Consolidated RIN Basis of Preparation

This document is an attachment to the written response to the Regulatory Information Notice (**RIN**) dated 28 October 2015 served on Tasmanian Networks Pty Ltd ABN 24 167 357 299 (**TasNetworks**) by the Australian Energy Regulator (**AER**), hereafter called the **Reset RIN**.

For ease of reference, the numbering of the tabs and tables in the Reset RIN template is preserved in this document.

This document is the collated Basis of Preparation required by paragraph 1.3 of the RIN.

Contents

2.4 Augex Model

Table 2.4.1 Augex model inputs - asset status - sub-transmission lines

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.1 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

Feeder demand data has been extracted from SCADA data accessed from the PI Historian tool.

Feeder line ratings are manufacturers ratings for conductor or cable. In some cases feeder ratings are the result of specific study of the burial of cable at the exit point of the substation

Route length data has been extracted from GIS systems

Feeder growth has been extracted from annual load forecasting activities

(c) Methodology and assumptions

Feeder demands are extracted at a half hourly level and filtered for maximum demand information. Probability of exceedance is not calculated at a feeder level by TasNetworks. Any feeder level maximum demand data is raw data.

Feeder line ratings are manufacturers ratings for conductor or cable. In some cases feeder ratings are the result of specific study of the burial of cable at the exit point of the substation.

Feeder growth at the substation level is applied across all feeders exiting each substation

(d) Estimated information

Not applicable, there was no estimated information.

Table 2.4.2 Augex model inputs - asset status - HV feeders

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.2 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

Feeder demand data has been extracted from SCADA data accessed from the PI Historian tool.

Feeder line ratings are manufacturers ratings for conductor or cable. In some cases feeder ratings are the result of specific study of the burial of cable at the exit point of the substation

Route length data has been extracted from GIS systems

Feeder growth has been extracted from annual load forecasting activities

(c) Methodology and assumptions

Feeder demands are extracted at a half hourly level and filtered for maximum demand information. Probability of exceedance is not calculated at a feeder level by TasNetworks. Any feeder level maximum demand data is raw data.

Feeder line ratings are manufacturers ratings for conductor or cable. In some cases feeder ratings are the result of specific study of the burial of cable at the exit point of the substation. TasNetworks does not keep operational ratings for distribution feeders.

Feeder growth at the substation level is applied across all feeders exiting each substation

(d) Estimated information

Not applicable, there was no estimated information.

Table 2.4.3 Augex model inputs - asset status - sub-transmission substations & switching stations and zone subs

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.3 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

Zone substation demand data has been extracted from SCADA data accessed from the PI Historian tool.

Transformer rating information is extracted from manufacturers specifications

Demand growth has been extracted from annual load forecasting activities

(c) Methodology and assumptions

Zone substation demands are extracted at a half hourly level by summating the two incoming sub-transmission feeders and filtering for maximum demand information. Probability of exceedance is calculated during the annual load forecasting process. For more detail on the weather correction please see basis of preparation for section 3.4.

Zone substation growth at the is sourced from annual load forecasting activities.

(d) Estimated information

TasNetworks does not utilise cyclic substation ratings. These have been estimated at a 30% increase of the name plate rating.

2.4.4 Augex model inputs - asset status - distribution substations

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.4 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

Distribution substation data was extracted from GIS systems. Other data used in the calculation of utilisation was extracted from GIS systems and load forecasts.

(c) Methodology and assumptions

Utilisation for individual distribution substations is not available. Utilisation is calculated by feeder by taking the total feeder maximum demand as a percentage of the total connected transformer capacity and this utilisation is applied to every substation connected to the feeder. Feeders each have a category of Urban, Short Rural and Long Rural and the distribution substations are then grouped according to this measure. The resulting utilisations are recorded in table 2.4.4.

(d) Estimated information

Not applicable, there was no estimated information.

2.4.5 Network segment data

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.5 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

The information provided in table 2.4.5 is not normally collected or calculated by TasNetworks. The information provided in this table has been calculated by Brian Nuttall as a consultant for TasNetworks. For detail surrounding the calculation please refer to the report "AER Augex Model Assessing the TasNetworks Augex Forecast", Nuttall Consulting, January, 2016.

(c) Methodology and assumptions

See response to (b).

(d) Estimated information

Not applicable.

2.4.6 Capex and network capacity added by segment group

(a) Compliance with the requirements of the RIN

Information provided in table 2.4.6 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

Information provided in table 2.4.6 was extracted from programs of work developed for the current and upcoming regulatory periods.

(c) Methodology and assumptions

Please refer to the relevant management plans for detail on the formulation of the programs of work.

(d) Estimated information

Not applicable, there was no estimated information.

2.11 Labour

Table 2.11.3.1 Labour Opex

Table 2.11.3.2 Labour Capex

(a) Compliance with the requirements of the RIN

The labour data reported in Tables 2.11.3.1 and 2.11.3.2 has been prepared in accordance with the Regulatory Information Notice under Division 4 of Part 3 of the National Electricity law specifically paragraphs 4.1-4.4 of Appendix E – Principles and Requirements. On this basis, the information provided regarding labour is consistent with the requirements of the RIN, in that:

- only labour costs allocated to the provision of standard control services have been reported;
- labour used in the provision of contracts has not been reported;
- Labour has been broken down (both employees and labour contracted through hire contracts) into the categories provided in the regulatory template 2.11.
- Quantities of labour expenditure, or stand down periods have not been reported multiple times across the regulatory templates.
- The Forecast years have been appropriately calculated in real June 2017 dollars.

(b) Information sources

All information has been obtained from the Navision Finance System and the Payroll System (PeopleSoft).

(c) Methodology and assumptions

- In-house Labour expenditure has been obtained by gathering total labour costs (based on the definition of Labour Expenditure provided by the AER) and then identifying only Standard Control labour (based on the work category codes in Navision).
    - All other expenses included in Labour Expenditure such as training & study assistance have been obtained by identifying items which were allocated to Standard Control.
    - For Termination Payments, where the employee can be directly associated with Standard Control services, only those employees costs have been included.
- Labour expenditure outsourced to related parties (as defined by the AER) has been defined as Contract Labour engaged in undertaking standard control services. During the reporting period, no contract labour by a related party was engaged by TasNetworks or Aurora.
- Labour expenditure outsourced to unrelated parties has been defined as contract labour engaged in undertaking standard control services. The allocation of standard control costs has been identified using total contract labour for the period based on the standard control work category codes in Navision.

- Controllable non-labour expenditure has been defined as total costs that are incurred as part of ordinary standard control business activities, excluding labour and uncontrollable expenses.
- Uncontrollable non-labour expenditure has been defined as standard control expenditure that is incurred as a result of unforeseen events, such as extreme weather conditions.
    - The calculation of this expenditure has been based on:
        - the expenses charged to the non-routine Non-NW Maintenance Emergency and Unscheduled Power Systems work category codes in Navision, excluding labour costs; and
        - specific costs directly related to unforeseen events, including: GSL payments, Damage Claims and Customer Charter Claims.

(d) Estimated information

No estimates have been used in preparing this RIN.

2.14 Forecast Price Changes

Table 2.14.1 Forecast Labour and Materials Price Change

TasNetworks has not calculated historical labour and materials price changes as it absorbed all such changes within its expenditure for the current regulatory control period.

2.17 Step Changes

Table 2.17.3 Forecast Opex Step Changes for Dual Function Assets

TasNetworks has no Dual Function Assets.

Table 2.17.4 Forecast Opex Step Changes for Dual Function Assets

TasNetworks has no Dual Function Assets.

3.1 Revenue

Table 3.1.1 Revenue grouping by chargeable quantity

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. Revenue forecasts are provided for Standard Control Services and Alternative Control Services, and then further split according to the definitions associated with the variables.

(b) Information sources

The data for all of the variables in this table is sourced from TasNetworks' forecasting and pricing models.

(c) Methodology and assumptions

DREV0101

This variable relates to forecast revenue from network tariff fixed daily charge components, and includes the following network tariffs:

- TAS31 – General Network – Residential
- TAS22 – General Network – Business
- TAS34 – General Network – Business, Nursing Homes
- TASCURT – General Network – Business, Curtilage
- TAS41 – Uncontrolled Energy
- TAS61– Controlled Energy
- TAS63 – LV Controlled Energy
- TASUMS – Small LV Unmetered
- TAS75 – LV Irrigation – TOU
- TAS82 – LV kVA Demand
- TASSDM – HV kVA Specified Demand
- TAS101 – LV PAYG
- TAS94 – LV TOU – Business
- TAS93 – LV TOU – Residential
- Large Low Voltage Commercial Demand
- Low Voltage Commercial Demand
- Residential Demand

DREV0102

This variable relates to forecast revenue from network tariffs comprised of energy charging parameters where charges do not vary based on time of use, and includes the following network tariffs:

- TAS31 – General Network – Residential
- TAS22 – General Network – Business
- TAS34– General Network – Business, Nursing Homes
- TASCURT – General Network – Business, Curtilage
- TAS41– Uncontrolled Energy
- TAS61 – Controlled Energy
- TAS63 - LV Controlled Energy
- TASUMS - Small LV Unmetered
- TAS82 – LV kVA Demand
- TAS101 – LV PAYG

DREV0103, DREV0104, DREV0105

Various tariffs have different time periods in respect to peak, shoulder and off-peak, these periods have been utilised for completion of this table, the table includes the following network tariffs.

- TAS15 – Business HV – Specified Demand (>2.0MVA)
- TAS75 – LV Irrigation – TOU
- TAS93 – LV TOU – Residential
- TAS94 – LV TOU – Business
- TASSDM – HV kVA Specified Demand

DREV0106

This variable relates to forecast revenue from network tariffs for controlled load, and includes the following network tariffs:

- TAS61 – Controlled Energy
- TAS63 – LV Controlled Energy

DREV0107

This variable relates to forecast revenue related to network tariffs for unmetered supplies, and includes the following network tariffs:

- TASUMS – Small LV Unmetered; and
- TASUMSSL – Street Lighting.

DREV0108

This variable relates to forecast revenue relating to excess or additional demand network charges (tariff components). TasNetworks' demand-based network tariffs include a charging parameter for excess demand, demand over and above a specified or contract level is charged at a different rate. TasNetworks' demand-based network tariffs include the following:

- TASSDM – HV kVA Specified Demand
- TAS15 – HV kVA Specified Demand (>2.0 MVA)
- TASCUS1 – Customer Calculation – Negotiated Tariff
- TASCUS4 – Customer Calculation – Negotiated Tariff

DREV0109

This variable relates to forecast revenue relating from network demand-based network tariffs (excludes revenue received as a result of excess demand charges). TasNetworks demand-based network tariffs include:

- Large Low Voltage Commercial Demand
- Residential Demand
- Low Voltage Commercial Demand
- TAS82 – LV kVA Demand
- TASSDM– HV kVA Specified Demand
- TAS15– HV kVA Specified Demand (>2.0 MVA)
- TASCUS1 – Specific Customer Calculation – Negotiated Tariff
- TASCUS3 – Specific Customer Calculation – Negotiated Tariff
- TASCUS4 – Specific Customer Calculation – Negotiated Tariff

DREV0110

This variable relates to forecast revenue from daily metering charge components associated with the following network tariffs:

- TAS31 – General Network - Residential
- TASCURT – General Network – Business, Curtilage
- TAS82 – LV kVA Demand
- TAS22 – General Network - Business
- TAS34– General Network – Business, Nursing Homes
- TAS94 – LV ToU Business
- TAS61 – Controlled Energy
- TAS63 – Controlled Energy
- TAS41 – Uncontrolled Energy
- TAS93 – LV ToU - Residential

- TAS75 – LV Irrigation (ToU)
- TAS101 – LV PAYG

DREV0111

This variable relates to revenue received from connection charges. TasNetworks receives no revenue from connection charges.

DREV0112

This variable relates to revenue received from the provision of public lighting services and contract lighting services.

Values for this variable were sourced from TasNetworks' metering and billing systems.

DREV0113

This variable relates to revenue received from "other" sources:

- Revenue derived from the provision of fee based services (special services) and quoted services was captured in TasNetworks' financial systems, no data manipulation was required.
- The movement in unbilled energy was as reported in TasNetworks' Annual Reporting RIN.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.1.2 Revenue grouping by customer type or class

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. Revenues forecasts are provided for Standard Control Services and Alternative Control Services, and then further split according to the definitions associated with the variables.

(b) Information sources

The data was sourced from:

- TasNetworks' forecasting and pricing models.

(c) Methodology and assumptions

DREV0201

This variable relates to revenue from residential customers, which incorporates both Standard Control Services and Alternative Control Services.

All data for variable DREV0201 is sourced from TasNetworks' forecasting and pricing models.

Standard Control Services

The following tariffs are applicable to residential consumers:

- TAS31 – General Network Residential
- TAS41 – Uncontrolled Energy
- TAS61 – Controlled Energy
- TAS63 – Controlled Energy
- TAS93 – LV ToU Residential
- TAS41 – Uncontrolled Energy
- TAS61 – Controlled Energy
- TAS63 – Controlled Energy
- Residential Demand

Alternative Control Services

The primary tariff and NMI installation type was used to ensure that only revenue relating to residential customers is included in DREV0201.

DREV0202

This variable relates to revenue from non-residential customers, which incorporates both Standard Control Services and Alternative Control Services.

All data for variable DREV0202 is sourced from TasNetworks' forecasting and pricing models.

Standard Control Services

Revenue received via the following non-residential tariffs:

- TAS22 – General Network – Business
- TAS34– General Network – Business, Nursing Homes
- TASCURT – General Network – Business, Curtilage
- TAS75 – LV Irrigation – TOU
- TAS94 – LV TOU – Business

Alternative Control Services

Revenue received for the provision of metering services to residential customers only, the primary tariff and NMI installation type has been used to ensure only revenue relating to residential customers has been included in DREV0201.

DREV0203

This variable relates to revenue from non-residential LV customers on demand tariffs, which incorporates both Standard Control Services and Alternative Control Services.

All data for variables DREV0203 is sourced from TasNetworks' forecasting and pricing models.

Standard Control Services

The following demand tariffs are applicable to non-residential LV customers:

- TAS82 – LV KVA Demand
- Low Voltage Commercial Demand
- Large Low Voltage Demand

DREV0204

This variable relates to revenue from non-residential HV customers on demand tariffs, which incorporates both Standard Control Services and Alternative Control Services.

All data for variables DREV0204 is sourced from TasNetworks' forecasting and pricing models.

Standard Control Services

The following demand tariffs are applicable to non-residential HV customers:

- TASSDM – HV kVA Specified Demand;
- TAS15 – HV kVA Specified Demand (>2.0 MVA); and
- TASCUS1-4 - Individual Network Tariff Calculations.

Alternative Control Services

The primary tariff and where applicable the installation type was used to ensure that only revenue relating to non-residential customers is included in DREV0204.

Please note that many of these sites have contestable (unregulated) metering.

DREV0205

This variable relates to revenue from unmetered supplies, which incorporates both Standard Control Services and Alternative Control Services.

All data for variables DREV0205 is sourced from TasNetworks' forecasting and pricing models.

The applicable network tariffs are:

- TASUMS – Small LV Unmetered
- TASUMSSL – Street lighting

DREV0206

This variable relates to revenue from "other" customers, which incorporates only Alternative Control Services.

All data for variables DREV0206 is sourced from TasNetworks' forecasting and pricing models.

(d) Estimated information

Not applicable, there was no estimated information.

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

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN.

(b) Information sources

Not applicable.

(c) Methodology and assumptions

- DREV0301 – Forecast EBSS bonuses included in the table, amounts are consistent with the PTRM.
- DREV0302 – No STPIS revenue adjustments assumed.
- DREV0303 – There is no S-Factor for TasNetworks.
- DREV0304 – There is no S-Factor true up applicable to TasNetworks.
- DREV0305 – There are no other incentive scheme amounts applicable to TasNetworks.

(d) Estimated information

Not applicable, there was no estimated information.

3.2 Operating Expenditure

Table 3.2.1.1 Current opex categories and cost allocations

Table 3.2.2.1 Opex Consistency – Current Cost Allocation Approach

(a) Compliance with the requirements of the RIN

Information provided in tables 3.2.1.1 and 3.2.2.1 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

The expenditure data reported was sourced from the expenditure forecast models.

(c) Methodology and assumptions

The base step trend model has been used to derive the opex forecast. The category level information has been prepared based on the historical RIN reporting.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.2.4 Opex for high voltage customers

(a) Compliance with the requirements of the RIN

Information provided in tables 3.2.4 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

The expenditure data reported was sourced from the expenditure forecast models.

(c) Methodology and assumptions

The base step trend model has been used to derive the opex forecast. The category level information has been prepared based on the historical RIN reporting.

(d) Estimated information

Not applicable, there was no estimated information.

3.3 Assets (RAB)

Table 3.3.1 RAB vales

Table 3.3.2 Asset value roll-forward

Table 3.3.3 Total disaggregated RAB asset values

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. The variables rely on historical information recorded in TasNetworks' audited Statutory Accounts and information submitted to the AER by TasNetworks within the Roll Forward Model and Post Tax Revenue Model.

(b) Information sources

The information is sourced as follows:

- Unless otherwise noted, actual values reconcile to values previously reported as part of the RAB roll forward underpinning the revenue calculation for the 2012-2017 Determination.
- Forecasts reconcile and are sourced from the Roll Forward Model and the Post Tax Revenue Model.

(c) Methodology and assumptions

The values in this table were calculated as the average of the opening and closing RAB values for the relevant Regulatory Year.

DRAB0201, DRAB0301, DRAB0401, DRAB0501, DRAB0601, DRAB0701, DRAB1001, DRAB1101

Actual values reconcile to values previously reported as part of the RAB roll forward underpinning the revenue calculation for the 2012-2017 Determination (with forecasts replaced with actuals).

Forecast capex additions reconciles with the value provided in the Roll Forward Model and the Post Tax Revenue Model.

DRAB0901

RAB value consistent with the RAB Framework.

Easements

The following orange easement variables have had zero entered:

- DRAB0801 - Opening value.
- DRAB0802 - Inflation addition.
- DRAB0805 - Actual additions (recognised in RAB).
- DRAB0806 – Disposals.
- DRAB0807 - Closing value for easements asset value.

Inflation addition (DRABxx02 variables)

Inflation addition was applied in a manner consistent with the AER's Roll Forward Model and Post Tax Revenue Model.

Straight line depreciation (DRABxx03 variables)

Straight line depreciation was calculated based on the average remaining asset lives and standard remaining lives (for capex additions). The methodology for calculation of weighted average remaining lives and standards is consistent with that outlined in the Instructions and Definitions, that is, based on RAB value.

Regulatory depreciation (DRABxx04 variables)

This value is equal to the straight line depreciation less the inflation on the opening RAB.

Disposals (DRABxx06)

This values represent proceeds from sale as reported in the Annual RIN and forecasted within the Roll Forward Model and Post Tax Revenue Model.

Closing values (DRABxx07 variables)

These variables are calculated from the xx01 – xx06 values.

Table 3.3.3 Total Disaggregated RAB Asset Values

These variables are calculated as the average of the opening and closing RAB values for the relevant Regulatory Year for the other assets with long lives asset class.

Table 3.3 Asset Classification

Asset classes have been classified into the Benchmarking RIN reporting asset classes based on the definitions provided.

The following asset classes have been included in the for "other" asset items with long lives:

- Distribution Switching Stations (Ground) - Includes HV switching stations and switching points relating to underground assets (Standard Control and Network Services).
- Non-System Property - Property associated with depots and facilities, excludes property associated with substations and power line access (Standard Control and Network Services).
- HVST Service Connections - Service connection assets for high voltage sub transmission connected customers (Standard Control).
- HV Service Connections - Service connection assets for high voltage connected customers (Standard Control).
- HV Metering CA Service Connections - Includes voltage and current transformer, associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for HV meter installations (Standard Control).
- HV/LV Service Connections - Service connection assets for customers who are supplied at high voltage and metered at low voltage (Standard Control).

- Business LV Service Connections - Includes the overhead service conductor, service fuses and associated connections/fittings used to connect domestic LV installations to the network at a voltage of 415 volts or lower (Standard Control).
- Business LV Metering CA Service Connections - Includes LV current transformers and associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for business LV metering installations (Standard Control).
- Domestic LV Service Connections - Includes the overhead service conductor, service fuses and associated connections/fittings used to connect domestic LV installations to the network at a voltage of 415 volts or lower (Standard Control).
- Domestic LV Metering CA Service Connections - Includes LV current transformers and associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for domestic LV metering installations (Standard Control).
- Voltage Regulators on Distribution Feeders - Includes voltage regulators for HV feeder either pole or ground mounted (Standard Control and Network Services).
- Street lighting (Alternative Control Services only).

The following asset classes have been included in the for “other” asset items with short lives:

- Emergency Network Spares - Includes other system assets for example, spare parts that are not part of inventory, such as mobile generators and emergency substations (Standard Control).
- SCADA - SCADA system and Control Centre IT systems and facilities (Standard Control).
- Motor Vehicles - Non-network capital expenditure directly attributable to the purchase, replacement, and maintenance of motor vehicle assets, excluding mobile plant and equipment (Standard Control, Network Services and Alternative Control Services).
- Minor Assets - Includes all minor assets and typically includes field services tools and equipment and IT assets (hardware) (Standard Control, Network Services and Alternative Control Services).
- Spare Parts - Includes other system assets which form inventory (Standard Control, Network Services and Alternative Control Services).
- NEM Assets - Includes assets relating to NEM entry and FRC (Standard Control, Network Services and Alternative Control Services).

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.3.4.1 Asset lives - estimated service life of new assets

Table 3.3.4.2 Asset lives - estimated residual service life

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. The variables rely on information provided by TasNetworks within the Roll Forward Model and Post Tax Revenue Model.

(b) Information sources

The information was sourced from the following:

- TasNetworks' Economic Benchmarking Assets models updated for the current regulatory control period.
- Roll Forward Model and Post Tax Revenue Model.

(c) Methodology and assumptions

The asset classes used are the same as the asset classes that are used to describe TasNetworks' Regulatory Asset Base.

The standard asset lives applied to each asset class are consistent with TasNetworks' submissions to the AER's 2012 Distribution Determination. Where asset categories comprise a number of asset classes, consistent with the AER's instructions, the asset lives for the whole category were calculated by weighting the lives of individual asset classes within that category on the basis of replacement cost.

The asset replacement costs used to derive weighted ages, weighted average useful lives and weighted average residual service lives for each category of asset reflect the Optimised Replacement Cost of the period additions to each asset class reported in TasNetworks' Regulated Accounts for 2014-15.

In order to estimate residual asset lives, for each class of asset a weighted average end of year age was calculated. For assets commissioned prior to and including 1998 within each asset class, an estimate of the consolidated residual life of those assets was applied and these have been treated as having been commissioned in 1998 (refer Section e – Estimated Information below). The weighted average age of each asset class reflects the age of those assets as at the end of the year.

The average age for each asset class was weighted on the basis of the proportional contribution to the total cumulative replacement cost of that asset class. The estimated residual service life for a given asset class was calculated by subtracting the weighted average age of that asset class from the relevant standard asset life.

It is noted that where the period additions to an asset class are, at the end of any given regulatory year, of an age that exceeds the estimated service life of new assets in that asset class, rather than ascribe a negative residual service life to that asset class, the estimated residual service life of the assets in question was deemed to be nil. This was done to reflect that, while a negative residual service life may indicate the extent to which an asset is theoretically overdue for replacement, in practice the assets in question simply have no

residual service life remaining, and the use of negative residual service lives would distort calculations of collective residual service lives.

Where an Asset Category is comprised of a single asset class, the standard operating life of that class of asset was deemed to be the estimated service life of new assets for the corresponding Asset Category, and the estimated residual service life applying to that asset class for a given regulatory year was also applied to the Asset Category in question.

In cases where an Asset Category comprises a number of asset classes, the weighted average asset ages, useful lives and residual service lives of each asset class making up the Asset Category, which have been calculated separately as described above, were themselves averaged in order to derive an average useful asset life and estimated residual service life for the Asset Category as a whole. This was done by weighting each asset class' average age, useful life and estimated residual service life on the basis of the optimised replacement cost of each asset class as a percentage of the combined replacement cost of the Asset Category in question.

As part of the AER's determination process the metering standard and average remaining lives were adjusted. These adjustments are reflected in the RAB roll forward model applied for completion of the 2015 Benchmarking RIN Template.

(d) Asset Classification

Asset classes have been classified into the Benchmarking RIN reporting asset classes based on the definitions provided.

The following asset classes have been included in the for "other" asset items with long lives:

- Distribution Switching Stations (Ground) - Includes HV switching stations and switching points relating to underground assets (Standard Control and Network Services).
- Non-System Property - Property associated with depots and facilities, excludes property associated with substations and power line access (Standard Control and Network Services).
- HVST Service Connections - Service connection assets for high voltage sub transmission connected customers (Standard Control).
- HV Service Connections - Service connection assets for high voltage connected customers (Standard Control).
- HV Metering CA Service Connections - Includes voltage and current transformer, associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for HV meter installations (Standard Control).
- HV/LV Service Connections - Service connection assets for customers who are supplied at high voltage and metered at low voltage (Standard Control).
- Business LV Service Connections - Includes the overhead service conductor, service fuses and associated connections/fittings used to connect domestic LV installations to the network at a voltage of 415 volts or lower (Standard Control).

- Business LV Metering CA Service Connections - Includes LV current transformers and associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for business LV metering installations (Standard Control).
- Domestic LV Service Connections - Includes the overhead service conductor, service fuses and associated connections/fittings used to connect domestic LV installations to the network at a voltage of 415 volts or lower (Standard Control).
- Domestic LV Metering CA Service Connections - Includes LV current transformers and associated wiring, meter panel, meter isolation switches, fuses and circuit breakers for domestic LV metering installations (Standard Control).
- Voltage Regulators on Distribution Feeders - Includes voltage regulators for HV feeder either pole or ground mounted (Standard Control and Network Services).
- Street lighting (Alternative Control Services only).

The following asset classes have been included in the for "other" asset items with short lives:

- Emergency Network Spares - Includes other system assets for example, spare parts that are not part of inventory, such as mobile generators and emergency substations (Standard Control).
- SCADA - SCADA system and Control Centre IT systems and facilities (Standard Control).
- Motor Vehicles - Non-network capital expenditure directly attributable to the purchase, replacement, and maintenance of motor vehicle assets, excluding mobile plant and equipment (Standard Control, Network Services and Alternative Control Services).
- Minor Assets - Includes all minor assets and typically includes field services tools and equipment and IT assets (hardware) (Standard Control, Network Services and Alternative Control Services).
- Spare Parts - Includes other system assets which form inventory (Standard Control, Network Services and Alternative Control Services).
- NEM Assets - Includes assets relating to NEM entry and FRC (Standard Control, Network Services and Alternative Control Services).

(e) Estimated information

An approximation has been made for the "replacement cost" and "remaining life" of all assets commissioned prior to and including 1998 which forms the earliest year in the asset and replacement cost data. The replacement cost data applied to these assets incorporates some historic adjustments that were made by the jurisdictional regulator at the establishment of the RAB to arrive at a desired revenue outcome and enshrined in the RAB values when passed to the AER. The methodology has continued to apply these estimates to ensure consistency with the treatment in the determination.

While the Category Analysis template 5.2.1 specifically details Asset Age Profile of certain assets, this information has not been incorporated into the Asset Lives calculations on the basis of the following:

- Category Analysis template data 5.2.1 contains estimated asset data;
- Replacement cost information is not held against this asset data other than the total cost established in 1998 as noted above; and
- The inclusion of asset count data in the calculation of asset lives, as has been applied by TasNetworks, does not change the derived asset life due to the RIN Asset Categories (excluding Metering and Other assets with long and short lives) comprising RAB asset classes all with the same useful life. In this case, the methodology applied does comply with the weighted average asset life calculation detailed by the AER.

The useful life of Metering Assets and Other Assets with Long and Short Lives represents an estimate as the category comprises some RAB asset classes with varying useful lives.

3.4 Operational Data

Table 3.4.1 Total Energy delivered

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It is the total energy delivered (forecast) to customers, as measured at the customers' premises.

(b) Information sources

As for Table 3.4.1.1

(c) Methodology and assumptions

The total energy delivered is the sum of variables DOPED0201 – DOPED0206.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.1.1 Energy grouping - delivery by chargeable quantity

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It is the total energy delivered or forecast to be delivered to customers, as measured at the customers' premises, categorised according to the RIN.

(b) Information sources

The data for all variables in this table was sourced from TasNetworks' forecasting and pricing models.

(c) Methodology and assumptions

General: Time Periods for Time of Use Tariffs

The time periods used in TasNetworks' Time of Use Tariffs are shown in Table 1.

DOPED0201

This variable is the sum of the total energy forecast to be delivered as measured at the customer connection point for the following network tariffs:

- TAS31 – General Network – Residential
- TAS22 – General Network – Business
- TAS34– General Network – Business, Nursing Homes
- TASCURT – General Network – Business, Curtilage
- TAS41 – Uncontrolled Energy
- TAS61 – Controlled Energy
- TAS63 – LV Controlled Energy
- TAS82– LV kVA Demand
- TAS101 – LV
- Large Low Voltage Commercial Demand
- Low Voltage Commercial Demand
- Residential Demand

DOPED0202, DOPED0203, DOPED0204

Data was extracted for each time period for the following time of use tariffs:

- TAS75 – LV Irrigation (ToU)
- TASSDM – HV kVA Specified Demand
- TAS94 – LV ToU - Business
- TAS93 – LV ToU - Residential
- TAS15 – HV kVA Specified Demand (>2.0MVA)
- TASCUS1-4 – Individual Network Tariff Calculation

DOPED0205

This variable is the sum of the total energy delivered or forecast to be delivered as measured at the customer connection point for the following controlled energy tariffs:

- TAS61 – Controlled Energy; and
- TAS63 - LV Controlled Energy.

DOPED0206

This variable is the sum of the total energy delivered or forecast to be delivered as measured at the customer connection point for the following unmetered supply tariffs:

- TASUMS – Small LV Unmetered; and
- TASUMSSL – Street Lighting.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.1.2 Energy - received from TNSP and other DNSPs by time of receipt

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It shows the energy received into the distribution network (or forecast to be delivered) from the TNSP.

(b) Information sources

Information for DOPED0304 is sourced from TasNetworks' metering and billing system and forecasting models.

Information for DOPED0301, DOPED0302 and DOPED0303 is not available as the TUoS charges are not based on time of use charging parameters.

(c) Methodology and assumptions

The variable DOPED0304 is total energy received (or forecast to be received) into the distribution network as reported at the connection points with the transmission network.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.1.3 Energy - received into DNSP system from embedded generation by time of receipt

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. The energy received (or forecast to be received) into the distribution network from embedded generators is categorised into residential and non-residential sources, and then further categorised into the time periods in which the generation occurred.

(b) Information sources

Data for this table is sourced from TasNetworks' market systems.

(c) Methodology and assumptions

General

The time of use periods are shown in Table 1.

Registered generator consumption data are excluded from this information.

DOPED0401, DOPED0402, DOPED403

These variables are the summed reported energy received from interval-metered, non-residential embedded generators by time of receipt.

DOPED0404

This variable reports the summed energy received from basic-metered, non-residential embedded generation, which is not captured in the variables DOPED0401, DOPED0402 and DOPED403.

DOPED0405, DOPED0406, DOPED0407

These variables are the summed reported energy received from interval-metered, residential embedded generators by time of receipt.

DOPED0408

This variable reports the summed energy received from basic-metered, residential embedded generation, which is not captured in the variables DOPED0405, DOPED0406 and DOPED407.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.1.4 Energy grouping - customer type or class

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It shows the energy delivered (or forecast to be delivered) to customers according to categories given in the RIN.

(b) Information sources

The data used to calculate the values for this table was sourced from TasNetworks' forecasting and pricing models:

(c) Methodology and assumptions

DOPED0501

Total energy delivered as forecast for the following residential tariffs:

- TAS31 – General Network Residential;
- TAS41 – Uncontrolled Energy;
- TAS61 – Controlled Energy;
- TAS63 – Controlled Energy;
- TAS93 – LV ToU Residential;
- TAS41 – Uncontrolled Energy;
- TAS61 – Controlled Energy; and
- TAS63 – Controlled Energy.
- Residential Demand

DOPED0502

The whole of the energy forecast for the following tariffs was summed to calculate this variable:

- TAS22 – General Network – Business
- TAS34 – General Network – Business, Nursing Homes
- TASCURT – General Network – Business Curtilage
- TAS75 – LV Irrigation (ToU)
- TAS94 – LV ToU Business

DOPED0503

For this variable, the value was calculated by summing the total forecast energy delivery for the following non-residential low voltage demand based tariffs:

- TAS82 – LV kVA Demand
- Large Low Voltage Commercial Demand
- Low Voltage Commercial Demand

DOPED0504

For this variable, the value was calculated by summing the total forecast energy delivery for the following non-residential high voltage demand based tariffs:

- TASSDM – HV kVA Specified Demand;
- TAS15 – HV kVA Specified Demand (>2.0 MVA); and
- TASCUS1-4 - Individual Network Tariff Calculations.

DOPED0505

For this variable, the value was calculated by summing the total forecast energy delivery for the following network tariffs:

- TASUMS – Small LV Unmetered
- TASUMSSL – Street lighting

(d) Estimated information

Not applicable, there was no estimated information.

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

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

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

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

Table 3.4.3.5 Power factor conversion between MVA and MW

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN.

DOPSD0101, DOPSD0104, DOPSD0107, DOPSD0110, DOPSD0201, DOPSD0204, DOPSD0207, DOPSD0210

The information provided about raw system annual maximum demands for the zone substation level and transmission connection points reports the amount of electricity transported through the network that has been taken from transmission connection points.

DOPSD0102, DOPSD0103, DOPSD0105, DOPSD0106, DOPSD0108, DOPSD0109,DOPSD0111, DOPSD0112, DOPSD0202, DOPSD0203, DOPSD0205, DOPSD0206, DOPSD0208, DOPSD0209, DOPSD0210, DOPSD0211

The information provided about weather adjusted system annual maximum demands for the zone substation level and transmission connection points has been determined in accordance with the definitions provided in the RIN.

DOPSD0301, DOPSD0302, DOPSD0306, DOPSD0308, DOPSD0309, DOPSD0310, DOPSD0307

The information provided about power factor conversion between MVA and MW has been determined in accordance with the definitions provided in the RIN.

(b) Information sources

DOPSD0101, DOPSD0104, DOPSD0107, DOPSD0110, DOPSD0201, DOPSD0204, DOPSD0207, DOPSD0210

All historical data is sourced from the transmission metering and SCADA at connection points.

DOPSD0102, DOPSD0103, DOPSD0105, DOPSD0106, DOPSD0108, DOPSD0109, DOPSD0111, DOPSD0112, DOPSD0202, DOPSD0203, DOPSD0205, DOPSD0206, DOPSD0208, DOPSD0209, DOPSD0210, DOPSD0211

All data is sourced from the latest distribution load forecast prepared by TasNetworks, which includes all historical data sourced from transmission metering and SCADA at connection points.

DOPSD0301, DOPSD0306, DOPSD0308, DOPSD0309, DOPSD0310

All data is sourced from the latest distribution load forecast prepared by TasNetworks, which includes all historical data sourced from transmission metering and SCADA at connection points.

DOPSD0302, DOPSD0307

All data is sourced from the latest distribution load forecast prepared by TasNetworks, which includes all historical data sourced from transmission metering and SCADA at connection points.

(c) Methodology and assumptions

DOPSD0101, DOPSD0104, DOPSD0107, DOPSD0110, DOPSD0201, DOPSD0204, DOPSD0207, DOPSD0210

Half hourly data were extracted from the metering and SCADA systems. Coincident and non-coincident maximum demands are extracted from this data set.

The power factor is measured at the non-coincident peak, and applied across the whole year when converting MW to MVA.

DOPSD0102, DOPSD0103, DOPSD0105, DOPSD0106, DOPSD0108, DOPSD0109, DOPSD0111, DOPSD0112, DOPSD0202, DOPSD0203, DOPSD0205, DOPSD0206, DOPSD0208, DOPSD0209, DOPSD0210, DOPSD0211

Half hourly data was extracted from transmission metering and SCADA systems. Coincident and non-coincident maximum demands are extracted from this data set.

Weather data was retrieved from appropriate Bureau of Meteorology weather stations around the state.

The weather correction process involves temperature sensitivity analysis at system level to determine the demand response to a change in temperature of one degree.

The linear variation of daily maximum demand of each season against daily average temperature was taken as demand sensitivity to temperature.

The relationship between the temperature on the highest demand day and the average long term temperature at the temperature monitoring site was found, to determine the relativity to the 50 POE or 10 POE scenarios.

The 50 and 10 POE temperatures were derived from the long term seasonal minimum of daily average temperatures.

The difference between average temperature of the maximum demand day and POE temperature was multiplied by the temperature sensitivity and added to the maximum demands to derive temperature corrected maximum demand.

The power factor is measured at the non-coincident peak and applied across the whole year when converting MW to MVA.

DOPSD0301, DOPSD0306, DOPSD0308, DOPSD0309, DOPSD0310

The power factor is calculated from the maximum demands given in tables 3.4.3.2 and 3.4.3.4 by separating out into different voltage levels.

DOPSD0302, DOPSD0307

Data is not directly captured for the LV network or HV SWER lines because TasNetworks does not have systems in place to capture such detailed information. Consequently:

The overall network power factor was used as a proxy for low voltage lines.

The network power factor for 22 kV was used as a proxy for SWER lines, because most of the SWER lines are operated at 22 kV.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.3.6 Demand supplied (for customers charged on this basis) - MW measure

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It shows the demand supplied (or forecast to be supplied) to customers according to categories given in the RIN.

(b) Information sources

The data used to calculate the values for this table was sourced from TasNetworks' forecasting and pricing models:

(c) Methodology and assumptions

DOPSD0401

- No applicable tariffs

DOPSD0402

Total demand supplied as forecast for the following tariffs:

- Residential Demand
- Low Voltage Commercial Demand

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.4.3.7 Demand supplied (for customers charged on this basis) - MVA measure

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. It shows the demand supplied (or forecast to be supplied) to customers according to categories given in the RIN.

(b) Information sources

The data used to calculate the values for this table was sourced from TasNetworks' forecasting and pricing models:

(c) Methodology and assumptions

DOPSD0403

- TASSDM – HV kVA Specified Demand;
- TAS15 – HV kVA Specified Demand (>2.0 MVA); and
- TASCUS1-4 - Individual Network Tariff Calculations.

DOPSD0404

Total demand supplied as forecast for the following tariffs:

- TAS82 – LV kVA Demand
- Large Low Voltage Commercial Demand

(d) Estimated information

Not applicable, there was no estimated information.

3.5 Physical Assets

Table 3.5.1.1 Overhead network length of circuit at each voltage

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. A seven year forecast for the total circuit length of TasNetworks-owned conductors is provided, based on historical circuit lengths.

(b) Information sources

Data for these tables was extracted from previous economic benchmarking RINs submitted by TasNetworks and Aurora Energy.

(c) Methodology and assumptions

Five years of circuit length data for each voltage level was populated in a spreadsheet from previous economic benchmarking RIN submissions. The excel function LINEST (linear regression) was used to determine a linear model for future year's circuit lengths. This linear model was used to forecast the circuit lengths for future years. Where the circuit length is zero and has a negative slope coefficient, the forecast for future years is set as zero.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.5.1.2 Underground network length of circuit at each voltage

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. A seven year forecast for the total circuit length of TasNetworks-owned cables is provided, based on historical circuit lengths.

(b) Information sources

Data for these tables was extracted from previous economic benchmarking RINs submitted by TasNetworks and Aurora Energy.

(c) Methodology and assumptions

Five years of circuit length data for each voltage level was populated in a spreadsheet from previous economic benchmarking RIN submissions. The excel function LINEST (linear regression) was used to determine a linear model for future year's circuit lengths. This linear model was used to forecast the circuit lengths for future years. Where the circuit length is zero and has a negative slope coefficient, the forecast for future years is set as zero.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.5.1.3 Estimated overhead network weighted average MVA capacity by voltage class

Table 3.5.1.4 Estimated underground network weighted average MVA capacity by voltage class

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting a length-weighted overall circuit MVA rating based on thermal capacity, as specified.

(b) Information sources

Data for calculation of the parameters in these tables was obtained from:

- the Spatial Data Warehouse;
- the distribution "Standard Element Database"; and
- WASP pole inspection data.

(c) Methodology and assumptions

Variables except DPA0301 & DPA0401

Please note that no ratings have been specified using voltage limitations, as this is thought to introduce too much complexity into the model.

For HV conductors, the SDW was accessed to obtain live conductor type, number of phases (n_p), line-line voltage (V_{LL}) and geographic data.

The length of each conductor segment was calculated from the geographic coordinates, and aggregated by total length, conductor type and voltage.

This was combined with the thermal current rating (I_{TH}) of the conductor type from the Standard Element Database (a conductor characteristic database used normally for network load-flow simulations), defined as the current per phase that a cable can carry continuously without exceeding its rated maximum conductor temperature, at:

- Daytime 10^{o}C, <1.0 m/s wind speed for overhead lines; or
- 15^{o}C ground temperature for underground cables with the following assumed burial depths:

<1 kV	1 < 22 kV	>22 kV
600 mm	900 mm	1000 mm

These characteristics are maintained from a number of sources, typically manufacturer datasheets or calculations from Australian or IEC standards.

Note that these base thermal values are conservative by design (to allow for worst-case modelling) – actual peak capacity may be higher through cyclic loading schemes or more detailed cable modelling, particularly in the case of 33kV sub-transmission lines.

Using the above data, the MVA capacity (*P)* calculation used for single or three phase (SWER) line types is:

$$P_{1ph,3ph} = \frac{V_{LL}}{\sqrt{3}} n_p I_{TH}$$

For two phase lines, the following has been used:

$$P_{2ph} = V_{LL} I_{TH}$$

DPA0301 & DPA0401

A different approach was used for the variables DPA0301 and DPA0401. While a geographic LV line model is available in the SDW, overhead LV conductor type data is very poor. Fractions of LV conductor types have thus instead been estimated from pole inspection data in the WASP database, and subsequently combined with the total LV line length and number of phases from the SDW. This provides a better estimate of the network weighted average MVA capacity, for the following reasons:

- pole inspection records are well maintained and are repeated on ~5 year cycles; and
- fewer than one per cent of LV overhead poles did not have any conductor type associated.

Pole inspection records (routinely performed for condition assessment) also list all LV conductor circuits on the pole. For each conductor type (*t*) of the (*n*) total types in the inspection database, the length of each conductor type (L_t) was estimated from the fraction of LV poles supporting that conductor (P_t):

$$L_t = \frac{P_t}{\sum_n P_t} L_n$$

where the total length (L_n) is known from the SDW model.

The LV SDW model also contains the number of phases – this was averaged and applied across the entire network, since it could not be resolved to each conductor type in the WASP database.

These parameters were the used in same capacity calculation as the HV conductor.

For LV underground cables, it was assumed that ten per cent of cables were ducted and the remainder directly buried. This impacted the thermal ratings used in these calculations.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.5.2.1 Distribution transformer total installed capacity

Table 3.5.2.2 Zone substation transformer capacity

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting distribution transformer capacities according to the definitions in the RIN.

(b) Information sources

Data for the variables in these tables was sourced from:

- the Asset History data warehouse;
- TasNetworks' Inventory Management; and
- TasNetworks' distribution billing data.

(c) Methodology and assumptions

Queries were run on tables in the asset history data warehouse that hold transformer asset information to extract into the Regulatory Reporting data warehouse a static view of all transformers/loads that were active in the system at the end of the financial year.

DPA0501

A query was run on the static transformer data to determine the total installed capacity of distribution transformers in the network owned by TasNetworks. Data was extracted into Table 3.5.2 Transformer Capacities – DPA0501. This figure was added to DPA0503 to produce final DPA0501.

DPA0502

TasNetworks does not possess the data for customer-owned transformers. The connected capacities of HV customers' transformers is approximated as the maximum demand of these customers.

DPA0503

Cold spare capacity holdings and total in stock capacity of distribution transformers from stored data on inventory holdings. Data was extracted into Table 3.5.2 Transformer Capacities – DPA0503.

DPA0601, DPA602

Not applicable as TasNetworks does not have any transformers that meet this condition.

DPA0603, DPA0604, DPA0605

A query was run on the static transformer data to determine the total installed capacity of zone substation transformers in the network owned by TasNetworks. Only transformers that were previously owned by Aurora Energy, and classified as zone transformers have been included. Data was extracted into *Table 3.5.2 Transformer Capacities – 3.5.2.2 and 3.5.2.3*. Transformers were classified into "Zone", "Other" and "Spare". "Zone" and "Spare" transformer capacity MVA were transferred into the template.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.5.3 Public lighting

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting on public lighting luminaires owned by TasNetworks and assets operated and maintained by TasNetworks, and public lighting poles exclusively used for public lighting and owned by TasNetworks and assets operated and maintained by TasNetworks.

(b) Information sources

Data for the variables in this table was extracted from:

- UMS view – Spatial Data Warehouse (SDW)
- Public lighting RIN data supplied by Metering Asset Strategy Team

(c) Methodology and assumptions

DPA0701

A count of public lighting luminaires was extracted from public lighting RIN data.

DPA0702, DPA0703

Queries were run on the UMS data in the SDW to identify public lighting poles that are dedicated to street-lighting by using the pole type attribute of "Streetlight". UMSs that were connected to poles with pole tags of 0 (108) were excluded from this query as the pole type cannot be confirmed and including these figures skewed the query.

Poles were classified as "Columns" if the pole material was "Steel – Other". All other materials were classified as "Poles".

The data was extracted into Excel workbook *Table 3.5.3 Public Lighting – PL Pole Data*.

A pivot of the pole data was extracted into worksheet *DPA0702, DPA0703* to get a unique count of asset Ids.

Poles with a UMS type of PRIVATE were excluded. This is because the primary function of these lights is not for public lighting, and does not meet the definition provided in clause 6.3.

(d) Estimated information

Not applicable, there was no estimated information.

3.6 Quality of Service

Table 3.6.2 Energy not supplied

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN. A seven year forecast for the total energy not supplied by TasNetworks is provided, based on historical estimations of energy not supplied.

(b) Information sources

Data for these tables was extracted from previous economic benchmarking RINs submitted by TasNetworks and Aurora Energy.

(c) Methodology and assumptions

Five years of energy not supplied data for each outage type (planned vs. unplanned) was populated in a spreadsheet from previous economic benchmarking RIN submissions. The excel function LINEST (linear regression) was used to determine a linear model for future year's energy not supplied. This linear model was used to forecast energy not supplied for future years.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.6.3 System losses

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN.

(b) Information sources

Electricity imported is sourced from:

- Table 3.4.1.2 Energy - received from TNSP and other DNSPs by time of receipt; and
- Table 3.4.1.3 Energy - received into DNSP system from embedded generation by time of receipt.

Electricity delivered is sourced from:

- DOPED01 (in Table 3.4.1) - Total energy delivered.

(c) Methodology and assumptions

The system loss percentage is calculated in accordance with equation 2 on page 37 of the RIN.

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.6.4 Capacity utilisation

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting the capacity utilisation of the distribution network in accordance with the definitions provided in the RIN.

(b) Information sources

Non-coincident summated raw system annual maximum demand (MVA measure at zone substation level) is sourced from table 3.4.3.3 (DOPSD0201).

A query was run on the static transformer data to determine the total installed capacity of zone substation transformers in the network owned by TasNetworks. Only transformers that were previously owned by Aurora Energy, and classified as zone transformers have been included.

(c) Methodology and assumptions

The capacity utilisation variable is calculated as the non-coincident summated raw system annual maximum demand (MVA measure at zone substation level) (DOPSD0201) divided by the total zone substation transformer capacity.

(d) Estimated information

Not applicable, there was no estimated information.

3.7 Operating Environment

Table 3.7.1 Density factors

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, being calculated from other variables within the RIN.

(b) Information sources

- Table 3.4.1 DOPED01 Total Energy Delivered
- Table 3.4.2.1 DOPCN01 Total Customer Numbers
- Table 3.4.3.3 DOPSD0201 Non–coincident Summated Raw System Annual Maximum Demand
- Table 3.7.3 DOEF0301 Route Line Length

(c) Methodology and assumptions

- DOEF0101 Customer density: DOPCN01 ÷ DOEF0301
- DOEF0102 Energy density: DOPED01 ÷ DOPCN01
- DOEF0103 Demand Density: DOPSD0201 ÷ DOPCN01

(d) Estimated information

Not applicable, there was no estimated information.

Table 3.7.2 Terrain factors

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting the information sought based on actual and estimated data pertaining to Route Line Length, AER feeder classification and vegetation proximity to TasNetworks' distribution network.

(b) Information sources

Data for the variables in these tables were sourced from:

- the Spatial Data Warehouse (SDW)
- Vegetation Management System
- Vegetation Contractor Expenditure

(c) Methodology and assumptions

General

The information in these tables was built upon the TasNetworks Distribution "Span Model" – a geographic a database of pairs of geographic coordinates that correspond to poles with at least one connecting conductor circuit. The Span Model has been derived from spatial conductor data in the SDW specifically to meet the AER definition of Route Line Length.

Fields containing span data have been escalated for future years based upon the annual growth of the system (Between 2012-13 to 2014-15). An assumption has been made that the percentage of increase spans over this period will remain constant.

Spans containing only LV circuits are not included in the current iteration of the Span Model. TasNetworks' current active (i.e. non-reactive) vegetation management program is based upon the Span Model – LV-only spans are not actively managed.

Each span in the Span Model was assigned a classification based on the AER load-based feeder definitions: CBD, Urban, and Long/Short Rural (assigned in that order for multiple circuit spans).

TasNetworks' primary contractor (responsible for approximately 75% of work) reports the number of spans cleared by feeder. Contractors undertaking the remainder of the work do not yet have the capability to report on the required metrics. To account for this, it was assumed that the work of the other contractors was similar to that of the primary contractor, and the primary contractor data was scaled up.

DOEF0201

The total length of long and short rural spans divided by the total route line length is taken as the rural portion.

DOEF0202 – DOEF0205

These values are extrapolated from data pertaining to TasNetworks' primary contractor.

DOEF0206, DOEF207

TasNetworks' bushfire strategy aims for 1-year cycles for all feeders inside a designated High Bushfire Risk Area. All other feeders aimed to have a 2 year vegetation management cycle target. The average span cycle has been calculated from data provided by ETS within the vegetation management system (special data warehouse).

At the time of gathering data for RIN, policy on vegetation cycles had not changed, therefore the historical cutting cycle is expected to carry through as the planned cutting cycle.

DOEF0208 – DOEF211

Trimmings were taken to correspond to a single defect, while the number of trees was taken to be trimmings plus tree removal. Trees reported in this data as "< 100 mm" or "Scrub control sapling" were excluded as these are not thought to be consistent with the AER definition of a managed "defect". The data from the primary contractor was extrapolated.

DOEF0212

No tropical vegetation communities exist in Tasmania.

DOEF0214

TasNetworks has defined a high bushfire risk zone in conjunction with industry and local climate experts, based on the "Phoenix Rapid-fire" model, which incorporates both bushfire probability/intensity and potential consequences based on infrastructure in the area. Maintenance spans within this zone have been reported.

(d) Estimated information

DOEF0213 – Standard Vehicle Access

This value was estimated as TasNetworks does not explicitly tag its network as "accessible" (or otherwise) in line with the AER definitions.

TasNetworks has a service level agreement supply of up-to-date GIS transport information. This includes known private off-road trails, in addition to all public highways and smaller streets. After excluding trails explicitly flagged "4WD only", the reported km for this factor is the total length of spans not within 25 m of any transport element.

Table 3.7.3 Service area factors

(a) Compliance with the requirements of the RIN

The information provided is consistent with the requirements of the RIN, reporting the Route Line Length as defined in the RIN.

(b) Information sources

Data for this variable was sourced from the Spatial Data Warehouse (SDW).

(c) Methodology and assumptions

The information in these tables is built upon the TasNetworks Distribution "Span Model" – a geographic database of pairs of geographic coordinates that correspond to poles with at least one connecting conductor circuit. The Span Model has been derived from spatial conductor data in the SDW specifically to meet the AER definition of Route Line Length.

The total length of the Span Model, developed explicitly along the definition of this factor, has been reported for all HV routes. Multiple LV circuits are modelled as single lines in the SDW, hence a separate spatial query was run to get the length of al LV spans outside the span model. The reported Route Line Length is the sum of lengths of the span model and separate LV spans.

(d) Estimated information

Not applicable, there was no estimated information.

6.1 Telephone Answering

Table 6.1.1 Telephone Answering Data

(a) Compliance with the requirements of the RIN

Information provided in table 6.1.1 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

- Fault telephone answering data for the period up to and including 31/10/2014 was extracted from “High Path”, the Aurora Energy telephone answering software
- Fault telephone answering data for the period 01/11/2014 to 31/10/2015 was extracted from “OpenScape Contact Centre”, the TasNetworks’ telephone answering software.

(c) Methodology and assumptions

The historical data set is incomplete. Missing “Total number of calls received” and “calls abandoned within 30 seconds” data was replaced with a “0”.

TasNetworks does not have payment lines or automated interactive services, so there is no data for this column.

(d) Estimated information

No information was estimated.

7.1 Shared Assets

Table 7.4.1 Total Unregulated Revenue Earned with Shared Assets

(a) Compliance with the requirements of the RIN

Information provided in table 7.4 was completed in accordance with the definitions provided in the RIN.

(b) Information sources

- Financial System - Navision

(c) Methodology and assumptions

Data is not provided for years prior to 2012-13 because TasNetworks was not regulated by the AER under the Rules.

Pole rental is the only unregulated revenue earned from shared assets.

(d) Estimated information

No information was estimated.