BoP for Economic Benchmarking RIN

Sheet: 3.1 | Actual | FINANCIAL

SOURCE(S): (incl name of report, how extracted)	Data originally comes from two billing data bases ANetworks and Gentrack. Also from Oracle & TM1.
REPORT / EXTRACT DATE:	05 August 2014
FINANCIAL /NON-FINANCIAL: (F/NF)	F
FINANCIAL DATA - Real or Nominal $:	Nominal
OVERHEADS:	Directly attributable
LABOUR / MATERIALS / TOTAL?	Total cost
Can information requested be provided from Actual information? (Y/N)	**Y**

Base date for Real $: 2013/14

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Billing data is journalled to Oracle GL and "unreads" are calculated. Unreads looks at the opening balance for the year plus Electricity receipts less losses less what has been billed. These calculations are consolidate in Oracle GL. The balance is portioned over the different billing groups. Data is not DUoS but NUoS as there is no allocation presently available.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.2 | Estimated | FINANCIAL

SOURCE(S): (incl name of report, how extracted)	Oracle Financial General Ledger/TM1 (Activity Analysis Report)
REPORT / EXTRACT DATE:	05 August 2014
FINANCIAL /NON-FINANCIAL: (F/NF)	F
FINANCIAL DATA - Real or Nominal $:	Nominal
OVERHEADS:	Directly attributable
LABOUR / MATERIALS / TOTAL?	Total cost

Base date for Real $: 2013/14

Can information requested be provided from Actual information? (Y/N)	**Y/N**

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ? Operating expenditure needs to be adjusted for Corporate Services allocation as the depreciation & changes to their costing methodology needs to back out of the regulatory accounts to be consistent with the approved CAM.

What is the basis of estimate ? Adjustments for depreciation & CAM are reworked through corporate services allocation model.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Activity data comes from Oracle which is uploaded into TM1. Corporate overheads from the recent change in CAM are excluded from the calculations. Activities are mapped between Standard Control & Alternate Control with revenue recoveries from customers relating to these activities are netted against operating expenditure.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.2.3 | Actual | FINANCIAL

SOURCE(S): (incl name of report, how extracted)	Oracle Financial General Ledger (Account Analysis Report) -Data directly extracted from Oracle, WASP, Riva or corporate systems in day-to-day operational use.
REPORT / EXTRACT DATE:	30 September 2014
FINANCIAL /NON-FINANCIAL: (F/NF)	F
FINANCIAL DATA - Real or Nominal $:	Nominal
OVERHEADS:	Directly attributable
LABOUR / MATERIALS / TOTAL?	Total cost
Can information requested be provided from Actual information? (Y/N)	**Y**

Base date for Real $: 2013/14

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

PROVISIONS - Report has been reviewed to identify all provisions. Account analysis report has been produced to identify movements for each financial year. Please also refer to ActewAGL's significant accounting policies document.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.3 | Estimated | FINANCIAL

SOURCE(S): (incl name of report, how extracted)

3.3.1 - RAB values sourced from previous benchmarking RIN and the submitted RFM and updated with actual capex outcome in FY14.
3.3.2 - All other categories used in the PTRM map into a single category in the RIN.
3.3.3 - Capital contributions have been updated for actual numbers for FY14.
3.3.4 - Asset Lives 'Other (short term)' and 'Other (long term)' assets: Data is sourced from the PTRM.

REPORT / EXTRACT DATE:	09 October 2014
FINANCIAL /NON-FINANCIAL: (F/NF)	F
FINANCIAL DATA - Real or Nominal $:	Real
OVERHEADS:	Directly attributable
LABOUR / MATERIALS / TOTAL?	Total cost

Base date for Real $: 2013/14

Can information requested be provided from Actual information? (Y/N)

Yes	In relation to capex/cap cons.
No	In relation to the RAB.

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ? Values are a combination of regulatory asset base values, which are effected by past determinations, and forecast capital expenditure and inflation rates.

What is the basis of estimate ? The value of the RAB from the AER's 2009 decision, with dual function assets separated, are rolled forward using the AER's RFM and PTRM with historical and forecast/estimated capex and inflation. These documents will have been submitted as part of AAD's regulatory proposal.

Reasons why this is best estimate ? Data is sourced directly from the PTRM/RFMs in the majority of cases. 'Opening distribution assets' uses the same proportional split underlying the economic benchmarking RIN.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Tables 3.3.1

The opening RAB is sourced from the submitted RFM to the AER in June 2014. Of the categories in the PTRMs, the 'opening distribution assets' category is proportionally split across the categories in the RIN using the same proportions as in the modelling underlying the economic benchmarking RIN submitted earlier in 2014 - i.e.: based on actual data (asset register) as at 2009 June 30. Capex figures have been updated for actual outcome in 2013/14

Tables 3.3.2

Most numbers are sourced directly from or as simple additions of relevant values in the submitted PTRM/RFMs. Of the categories in the PTRMs, the 'opening distribution assets' category is proportionally split across the categories in the RIN using the same proportions as in the modelling underlying the economic benchmarking RIN submitted earlier in 2014 - i.e.: based on actual data (asset register) as at 2009 June 30. Capex figures have been updated for actual outcome in 2013/14

Tables 3.3.3

Most numbers are sourced directly from or as simple additions of relevant values in the submitted PTRM/RFMs, submitted earlier in 2014, but updated for the actual capex in 2013/14. Of the categories in the PTRMs, the 'opening distribution assets' category is proportionally split across the categories in the RIN using the same proportions as in the modelling underlying the economic benchmarking RIN - i.e.: based on actual data (asset register) as at 2009 June 30. Other categories in the PTRM are mapped into a single category in the RIN.

Table 3.3.4
Asset Lives - ‘Other (short term)’ and ‘Other (long term)’ assets:
Data is sourced from the PTRM/RFM.
The RAB asset categories included in ‘Other (long term)’ assets are ‘Buildings’ and ‘Equity raising costs’. Land has been excluded as it does not depreciate and so has no real age.
The RAB asset categories for ‘Other (short term)’ assets are:
• IT & Communication Systems (Networks)
• Motor Vehicles
• Other Non-System Assets (Networks)
• IT Systems (Corporate)
• Telecommunications (Corporate)
• Other Non-System Assets (Corporate)

Tables 3.3.4.1
The average age of new assets is calculated as the weighted standard life used in the PTRM using the capex in 2013/14 as the weight.

Tables 3.3.4.2
The average asset life is calculated by taking the weighted average of remaining lives calculated in the RFM submitted in June 2014. The remaining life is calculated by dividing the real asset base (unadjusted for inflation) by real depreciation, with an adjustment for capital expenditure in the 2013/14 year.

Tables 3.3.4.2 (DRAB 1508, 1509):
Estimated residual service life for 'Other' (long lives and short lives) has been calculated by dividing the opening RAB value for the relevant categories in the PTRM by the depreciation for those categories in that year. Again, land is excluded from the average as it has no real life.

OTHER COMMENTS

Clarifying "Meters" categories:

The forecast life of all meters we expect to install in any year between now and 2019 is currently 20 years. All meters installed are expected to be new meters, meaning that the residual life of any meter installed between now an 2019, at the time of installation, will also be 20 years.
Naturally as these numbers are forecasts the actual numbers may differ in response to changes in the meters used or changes in our knowledge of the meter life cycle.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN — Sheet: 3.3.4.1 — Estimated — NF

SOURCE(S): (incl name of report, how extracted)	From Riva, list of all assets commissioned in the previous financial year, including costs and expected lifetimes.
REPORT / EXTRACT DATE:	13 October 2014
Can information requested be provided from Actual information? (Y/N)	**N**

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.3.4.1 (DRAB1401 to 1406)
Assumes that types and proportional quantities of assets commissioned in the previous financial year are reasonably representative of the types and proportional quantities of assets commissioned in 2013/2014.
Lifetimes were cross-checked and corrected based on the SKM review of lifetime data in Riva
Within each category the weighted average expected life of new assets has been calculated based on the estimated replacement cost of each individual asset
Sum over all assets in a category of (asset life of each asset in the category * the replacement cost for the asset type) / (sum of the replacement costs of all assets in the category)

Table 3.3.4.2 (DRAB1501 to 1506)
Assumes that types and proportional quantities of assets currently in commission are reasonably representative of the types and proportional quantities of assets commissioned in previous years.
Within each category the weighted average residual service life has been calculated based on the estimated replacement cost of each individual asset. Uses same expected lifetimes as for Table 3.3.4.1
Sum over all assets in category of ((expected total lifetime of each asset when new – age of each asset) * estimated replacement cost of the asset)) /(sum of replacement costs of all assets in the category)
Note that where the age of the asset exceeds the expected total lifetime the expected total lifetime of each asset when new – age of asset is set to zero.

OTHER COMMENTS

Comment on DRAB1405 - Underground network assets 33kV and above (cables, ducts etc.) - at the time of the 2014 Reset RIN there were no plans to install this type of asset, thus it is blank. Eastlake has been built in the meantime and now we do have data.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.3 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)	From Riva, list of all assets commissioned in the previous financial year, including costs and expected lifetimes.
REPORT / EXTRACT DATE:	13 October 2014
Can information requested be provided from Actual information? (Y/N)	N

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.3.4.2 (DRAB1501 to 1506)
within each category the weighted average residual service life has been calculated based on the estimated replacement cost of each individual asset. Uses same expected lifetimes as for Table 3.3.4.1

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.4.1 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)

Forecast model
ANetworksdbP - Data extracted from bulk supply points interval data

REPORT / EXTRACT DATE: 05 August 2014

Can information requested be provided from Actual information? (Y/N) N

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ?
Energy delivered is based on billing data (meter readings).

What is the basis of estimate ?
Where interval data is available, actual energy delivery is included. Where accumulation meters are used, billed consumption is the best estimate of actual deliveries.

Reasons why this is best estimate ? The data is made up of actual meter readings. Estimate will vary from actual energy delivered by the variations in the amount of unread energy consumption carried over from the previous year compared to the amount of unread consumption carried over into the next year. (Also, some meter reading data may not be final at this stage. Data may be corrected for missed readings or inaccurate readings, etc.)

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

3.4.1.1
DOPED0201 Energy Delivery where time of use is not a determinant
DOPED0202 Energy Delivery at On-peak times (On peak: refer to attachment Electricity Network Prices - includes residential maximum and commercial businesses)
DOPED0203 Energy Delivery at Shoulder times (Shoulder: refer to attachment Electricity Network Prices - includes evening period, commercial business and mid-residential)
DOPED0204 Energy Delivery at Off-peak times(Off peak: refer to attachment Electricity Network Prices - includes economy and commercial business at weekends)
DOPED0205 Energy Delivery to unmetered supplies

Time periods
• Business times are defined as from 0700 hours (7.00am) to 1700 hours (5.00pm) on weekdays.
• Evening times are defined as from 1700 hours (5.00pm) to 2200 hours (10.00pm) on weekdays.
• Off-Peak times are defined as all other times.

Weekdays are Monday to Friday.
• Max times are defined as from 0700 hours (7.00am) to 0900 hours (9.00am) and from 1700 hours (5.00pm) to 2000 hours (8.00pm) every day.
• Mid times are defined as from 0900 hours (9.00am) to 1700 hours (5.00pm) and from 2000 hours (8.00pm) to 2200 hours (10.00pm) every day.
• Economy times are defined as all other times.

For all above - Estimated energy consumption based upon actual billing data, taken from meter readings where applicable.
For all above - Actual energy metered to have been received.

3.4.1.2

DOPED0301 Energy into DNSP network at On-peak times
DOPED0302 Energy into DNSP network at Shoulder times
DOPED0303 Energy into DNSP network at Off-peak times
DOPED0304 Energy received from TNSP and other DNSPs not included in the above categories. This is energy received where the specific time (On, Off, Shoulder time) were not recorded due to a metering issue.
ADD know how much has been delivered (based on metering of transmission facilities). The ACT currently has three bulk supply points (Canberra 300/132kV, Williamsdale and Queanbeyan 132/66kV). These substations are read on a half hourly basis and data is sent to Networks database ANetworks.

<u>Transmission lines connection point to ACT:</u>
Queanbeyan – 132kV
Williamsdale – 330kV
Canberra Substation – 330kV

3.4.1.3

DOPED0401-0403 Data not recorded in TOU format.
DOPED0404 Energy received from methane generators and mini-hydro recorded in accounts.
DOPED0405-0407 Data not recorded in TOU format.
DOPED0408 Energy received from Net PV, Gross PV and Government's Feed-in Tariff schemes. Mostly residential but may include some non-residential customers. Data comes from billing system accounts. It is not possible to split residential and non-residential customers as they all feed in to the one tariff code.

3.4.1.4

DOPED0501 Billings of residential consumption including TOU and controlled load/off-peak tariffs (excluding controlled load/off-peak for non-residential consumers).
DOPED0502 Data from billings recorded in the accounts.
DOPED0503 Data from billings recorded in the accounts.
DOPED0504 Data from billings recorded in the accounts.
DOPED0505 No other customer classes.
Data comes from actual sources

3.4.2.2

Definitions used for split of customer numbers:
- **Urban customer:** Customers of all types and classes connected to an urban feeder. An urban feeder is a feeder, which is not a CBD feeder, with actual Maximum Demand over the reporting period per total feeder route length greater than 0.3 MVA/km.

- **Short Rural customer:** Customers of all types and classes connected to a short rural areas feeder. A short rural areas feeder is a feeder which is not a CBD or urban feeder with a total feeder route length less than 200 km.

ActewAGL has no feeders defined as CBD or Long Rural.

The average customer numbers for the reporting period on each feeder, in each classification were summated.

3.4.3.7

DOPSD0403 No Chargeable Contracted Maximum Demand in the ACT. (There is a capacity charge which is the maximum demand over the previous 12 months.)
DOPSD0404 Chargeable Measured Maximum Demand is calculated by weighting the monthly maximum demand by the number of days in the month and summing these for 12 months then dividing by the number of days in the year. To avoid double counting, these calculations exclude the capacity charges which are applied together with demand charges in all tariffs that include capacity charges.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.4 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)

TrendSCADA (used for questions about "zone substation level")
Calculated data (from data supplied in current report)
Finance reports (Transmission metering data)
Network Peak Demand Report (used for questions about "transmission connection point")
Engineering Estimates
Transmission Metering Billing Report (used for questions about "transmission connection point")
Forecast document - http://www.aer.gov.au/sites/default/files/ActewAGL%20-%20C1%20Peak%20demand%20forecast%20-%202014.pdf
• DOPSD0110 - Data from Transgrid

REPORT / EXTRACT DATE: 26 September 2014

Can information requested be provided from Actual information? (Y/N) **Y and N** Actual data calculated to meet the obligations of the RIN

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Power Factor is not measured at most locations, therefore it needs to be estimated

Power Factor is estimated from power factors at similar locations, then estimated Power Factor (0.9) was used to convert between MW and MVA
This estimate used is the best estimate based on system sources available and the calculation made with the engineers considered judgement and extensive knowledge of the subject. With the upgrade of system upgrades/data sources in progress within ActewAGL, future information will not be estimated.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

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

DOPSD0101 = DOPSD0201 * DOPSD0306
DOPSD0102 = DOPSD0202 * DOPSD0306
DOPSD0103 = DOPSD0203 * DOPSD0306
DOPSD0104 = DOPSD0204 * DOPSD0306
DOPSD0105 = DOPSD0205 * DOPSD0306
DOPSD0106 = DOPSD0206 * DOPSD0306

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

DOPSD0107 from Transmission Metering Billing Report
DOPSD0108 = DOPSD0108 + 50.974 * DOPSD0313
DOPSD0109 = DOPSD0108 +40.38 * DOPSD0313
DOPSD0110 from Network Peak Demand Report
DOPSD0111 = DOPSD0110 +50.974*DOPSD0313
DOPSD0112 = DOPSD0110 + 40.38*DOPSD0313

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

DOPSD0201 Category Analysis RIN 5.4

DOPSD0202 Category Analysis RIN 5.4

DOPSD0203 Category Analysis RIN 5.4

DOPSD0204 from TrendSCADA. Yes the TrendSCADA readings are higher than the transmission metering readings.

There does not seem to be a reasonable engineering reason for this except to say that SCADA has not been calibrated

DOPSD0205 = DOPSD0204+50.97

DOPSD0206 =DOPSD0204+40.38

Raw data is extracted from TrendSCADA at 5min data intervals.

The raw data was examined filtering out abnormal data such as testing values giving false loading trends.

The non-coincident summated raw system annual maximum demand is the sum of zone substation non-coincident maximum demands at the zone substation level.

Points in TrendSCADA used to calculate Coincident Raw System Annual Maximum Demand.

Date/Time	25/06/2014 18:00
Angle Crossing, LV MW5 Minute - Instantaneous	0
Angle Crossing, LV MVA5 Minute - Instantaneous	0
Belconnen Zone, Total 11kV load MVA5 Minute - Instantaneous	51.4
City East Zone, Total 11kV load MVA5 Minute - Instantaneous	64.2
Civic new, Total 11kV load MVA5 Minute - Instantaneous	50.68
Civic zone old, Total 11kV load MVA5 Minute - Instantaneous	
East Lake, Total 11kV load MVA5 Minute - Instantaneous	3.49
East Lake, Total 11kV load MW5 Minute - Instantaneous	3.43
Fyshwick, Total 11kV load MVA5 Minute - Instantaneous	13.49
Fyshwick, Fyshwick load MW5 Minute - Instantaneous	
Gilmore Zone, Total 11kV load MVA5 Minute - Instantaneous	25.5
Gold Creek Zone, Total 11kV load MVA5 Minute - Instantaneous	49.66
Latham Zone, Total 11kV load in MVA5 Minute - Instantaneous	59.94
Telopea Park zone, Total 11kV load MVA5 Minute - Instantaneous	83.73
Theodore Zone, Total 11kV load in MVA5 Minute - Instantaneous	25.06
Wanniassa Zone, Total 11kV load MVA5 Minute - Instantaneous	69.57
Woden zone, Total 11kV load MVA5 Minute - Instantaneous	68.9
MVA total	565.62

Weather corrected factors are applied at the zone substation level. The non-coincident summated weather adjusted system annual maximum demand is the sum of zone substation non-coincided weather corrected maximum demands at the zone substation level for 10% & 50% PoE weather adjusted maximum demands.

Individual feeder outages that may transfer load to another substation are considered non material. Only large load transfers would impact materially. The only outage identified to trigger material load transfers is from Fyshwick zone substation to Gilmore and Telopea Park zone substation during the period 15/2/14 to 17/3/14. As the non-coincident maximum demand at Gilmore and Telopea Park occurred outside this period, this switching event did not affect the non-coincident maximum demand.

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

DOPSD0207 From Transmission Metering Billing Report

DOPSD0208 = DOPSD0207 + 50.97

DOPSD0209 = DOPSD0207 + 40.38

DOPSD0210 = DOPSD0110 / DOPSD0313

DOPSD0211 = DOSPD0210 + 50.974

DOPSD0212 = DOPSD0210 + 40.38

Table 3.4.3.5 Power factor conversion between MVA and MW
DOPSD0301 average of DOPSD0302, DOPSD0306, DOPSD0308, DOPSD0311, DOPSD0313
DOPSD0302 estimate
DOPSD0303 NA
DOPSD0304 NA
DOPSD0305 NA
DOPSD0306 estimate
DOPSD0307 NA
DOPSD0308 estimate
DOPSD0309 NA
DOPSD0310 NA
DOPSD0311 based on transmission metering data at time of peak
DOPSD0312 NA
DOPSD0313 based on transmission metering data at time of peak
DOPSD0314 NA

Weather correcting adjustments were calculated using the forecast models on the basis of the difference between the actual weather conditions and the forecast weather conditions in the model predictor variables
http://www.aer.gov.au/sites/default/files/ActewAGL%20-%20C1%20Peak%20demand%20forecast%20-%202014.pdf

Non-coincident maximum demand at Gilmore and Telopea Park occurred outside this period, this switching event did not affect the non-coincident maximum demand.

Table 3.4.3.6 Demand supplied (MW measure)
AAD does not charge customers using MW.

OTHER COMMENTS

The TrendSCADA readings are higher than the transmission metering readings.
There does not seem to be a reasonable engineering reason for this except to say that SCADA has not been calibrated

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.4.3.3 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)	TrendSCADA
REPORT / EXTRACT DATE:	26 September 2014
Can information requested be provided from Actual information? (Y/N)	**N**

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ?

What is the basis of estimate ?
Load data is taken from TrendSCADA (SCADA data database)

Reasons why this is best estimate ?
The estimate uses information from corporate systems and where information is not stored as normal practice best estimates have been applied.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.4.3.3
DOPSD0201 - DOPSD0203

The raw data was examined filtering out not normal data such as data recorded during testing giving false loading trends.

The non-coincident summated max demands are the sum of zone substation non-coincident maximum demands at the zone substation level.

Individual feeder outages that may transfer load to another substation are considered immaterial. Only large load transfers would impact materially. The only outage identified to trigger material load transfers is from Fyshwick zone substation to Gilmore and Telopea Park zone substation during the period 15/2/14 to 17/3/14. As the non-coincident maximum demand at Gilmore and Telopea Park occurred outside this period, this switching event did not affect the non-coincident maximum demand.

The embedded generation and weather corrected factors were provided by Asset Strategy and Planning Branch and applied to the loading results.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.4.2 | Actual | NF

SOURCE(S): (incl name of report, how extracted) Anetworks (for all metered and unmetered data)

REPORT / EXTRACT DATE: 13 October 2014

Can information requested be provided from Actual information? (Y/N) Y

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

3.4.2.4 Unmetered connections points (UMCP) – sum of Unmetered supply customers with Active NMI's, excluding streetlights. Unmetered connections include: traffic lights, bus shelters, CCTV cameras, pedestrian crossing lights, floow warning lights, public telephone booths, artwork lighting, parking voucher machines, cathodic protection stations for gas supply, and telecommunication nodes..

OTHER COMMENTS

DOPCN0302 - *Unmetered connections not reported in customer numbers in the economic benchmarking RIN* - Determining the number of connections that supply streetlights requires more definition from the AER. AAD assumed a simple 1:1 ratio for this data: i.e. one streetlight equals one connection.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.4.2 | Actual | NF

SOURCE(S): (incl name of report, how extracted)	The source of customer numbers is the AAD REG billing system (Actual)
REPORT / EXTRACT DATE:	22 October 2014
Can information requested be provided from Actual information? (Y/N)	Y

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

3.4.2.1 & 3.4.2.2

Customer numbers are entered into Electricity Outage Reporting Database from the AAD REG billing system on an end of month basis.

Customer numbers has been calculated as per RIN definitions to be the average number. Using the start of financial year 2013/14 plus end of financial year 2013/14 divided by 2.

3.4.2.2 - Split for customers urban/Rural

- Urban customer: Customers of all types and classes connected to an urban feeder. An urban feeder is a feeder, which is not a CBD feeder, with actual Maximum Demand over the reporting period per total feeder route length greater than 0.3 MVA/km.

- Short Rural customer: Customers of all types and classes connected to a short rural areas feeder. A short rural areas feeder is a feeder which is not a CBD or urban feeder with a total feeder route length less than 200 km.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.5 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)

WASP
GIS data

REPORT / EXTRACT DATE: 26 September 2014

Can information requested be provided from Actual information? (Y/N) Y and No

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information?
Vegetation management data not captured in corporate system

What is the basis of estimate?
From previous experience of persons reporting, based on combination of data from Rural and Urban areas. Study of a sample of 200 ActewAGL's 'Notification to clear trees' under Utilities Act section 125 - Network protection notice.

Reasons why this is best estimate?
The estimate uses information from corporate systems and where information is not stored as normal practice best estimates have been applied.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Tables 3.5.1.1
Cumulative line length from Table 5.2, Asset Age Profile. Overhead and Underground LV distribution lines exclude service lines.

Table 3.5.1.2
Cumulative line length from Table 5.2, Asset Age Profile

Tables 3.5.1.3 &
Table 3.5.1.4
For each voltage category, ∑(Feeder winter continuous current rating (from the ActewAGL's Electrical Data Manual) x Nominal Voltage(eg.11kV) x √ 3 x Length of feeder)/∑ Length of feeder
DPA0501 - WASP
DPA0502 - Data from Customer Connections and System Control
DPA0503 - Oracle, end of FY stock data from the warehouse

Note: Circuit Capacity MVA
Weighted average is the same as supplied for 2012/13 and RESET RIN.
Added line lengths being small, the impact on the MVA capacity is insignificant'

Table 3.5.2.1
DPA0501 - WASP
DPA0502 - Data from Customer Connections and System Control
DPA0503 - Oracle, end of FY stock data from the warehouse

Table 3.5.2.3 Distribution - other transformer capacity
ActewAGL did not report on this item in 2013. Judging by the note in the cell, we won't be reporting on it again.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.5.2.2 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)	WASP Asset Management software tool
REPORT / EXTRACT DATE:	03 October 2014
FINANCIAL /NON-FINANCIAL: (F/NF)	F/NF
FINANCIAL DATA - Real or Nominal $:	Real
OVERHEADS:	Directly attributable
LABOUR / MATERIALS / TOTAL?	Total cost
Can information requested be provided from Actual information? (Y/N)	**N**

Base date for Real $: 2013/14

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information?
Data including full maintenance history, asset installation and asset disposal dates are not captured in corporate systems under normal business processes.

What is the basis of estimate?
Audits were carried out to ensure all assets were installed and commissioned. Operational and maintenance requirements were ensured as per the one Substation Inspection & Maintenance Strategy Procedure NTS7.11.P02.W01 for maintenance history. Asset disposal dates have been extracted from WASP general notes and estimated where data is not avaliable.

Reasons why this is best estimate?
The estimate use's information from corporate systems and where information is not stored as normal practice best estimates have been applied.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.5.2.2

WASP Asset Database and Electrical Data Manual used as the basis for this information. Project contract documentations & estimates (for East Lake Zone S/S), Electrical Data Manual and WASP Asset Database used to determine equipment ratings and confirmed during various site audits/inspections. Considered reliable and accurate, used as technical and operational "source of truth" for operational assets, hence any errors identified and corrected in normal course of operations.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.5.3

OTHER COMMENTS

ActewAGL Distribution does not own the streetlighting assets located in the ACT.

The ACT government department TAMS (Territory and Municipal Services) is responsible for co-ordinating ownership, purchasing and work order allocation for street lights. TAMS allocates work orders to ActewAGL Distribution to replace damaged street light columns and to provide maintenance for those assets. There are approximately 76,000 street lighting assets owned by TAMs.
The AER should obtain information about street lighting from TAMs.

A further complication is that there are about 2500-3000 streetlighting columns owned by the NCA (National Capital Authority).
The AER should obtain information about street lighting from the NCA.

BoP for Economic Benchmarking RIN

Sheet: 3.6.2 | Estimated | NF

SOURCE(S): (incl name of report, how extracted)

Electricity Outage Reporting Database extract manipulated in spreadsheet to produce outage reports (Actual)
Single Premise Outage Report extract manipulated in spreadsheet to produce outage reports (Actual)
Premise Deposit Registry extract manipulated in spreadsheet to produce reports (Actual)
Energy Not Supplied forecast - (Estimated)

REPORT / EXTRACT DATE: 02 September 2014

Can information requested be provided from Actual information? (Y/N) **Y and N** Actual data calculated to meet the obligations of the RIN

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ? Energy Not Supplied: This calculation relies on proportioning total energy supplied to customer minutes lost in 2013-14.

What is the basis of estimate ? This estimate assumes the total energy supplied is correct for the 2013-14 period.

Reasons why this is best estimate ? Uses the most accurate information available at the time of this report.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.6.1.1 - Reliability - Inclusive of MEDs

SAIDI (System Average Interruption Duration Index) was calculated by the sum of the duration of each unplanned sustained Customer interruption (in minutes) divided by the total number of Distribution Customers. SAIDI excludes momentary interruptions (interruptions of one minute or less).

SAIFI (System Average Interruption Frequency Index) was calculated by the total number of unplanned sustained Customer interruptions divided by the total number of Distribution Customers.
Unplanned SAIFI excludes momentary interruptions (interruptions of one minute or less).

Table 3.6.1.2 - Reliability - Exclusive of MEDs

SAIDI (System Average Interruption Duration Index) was calculated by the sum of the duration of each unplanned sustained Customer interruption (in minutes) divided by the total number of Distribution Customers. SAIDI excludes momentary interruptions (interruptions of one minute or less).

SAIFI (System Average Interruption Frequency Index) was calculated by the total number of unplanned sustained Customer interruptions divided by the total number of Distribution Customers.
Unplanned SAIFI excludes momentary interruptions (interruptions of one minute or less).

The MED threshold was calculated for the 2013/14 Regulatory Year in accordance with the requirements in the STPIS.

Table 3.6.2 Energy Not Supplied

Energy not supplied is not recorded in Business Systems - To provide an estimate, a proportion of Total Energy delivered was calculated as Energy not supplied based on the system minutes of PSAIDI and USAIDI. PSAIDI and USAIDI are based on average customer numbers. Average customer load was assumed and no adjustments were made for customer category.
Energy delivered was divided into system minutes and multiplied by PSAIDI and USAIDI.
Momentary outages were excluded.

There were no excluded outages other than momentary outages. (As per STPIS guidelines)

RIN instructions describe certain methods to calculate energy not supplied:
1. average consumption of the customers interrupted based on their billing history;
2. feeder demand at the time of the interruption divided by the number of customers on the feeder;
3. average consumption of customers on the feeder based on their billing history;
4. Average feeder demand derived from feeder Maximum Demand and estimated load factor, divided by the number of customers on the feeder.

Energy not supplied is not recorded in ActewAGL Business Systems and cannot currently be reported in the methods required above. Customer NMI details or load profiles are not recorded in Network Outage Recording System. The Network Outage Recording system records the numbers of customer affected but cannot be reconciled to the billing system without reviewing each individual incident manually and the corresponding large burden which could not be achieved in time for the current RIN.

The following method of estimation was used in the previous Economic Benchmarking RIN reporting.

ActewAGL have provided an estimate of 'Energy not supplied' as a proportion of Total Energy delivered. This estimate was calculated based on the system minutes of PSAIDI and USAIDI.
Average customer load was assumed and no adjustments were made for customer category.
Energy delivered was divided into system minutes and multiplied by PSAIDI and USAIDI.

This reporting gap will be rectified in the 2015-16 reporting period on commissioning of the Telvent Outage Management System which will connect the customer NMI details and load profiles with Outage Reporting system.

OTHER COMMENTS

Average Customer Load was not calculated directly but an assumption made as the basis of the estimation of Energy Not Supplied.

As Energy not Supplied is not recorded in any business system, To provide an estimate, a proportion of Total Energy delivered was calculated as Energy not supplied based on the system minutes of PSAIDI and USAIDI.
PSAIDI and USAIDI are based on average customer numbers. Using this method of estimation, average customer load was required to be assumed and no adjustments were made for customer category.

Basis of Preparation for Category Analysis RIN

Sheet: 3.6.4 | Actual | NF

SOURCE(S): (incl name of report, how extracted)	TrendSCADA & Electrical Data Manual
REPORT / EXTRACT DATE:	09 October 2014
Can information requested be provided from Actual information? (Y/N)	**Y**

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.6.4 - Calculation for Capacity utilisation
The substation ratings where obtained from the electrical data manual. Note N-1 ratings are converted to N ratings. The capacity is the summer continuous thermal capacity of the substation (N rating).

Past load data was extracted from TrendSCADA using 5min data to calculate maximum demand.

Overall utilisation is given as the sum of non-coincident Maximum Demand at the zone substation level divided by summation of zone substation thermal capacity.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)

BoP for Economic Benchmarking RIN

Sheet: 3.6.3

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

See the Unlocked sheet in EB RIN for calculations

BoP for Economic Benchmarking RIN — Sheet: 3.7.1

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

See the Unlocked sheet in EB RIN for calculations

BoP for Economic Benchmarking RIN — Sheet: 3.7.2&3

Estimated | NF

SOURCE(S): (incl name of report, how extracted)

WASP
GIS data

REPORT / EXTRACT DATE: 26 September 2014

Can information requested be provided from Actual information? (Y/N)

N

IF "NO" - WHAT IS THE BASIS OF THE ESTIMATE? (Include Approach, Assumptions and reason why this is the Best Estimate)

Why is it not possible to use actual information ? Vegetation management data not captured in corporate system

What is the basis of estimate? From previous experience of persons reporting, based on combination of data from Rural and Urban areas. Study of a sample of 200 ActewAGL's 'Notification to clear trees' under Utilities Act section 125 - Network protection notice.

Reasons why this is best estimate ? The estimate uses information from corporate systems and where information is not stored as normal practice best estimates have been applied.

METHODOLOGY (Data assumption, adjustment, cleansing and justification)

Table 3.7.2

DOEF0201-Estimated based on WASP data.
DOEF0202-No CBD in the ACT. Estimated as Urban vegetation maintenance spans = (Number of first notices issued for encroachment clearing) + (Number of second notices issued for encroachment clearing) + (Contractor cut encroachments) + (All high voltage line encroachments in the Urban zone identified by aerial inspection and notices issued)
DOEF0203-Estimated as Rural vegetation maintenance spans = The number of vegetation encroachments cleared in the Rural zone before Bushfire Mitigation (BFM) season (identified by aerial inspection)
DOEF0204-Sum of the Urban and Rural.
DOEF0205-Estimated based on WASP data (number of poles minus 1).
DOEF0206-Inspection as per Vegetation Management Policy.
DOEF0207-Inspection as per Vegetation Management Policy.
DOEF0208- Average number of trees per urban vegetation maintenance span = (Total number of trees encroaching)/(Number of maintenance spans), calculated using a random sample of 200 notices issued in
DOEF0209- Estimated one tree per rural vegetation maintenance span based on results of the aerial inspection.
DOEF0210- Estimated to be equal to the average number of trees as only the encroachments have been counted.
DOEF0211- Estimated to be equal to the average number of trees as only the encroachments have been counted.
DOEF0213-Estimated based on WASP data 10% of all rural lines + all of 66kV and 132kV lines.
DOEF0214-Estimated based on WASP data for all rural poles.

Table 3.7.3

DOEF0301 - Route line length from GIS

Table 3.7.4

ActewAGL Distribuiton uses data from one weather station, the Pialligo (Canberra Airport) station. Station locations are listed in the Bureau of Metrology website.

OTHER COMMENTS

Explanation of Routine line length

2380.840 km is the summation of the 'Overhead Conductors' from Table 5.2 - Category Analysis.
4087 km appears to be the total route line length including the underground cables.

2336.242 km (total, including 124.608 km of routes shared by 11kV and LV). Thus reported only 2211.634 km

However, as per the following definition of 'Route Line Length' it should be only the overhead lines.

Route line length:
The aggregate length in kilometres of distribution lines, measured as the length of each span between poles and/or towers, and where the length of each span is considered only once irrespective of how many circuits it contains. This does not include vertical components such as line sag. The length of service lines is not to be included in the route line length.

Consistency with requirements: Provides best estimate of required data broken down into categories requested. Other definitions & instructions have been noted & followed (unless noted)