307, DPA0308, DPA0310, DPA0311, DPA0312, DPA0313	These variables are not applicable to JEN because JEN does not have any lines with these voltage levels.			
DPA0402, DPA0404, DPA0406, DPA0407, DPA0409, DPA0411, DPA0412	These variables are not applicable to JEN because JEN does not have any lines with these voltage levels. Therefore any information relating to these variables are not provided			

3.5.2 TRANSFORMER CAPACITIES

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DPA0501	The information was sourced from GIS and is considered actual information as GIS is a direct source of actual information.	The distribution transformer capacity is a characteristic of each of the distribution transformers.	There are no assumptions.
DPA0502	As per the AER RIN explanatory statement where this information is not available to the NSP, it is to report a summation of non-coincident individual maximum demands of each such directly connected customer	The maximum demand (MVA) for each HV customers is extracted from JEN's billing system GABI. The data provided is the summation of MVA MD of individual HV customers.	The data provided does not include the sub transmission customers.

Variable	Source and why actual	Methodology	Assumptions
	whenever they occur (ie the summation of a single annual MD for each customer) as a proxy for capacity within the customer's installation. The variable should be the sum of the direct information where this is available and of the proxy MVA measure where the direct measure is not available. Although JEN does not currently record the distribution transformer capacity owned by high voltage customers, JEN considers the information provided to be actual as the proxy MVA measure can be directly extracted from JEN billing system GABI.		
DPA0503	JEN considers this information to be actual information as it can be directly extracted from JEN SAP which has a specific flag as emergency stock.	This is the summation of JEN owned distribution transformers stored in JEN's warehouse as emergency stock.	JEN has applied the assumption that only the capacity that is held in emergency stock should be classified as cold spare capacity. Capacity that is held as stock which is reserved for construction projects has not been classified as cold spare capacity.
Table 3.5.2.3	JEN does not have Distribution other - transformer capacity	n/a	Distribution other - transformer capacity owned by utility definition is not provided. As all the capacity reported already covered all of JEN owned and all owned by HV Customer, this other - transformer capacity owned by utility is zero
DPA0601, DPA0602	JEN does not have any two-step transformations and has therefore provided no information relating to these variables.		
DPA0603, DPA0604	JEN considers this information to be actual information as it can be directly drawn from JEN's Distribution Annual Planning Report (DAPR) 2015.	This is the summation of JEN owned zone substation transformer normal assigned continuous capacity ratings.	This does not include the customer substation and other DNSP owned zone substations supplying JEN customers. Not all capacities of zone substations are the

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
			nameplate ratings of the transformers. Some are de-rated due to limiting capacity of zone substation exit feeder capacity, some due to voltage drop limitation etc.
DPA0605	JEN considers this information to be actual information as it can be directly drawn from JEN's records.	As per the definition of this variable, the total transformer capacity of 27MVA in East Preston Switch House A (EP A) and East Preston Switch House B (EP B) is reported in this variable.	This does not include the customer substation and other DNSP owned zone substations supplying JEN customers.

Estimated Information

99. No estimated information is provided.

3.5.3 PUBLIC LIGHTING

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DPA0701	JEN's GIS is the single source of actual data for the public lighting inventory. The data is extracted directly from the GIS and is therefore considered to be actual information.	The GIS is the single source of the public lighting physical inventory, therefore JEN are able to count the number of luminaires. The actual data was obtained by running a report directly from GIS.	No assumptions have been made in providing this information.
DPA0702	JEN's GIS is the single source of actual data for the public lighting pole inventory. The data is extracted directly from the GIS and is therefore considered to be actual information.	The GIS is the single source of the public lighting pole physical inventory, therefore JEN are able to count the number of public lighting poles. The actual data was obtained by running a report directly from GIS.	In applying this methodology, it has been assumed that the pole installation and pole removal dates have been accurately recorded in GIS.

Estimated Information

100. No estimated information is provided.

3.6 QUALITY OF SERVICE DATA

3.6.1 RELIABILITY

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DQS0101-DQS0108	JEN considers this information to be actual information as it is maintained directly within its Outage Management System (OMS). JEN's OMS is the repository for all outage information, including outage dates and times, the number of customers affected, restoration dates and times and restoration stages. JEN's CIS Plus and SAP ISU systems are the source of actual data for network customer numbers.	The data used to calculate the reliability variables (Key Performance Indicators (KPI)) is extracted from the OMS at the end of each month and is validated and cleansed to correct data errors. The cleansed data is loaded into the Customer Minutes Off Supply (CMOS) database. The reliability KPI's are then calculated. Unplanned SAIDI associated with outages greater than 1 minute duration was calculated using the following equations: DQS0101-0104 inclusive of MED DQS0101 = Total unplanned SAIDI = sum of Unplanned minutes off supply divided by average network customer numbers at the start and at the end of the regulatory year. DQS0102 = Unplanned SAIDI (excluding excluded outages) applies the same principle of calculation of total unplanned SAIDI with unplanned customer minutes off supply associated with the excluded events as per Clause in 3.3(a) in STPIS subtracted from the	No assumptions have been made in providing this information.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
		total unplanned minutes off supply before divided by average customer numbers. Similarly, DQS0103 = Total Unplanned SAIFI = sum of Unplanned customer interruptions divided by average network customer numbers at the start and at the end of the regulatory year DQS0104 = Unplanned SAIFI (excluding excluded outages) applies the same principle of calculation of total unplanned SAIFI with unplanned customer interruptions associated with the excluded events as per Clause in 3.3(a) in STPIS subtracted from the total unplanned customer interruptions before divided by average customer numbers. DQS0105-0108 exclusive of MED DQS0105 = DQS0101 – Unplanned SAIDI (MED) DQS0106 = DQS0102 – Unplanned SAIDI (MED)DQS0107 = DQS0103 – Unplanned SAIFI (MED) DQS0108 = DQS0104 – Unplanned SAIFI (MED) where: Unplanned SAIDI (MED) = sum of Unplanned minutes off supply on Major Event Days as per Clause 3.3 (b) in STPIS divided by average customer numbers; Unplanned SAIFI (MED) = sum of Unplanned customer interruptions on Major Event Days as per Clause 3.3 (b) in STPIS divided by average customer numbers	

Estimated Information

101. No estimated information is provided.

3.6.2 ENERGY NOT SUPPLIED

Actual Information

102. No actual information is provided.

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DQS0201-DQS0202 (Note: Data provided for 2006-2013 were incorrectly provided in MWh not GWh)	JEN has estimated these variables because it is calculated and is not an actual, measured value. The energy not supplied has been routinely reported by JEN at the end of each year. JEN has referred to these reports to populate these variables. The feeder maximum demand, load factor, power factor and number of customers are calculated using data from JEN's core asset management systems.	The methodology that has been used is the fourth option, outlined on page 37 of "Economic benchmarking RIN for distribution network service providers – Instructions and Definitions (November 2013)" That is, JEN has used the average feeder demand derived from feeder maximum demand, estimated load factor and power factor, divided by the number of customers on the feeder. Planned energy not supplied is increasing over the period due to increasing capital expenditure on the network. The proportion of capex spent on the distribution network (contribution to planned energy not supplied) has increased compared to zone substation capex (no contribution to planned energy not supplied) in the later years of the	The planned energy not supplied has been consistently calculated with a factor of 0.3 since 1997. The assumption has considered that customers have been given notice 4 days before the outage, energy usage would just be diverted to times when supply is available and the actual energy not supplied would only be the base continuous consumption such as operating a fridge. The assumption and the adjustment factor was communicated to the Regulator (Office of the Regulator General (ORG)) before the 1997 annual report was submitted. There has been no instruction from the Regulator since indicating that the assumption should not be applied. JEN has used the average feeder	JEN has adopted the fourth estimation option for average customer demand because all inputs to calculate average customer demand on a feeder are readily available. Options 1-3 could not be considered due to limitations of the IT system to merge the information from various sources. JEN is not aware of a superior estimation technique for these variables.

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		period. Generally, zone substation projects have little requirement for planned interruptions to customers and therefore little to no contribution to planned energy not supplied. Distribution projects are the dominant contributors to planned energy not supplied. The variation is also dependent on the scope of the projects. Unplanned energy not supplied is dependent on the number of unplanned outages and the nature/damage/date/time/network topology/available capacity etc. of the outages defined the duration of the outages. Unplanned energy not supplied is a function of unplanned customer-minutes-off-supply. As the RIN unplanned energy not supplied definition required the exclusion of excluded outages.	demand derived from feeder maximum demand, estimated load factor and power factor divided by the number of customers on the feeder.	

3.6.3 SYSTEM LOSSES

Actual Information

103.

Variable	Source and why actual	Methodology	Assumptions
DQS03	Wholesale market meter data, embedded generation data and cross boundary flow energy meter data are the sources for energy import and delivered	The system loss is calculated as below as per the definition of the variable.	No assumptions have been made in providing this information.

Variable	Source and why actual	Methodology	Assumptions
	data. Since FY 2014/15 system loss is based on actual energy imported and delivered data, JEN considers this information as actual. This particular variable is derived from other records used in ordinary course of business, and so it is categorised as actual information on the basis that is materially dependent on information recorded in JEN's business records and its presentation for the purposes of the Notice is not contingent on judgement and assumptions for which there are valid alternatives, which could lead to a materially different presentation in the response to the Notice.	$System\ losses = \frac{electricity\ imported\ (MWh) - electricity\ delivered\ (MWh)}{electricity\ imported}\ x\ 100$ Electricity imported is the total electricity inflow into JEN'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 JEN's network to its customers as metered (or otherwise calculated) at the customer's connection. As part of Distribution Loss Factor submission to AER in March each year, JEN calculates the actual system loss for previous financial year which is certified by independent consultant. In consistent with DLF reporting and RIN A, JEN has reported the system loss for CY 2015 as the actual for FY 2014/15.	

Estimated Information

104. No estimated information is provided

3.6.4 CAPACITY UTILISATION

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DQS04	JEN considers this variable to be actual information as the data is calculated from the variable code DOPSD0201, which is zone substation raw actual maximum demand (MVA), and variable code DPA0604, which zone substation transformer MVA capacity. Both are sources of actual data and so the derived capacity utilisation should be considered actual information also.	The overall utilisation for JEN owned zone substations is calculated each year by dividing the sum of non-coincident summated raw system maximum demand at the zone substation level by summation of zone substation thermal capacity. $$U_{ave} = \frac{MD_{ZSS}}{C_{ZSS}}$$ Where: U_{ave} = Overall utilisation of JEN owned zone substations MD = sum of non-coincident raw Maximum Demand (MVA) at the zone substation level (only JEN owned zone substations). This is equal to variable DOPSD0201. C_{ZSS} = summation of JEN owned zone substation thermal capacity. This is calculated as DPA0604 minus DPA0605.	As per variable codes DOPSD0201 and DPA0604.

Estimated Information

105. No estimated information is provided.

3.7 OPERATING ENVIRONMENT FACTORS

3.7.1 DENSITY FACTORS

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOEF0101	JEN considers this variable to be actual information as the data is calculated from the variable code DOEF0301, which is route line length, and variable code DOPCN01, which is total customer numbers—both are sources of actual data and so the derived customer density should be considered actual information and are directly reconcilable with JEN's internal business records.	The data is calculated by dividing the variable code DOPCN01, which is total customer numbers by the variable code DOEF0301, which is the route line length. It was identified (23 Feb 2015) that when variable code DOEF0301 – Route Line length was corrected in mid-2014 (to include route line length of the JEN underground network) dependent variable codes were missed in the correction. These are variables DOEF0101 – Customer density and DOEF0213 – Standard vehicle access.	As per variable codes DOEF0301 and DOPCN01
DOEF0102	JEN considers this variable to be actual information as the data is calculated from the variable code DOPED01, which is total energy delivered, and variable code DOPCN01, which is total customer numbers—both are sources of actual data and so the derived energy density should be considered actual information and are directly reconcilable with JEN's internal business records.	DOEF0102 is derived as follows: variable DOPED01 is converted to MWh and divided by variable DOPCN01. Formula: (DOPED01*1000)/DOPCN01	As per variable codes DOPED01 and DOPCN01.
DOEF0103	JEN considers this variable to be actual	Calculated as per the definition of variable i.e.	As per variable codes DOPSD0201 and

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	information as the data is calculated from the variable code DOPSD0201, which MVA non-coincident maximum demand at zone substation level, and variable code DOPCN01, which is total customer numbers—both are sources of actual data and so the derived demand density should be considered actual information and are directly reconcilable with JEN's internal business records.	kVA non-coincident Maximum demand (at zone substation level)/ no of customers $$DF_x = \frac{MD_x}{C_x}$$ Where: DF_x = Density Factor for year x MD = non-coincident maximum demand at zone substation level (kVA) in year x as per variable code DOPSD0201 x 1000 C = total number of customers on JEN network in year x as per variable code DOPCN01	DOPCN01

106.

Estimated Information

107. No estimated information is provided.

3.7.2 TERRAIN FACTORS

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOEF0201	This is an actual number for 2015. JEN's GIS is the single source of actual data for distribution asset inventory. The data is extracted from GIS and is therefore considered actual information.	An actual number is provided for 2015. A list of information relating to all HV lines is extracted from the GIS and reported in JEN's annual RIN Appendix C Table 4a. . The sum of the feeders defined as rural is then proportioned against the total network Line Length	No assumptions have been made in providing this information.
DOEF0202, DOEF0203, DOEF0204 and DOEF0214	The source of the information is the Vegetation Management System (VMS). The data is collected in the field and entered into data collection devices and is then loaded into the VMS. Reports are run directly from the VMS. JEN thereby considers these variables to be actual information as they can be directly drawn from JEN's internal business records.	The data collected in the field and loaded into the VMS includes the feeder that the span is connected to (thus it is possible to determine whether the feeder is in the rural or urban area and whether it is in a bushfire risk area as defined by the Country Fire Authority (CFA)).	No assumptions have been made in providing this information.
DOEF0205	The source of the information is the JEN GIS. The data is collected in the field and entered into data collection devices and is then loaded into the VMS.	Jemena records the number of poles and does not record the number of spans. The total number of spans is the total number	The assumption has been made that public lighting poles are to be included in the total pole number because there are public lighting poles that are serviced overhead as well as underground. The public lighting poles that are

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Source and why actual	Methodology	Assumptions
	Reports are run directly from the GIS. JEN thereby considers these variables to be actual information as they can be directly drawn from JEN's internal business records.	of poles less one.	serviced underground also receive management to assess and clear vegetation from poles.
DOEF0206 - DOEF0207	The source of the information is the Jemena Electric Line Clearance Management Plan for 2015, which document the actual vegetation maintenance span cycles applied to each of the specified areas.	The methodology that has been used is to determine the optimum cycle which is compliant with the Electric Line Clearance Regulations 2010.	Jemena's Electric Line Clearance Management Plan specifies the cycle times for CFA fire rated areas. For variable DOEF0206 it is assumed that all sections of urban and CBD feeders are within the Low Bushfire Risk Area and all sections of rural feeders are within the Hazardous Bushfire Risk Area.
DOEF0210, DOEF0211	JEN considers this variable to be actual information as the average number of defects per vegetation maintenance span is extracted from process data captured in the VMS. All information can be directly verified via VMS.	The average number of Defects per vegetation Maintenance Span is calculated by dividing the number of Defects (action spans) with maintenance spans at the end of each calendar year. JEN refers to this average as the "find rate" for a given year.	A "defect" is defined as any span which requires cutting (pruning or removal) in the year in question and is known as an "action span" in the VMS.
DOEF0212	JEN considers this variable to be actual information as Victoria has no tropical areas.	Not applicable	No assumptions have been made in providing this information.

Estimated Information

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
DOEF0208	JEN's vegetation Management System (VMS) does not record an actual count of the number of trees per maintenance span. The VMS records the number of maintenance spans but not the number of trees per maintenance span. Therefore JEN provided its best estimate	Average number of trees obtained from a physical survey of 150 urban spans conducted in Jan 2014. As JEN applies a two-yearly cutting cycle, it considers that the 2014 survey sample data is still relevant to the 2015 response as the data is within JEN's standard cutting cycle.	Based on local knowledge the spans selected for survey were assumed to be representative of all urban maintenance spans. It is assumed that Jan 2014 survey results are valid for at least one cycle. If a tree was likely to require pruning within the next 5 years it was counted as a tree in that span.	The estimate is JEN's best estimate because the methodology is representative and provides reasonable accuracy. Other photographic data sources such as NDVI and NVIS do not lend themselves to accurately estimating

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
	for this information using a sampling approach which conforms with the guidance set out in the Instructions and Definitions RIN document.		Locations for the survey were chosen on experience so as not to overstate or understate the average number of trees per span. Spans without trees were also counted giving a result representative of the total number of trees managed in the urban area.	numbers of trees per maintenance span. This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.
DOEF0209	JEN's vegetation Management System (VMS) does not record an actual count of the number of trees per maintenance span. The VMS records the number of maintenance spans but not the number of trees per maintenance span. Therefore JEN provided its best estimate for this information using a sampling approach which conforms with the guidance set out in the Instructions and Definitions RIN document.	Average number of trees obtained from a physical survey of 100 rural spans conducted in Jan 2014. As JEN applies a two-yearly cutting cycle, it considers that the 2014 survey sample data is still relevant to the 2015 response as the data is within JEN's standard cutting cycle.	Based on local knowledge the spans selected for survey were assumed to be representative of all rural maintenance spans. It is assumed that Jan 2014 survey results are valid for at least one cycle. If a tree was likely to require pruning within the next 5 years it was counted as a tree in that span. Locations for the survey were chosen on experience so as not to overstate or understate the average number of trees per span.	The estimate is JEN's best estimate because the methodology is representative and provides reasonable accuracy. Other photographic data sources such as NDVI and NVIS do not lend themselves to accurately estimating numbers of trees per maintenance span. This approach is the most reasonable given the availability of data. JEN is not aware of a superior technique, given the data availability constraints.
DOEF0213	JEN has estimated this information because this variable is not recorded in the GIS as a characteristic against each pole.	The estimate is made based on local knowledge and relevant safety legislation e.g. CFA Act which states that petrol powered vehicles are not to be driven where their exhaust systems may contact vegetation such as grass, during the declared fire danger period (approximately 6 months in any 12 month	To arrive at a number which is the most realistic, the following assumptions were made: 1. All poles in the urban areas can be accessed by standard vehicles, therefore poles/lines in rural areas only are considered for this variable.	JEN considers this to be its best estimate as the basis of the estimate is robust, and furthermore, the JEN area is relatively flat and most poles are accessible within 10km on foot from the nearest road or path accessible by

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
		period). Methodology used is as follows: 1. An average HV and ST span in the rural area is calculated based on the total length of HV and ST conductor length and the number of all poles supporting these conductors in this area. Some poles may be counted twice in order to estimate a realistic span length. 2. The GIS is used to find all poles located on private property in rural areas. These poles are filtered such that only poles supporting HV or ST are counted and each pole is only counted once. 3. The inaccessible line length is calculated by multiplying item 1 and 2 above. 4. The accessible line length is calculated by subtracting item 3 above from the total JEN route line length for all voltages.	2. All poles supporting LV in the rural areas are accessible by standard vehicles. 3. All private poles in the rural areas are accessible by standard vehicles. 4. Only JEN owned poles need to be accessed. 5. All poles not accessible by standard vehicle are accessible in a straight line along the span. 6. Due to the weight of equipment being carried this estimate does not apply to asset inspection and work crew vehicles. 7. A standard vehicle is reference to a two wheel drive sedan/hatch type vehicle predominantly for the use by office based staff for auditing, scoping, event investigation or similar purposes. 8. Only poles supporting HV or ST lines which are not on a road reserve are inaccessible by standard vehicle due to the designed route of these lines.	standard vehicle. The use of non-standard vehicles allows for better and timelier information capture for auditing or job scoping purposes. Whilst some LV only poles are inaccessible by standard vehicles the majority are in relatively close proximity to dwellings (assumed to be accessible by standard vehicle). Conversely poles supporting HV lines were generally designed to take the shortest route and most do not have defined paths leading to or near them. It is JEN's experience that none of these poles are accessible in a straight line from pole to pole but because the location and length of paths (route to the pole) is not recorded and not wishing to overstate the distance to a pole (only the portion inaccessible to a standard vehicle) JEN chose to represent 100% of the distance between poles off road. This approach is the most reasonable given the availability of data. JEN is

Variable	Why estimate, not actual	Basis for estimate	Assumptions	Why best estimate
				not aware of a superior technique, given the data availability constraints.

3.7.3 SERVICE AREA FACTORS

Actual Information

Variable	Source and why actual	Methodology	Assumptions
DOEF0301	JEN considers this variable to be actual information as the information was sourced from GIS.	A program was written to determine the route line length at the end of 2015. The number provided here includes the route line length of the JEN above ground and underground network. Same as for the overhead lines a program was written in the GIS to extract the route length of underground cables. For overhead conductor the program looks for multiple lines between poles and only counts this distance once. For underground cables, each cable is divided into 1m lengths and if a 1m segment from another cable is within 3m of any other segment then only one segment is counted.	Service lines are not included.

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd

Estimated Information

108. No estimated information is provided.

4. ATTACHMENT 1

109. See attached Microsoft Excel spreadsheet titled: ***JEN – EBT allocation model – FINAL – 30 Apr 14 – AER***

Public—29 April 2016 © Jemena Electricity Networks (Vic) Ltd