AusNet Electricity Services Pty Ltd

Category Analysis

2019 Regulatory Year Basis of Preparation

1. Overview

This Basis of Preparation document supports the preparation and reporting of the 2019 calendar year data presented in AusNet Electricity Services Pty Limited's ("AusNet Electricity Services" or "the Company") reports entitled '2019 AusNet Services Category Analysis - Actual Information', '2019 AusNet Services Category Analysis - Estimated Information', '2019 AusNet Services Category Analysis - Consolidated Information' and 'Other Supporting Information' (**the Reports**). The Reports provide data solely for the use of the Australian Energy Regulator (**AER**) to perform benchmarking activities under the AER's Better Regulation program.

The Reports have been prepared in accordance with the 'Regulatory Information Notice issued under section Division 4 of Part 3 of the National Electricity (Victoria) Law' (**RIN**) issued by the AER 7 March `2014 and other authoritative pronouncements of the AER.

AusNet Electricity Services' 2019 regulatory year is the period 1 January 2019 to 31 December 2019 (**Regulatory Year**). All financial data included in the Reports is presented in Australian dollars. Non-financial data is stated as per the measures specified in the Reports.

The ultimate Australian parent entity of the Company is AusNet Services Limited. The AusNet Services Limited Group **(The Group)** owns and operates 3 regulated networks – an electricity distribution network, a gas distribution network, an electricity transmission network and unregulated businesses. Employees of The Group work across the 3 regulated networks and there are shared costs, overheads and other corporate costs that cannot be directly allocated to a particular network or other business units. These costs are proportioned amongst The Group's 3 regulated networks, as well as the unregulated businesses, based on a monthly Activity Based Costing (**ABC**) survey process. ABC Surveys are completed by all cost centre managers and are in accordance with AusNet Services' Cost Allocation Methodology (**CAM**).

Materiality has been applied throughout the Reports and Basis of Preparation. Materiality is defined as information that if omitted, misstated or not disclosed has the potential, individually or collectively to influence the economic decisions of users.

The Reports require inputs to be allocated between Standard Control Services and Alternative Control Services.

Standard Control Services are defined as per the National Electricity Rules (**NER**). For clarity, Standard Control Services capture services only available through the network (typically provided to all customers or a broad class of customers) recovered through general network tariffs.

Alternative Control Services are defined in the NER. By way of context, Alternative Control Services are intended to capture electricity distribution services provided at the request of, or for the benefit of, specific customers with regulatory oversight of prices. Alternative control services are electricity distribution services that are a direct control service but not a standard control service.

In conformity with AER requirements, the preparation of the Reports requires the use of certain critical management estimates. For the purpose of preparing the Reports, 'Estimated Information' is defined as information presented in the Reports whose presentation is not materially dependent on information recorded in accounting records or other records used in the normal course of business, and whose presentation for the purpose of the RIN is contingent on judgments and assumptions for which there are valid alternatives, which could lead to a materially different presentation in the Reports.

Where Estimated Information has been presented, the circumstances and the basis for the estimate, including the approach used, assumptions made and reasons why the estimate is AusNet Electricity Services' best estimate has also been set out below. Estimates are considered to be Management's best estimate based on the data available. Estimates will often not equal the related actual results and estimates have only been made for the purpose of disclosing the information required under the RIN. Considerations of the cost and efficiency of preparation as well as the reliability and accuracy of data available have been taken into account in determining the best methodology to determine the estimates.

'Actual Information' is defined as information materially dependent on information recorded in historical accounting records or other records used in the normal course of business, and whose presentation is not contingent on judgments and assumptions for which there are valid alternatives, which could lead to a materially different presentation. Any information or allocation which has been calculated via the ABC survey process is considered Actual Information, as this is in accordance with the AER approved CAM.

Interpretation of the AER's definition of Actual and Estimated information requires management judgments to be made as to the appropriate classification of information including:

- the extent to which the information is sourced from accounting or other records used in the normal course of business; and
- the degree of estimation involved and whether the information is materially dependent on judgments and assumptions for which there are valid alternatives, which could lead to a materially different presentation.

The methodologies, assumptions and judgments made by management in respect of variables are described within the relevant sections of this Basis of Preparation.

To the extent applicable, the information reported has been prepared in a manner consistent with the policies and methodologies applied in preparing the Annual Regulatory Accounts. Ausnet Electricity Services adopted the new accounting standard, *AASB16 – Leases* which broadly changes the treatment of operating leases. This accounting policy change was adopted from 1 April 2019 in the AusNet Electricity Services RINs and Regulatory Accounts. The adoption date is consistent with the AusNet Services Group Accounting Policy and also the assumptions in the 2022-2026 EDPR Proposal. The 2019 impact was an increase to Non-Network Capex of $38.2M and a decrease to Opex of $4.3M (SCS & ACS). There were no other changes in Accounting Policies during the Regulatory Year that had a material impact on the information presented.

The preparation methodologies and information sources adopted in the preparation of the Reports are set out below.

Contents

2.1 Expenditure Summary

Capital Expenditure ("Capex") includes all costs that are directly attributable to bringing an asset to the location and condition necessary for it to be capable of operating in the manner intended by management.

Operating Expenditure ("Opex") reported is the costs of operating and maintaining the network (excluding all Capex).

Table 2.1.1 - Standard control services capex, Table 2.1.2 - Standard control services opex, Table 2.1.3 - Alternative control services capex and Table 2.1.4 - Alternative control services opex

The information reported was prepared using Capex and Opex data extracted from the Financial System. The expenditure reported in Total Capex and Total Opex in Table 2.1.1 to Table 2.1.4 is mutually exclusive and collectively exhaustive.

The expenditure reported for the following categories relate to direct costs only and excludes expenditure on overheads -

- Replacement expenditure;
- Connections;
- Augmentation Expenditure;
- Non-network;
- Vegetation management;
- Emergency Response;
- Metering;
- Public Lighting;
- Fee and Quoted; and
- Maintenance.

Information reported in Tables 2.1.1 to 2.1.4 is Estimated Information where the corresponding template information is considered Estimated Information. Total Capex and Opex have been reported on an 'as incurred' basis. All expenditure has been presented in nominal dollars.

The sum of each of the Capex and Opex line items in the Tables in 2.1 Expenditure Summary equals the total Capex and Opex in all templates from 2.2 Repex to 2.10 Overheads and Templates 4.1 Public Lighting to 4.4 Quoted Services.

The Capex Alternative Control 'balancing item' line includes Alternative Control Capex (which is double counted within the Alternative Control Services templates) and customer contributions.

The Opex Alternative Control 'balancing item' line includes Alternative Control Opex (which is double counted within the Alternative Control Services templates).

Amounts reported as capital contributions ("capcons") were extracted from the Annual Regulatory Accounts.

Table 2.1.5 - Dual function assets capex and Table 2.1.6 - Dual function assets opex

This table has been completed as zero as there are no dual function assets owned by AusNet Electricity Services.

2.2 Repex

Replacement Expenditure ("Repex") is the non-demand driven Capex to replace an asset with its modern equivalent, where the asset has reached the end of its economic life. Capex has a primary driver of replacement expenditure if the factor determining the expenditure is the existing asset's inability to efficiently maintain its service performance requirement.

The following definitions have been applied in the preparation of the data:

Asset Type	Definition
Poles	Vertically oriented assets that provide load bearing structural support for overhead conductors or other lines assets. This also includes associated pole top structures, such as cross-arms and insulators where these are replaced in conjunction with a pole replacement project. It excludes other pole mounted assets that are included in any other asset group, e.g. pole mounted substations and pole mounted switchgear such as links, fuses, air break switches etc.
Pole top structures	Horizontally oriented structures and their components that provide support for overhead conductors and related assets to be supported on a pole and provide adequate clearances. This relates to expenditure incurred when a pole top structure is replaced independently of the pole it is located on. This includes cross-arms and insulators. It excludes any pole mounted assets that are included in any other asset group, notably pole mounted substations and pole mounted switchgear such as links, fuses, air break switches etc.
Overhead conductors	These assets have the primary function of distributing power, above ground, within the distribution network. It excludes any pole mounted assets that are included in any other asset group.
Underground cables	These assets have the primary function of distributing power, below ground, within the distribution network. This includes cable ends, joints, terminations and associated hardware and equipment (e.g. surge diverters, etc.), cable tunnels, ducts, pipes, pits and pillars. It excludes any pole mounted assets that are included in any other asset group.
Service lines	Includes assets that provide a physical link and associated assets between the distribution network and a customer's premises.
Transformers	These are assets used to transform between voltage levels within the network. This includes all its components such as the cooling systems and tap changing equipment (where installed). It excludes any pole mounted assets that are included in any other asset group. This does not include instrument transformers as defined in the National Electricity Rules. It also does not include auxiliary transformers.
Switchgear	Used to control, protect and isolate segments of the network. This includes disconnect switches, fuses, circuit breakers, links, reclosers, sectionalisers, ring main units, oil insulated fuses etc.
SCADA & Network Control & Protection systems repex	Replacement expenditure associated with SCADA and network control hardware, software and associated IT systems. Includes replacement of protection and control systems and communication systems. This excludes all costs associated with SCADA and Network Control Expenditure that exist within gateway devices (routers, bridges etc.) at corporate offices. Protection systems have the meaning prescribed in the National Electricity Rules.

Asset Type	Definition
Other	These are assets or refurbishments which are not captured in the AER categories. No additional "Other" categories have been added in the Regulatory Year.

Table 2.2.1 – Replacement Expenditure, Volumes and Asset Failures by Asset Category

Replacement expenditure and volumes have been provided for the prescribed asset categories.

Capex and associated non-financial information has been reported against the Regulatory Year on an 'as incurred' basis. Expenditure reported are the costs directly attributable to replacement of the asset and excludes expenditures on overheads. All Capex has been presented in nominal dollars.

The sum of the asset group replacement expenditures is equal to the total replacement expenditure in Template 2.1 Expenditure Summary.

Replacement Expenditure and Volume

Preparation Methodology

Using information from the Annual Regulatory Accounts, the relevant projects and costs to report were determined. This information was ultimately sourced from SAP. The preparation process was as follows -

- A report was also generated in SAP providing work order details (including project number, project description, compatible unit type ("CU Type"), functional location ("floc"), 'equipment', 'notification') and also the corresponding costs ("work order report").
- The work order report was filtered to show all data on the replacement projects identified.
- The report costs were scaled down to exclude all costs which were capitalised finance charges ("CFCs") or overhead ("OHD") in nature. Scaling was calculated for each project.

Replacement Projects are either Bulk or Discrete project types.

- For the Discrete project types, the work order report was reviewed by a subject matter expert ("SME") and, using business case information, the work order data was allocated into the Repex Template categories. Expenditure for each project was allocated into asset categories based on the cost estimate prepared for the project business case. Where necessary, business case unit rates were applied to calculate volumes of replacements.

- For Bulk project expenditure, reports were generated from SAP with additional work order characteristics to enable the classification of the data. CU Type (of the equipment on the work order) was used as the primary classification driver (for Asset Type) and further characteristics on the work orders were used to determine the Asset Category. An SME determined the relevant characteristics. In some cases, the work order data had insufficient characteristics to enable classification to an Asset Category level. In these circumstances the Asset Category split from Template 5.2 Asset Age was applied to the Repex data to determine the sub-classifications. The knowledge and judgement of a SME was applied to determine categorisations where necessary.

- For Bulk project volumes, the above step was repeated for all repex workorders from 2015 to the current regulatory period. Using the total expenditure and total workorder volume, a unit rate was calculated for each asset category. An average CPI factor (based on ABS CPI Index for all cities)

was applied to escalate the unit rate to current regulatory year and then reviewed by a SME. Any necessary corrections to unit rates were made (based on historical Repex unit rate information) and replacement quantities adjusted accordingly.The expenditure calculated in the previous step was then devided by this escalated unit rate to derive the volume for bulk project repex categories.

Estimated Information:

The Asset Replacement Expenditure and Quantity data provided is considered Estimated Information due to the judgments made to align data with the categories required and the unit rate review approach outlined above. This is considered Management's best estimate based on the data available.

Asset Failures (Quantity)

Preparation Methodology:

A comprehensive report containing asset failures were obtained from the IM database. This data set contains the cause of failure, equipment characteristics and the floc data which was then grouped into asset categories for all causes that meet with the definition of asset failures. This data was then reviewd by an SME.

Estimated Information:

All Asset Failure Quantity data is considered estimated information due to the preparation process outlined above. This is considered Management's best estimate based on the data available.

Table 2.2.2 – Selected Asset Characteristics

Network Type metric (CBD, Urban, Rural Long, Rural Short)

Preparation Methodology:

AusNet Electricity Services does not capture quantities of replacement of assets in Network Type (CBD, Urban, Rural Long, Rural Short) categories. Because of this, the data provided in this table has been estimated.

Data in relation to 'Asset Volumes Currently in Commission' and 'Asset Replacements' were sourced from Table 2.2.1 Repex and Template 5.2 Asset Age Profile respectively.

The quantity information included in Table 2.2.2 has been allocated into Feeder Type (Poles, Overhead Conductors and Underground Cables) metrics. These metrics have been split into Network Type (CBD, Urban, Rural Long, Rural Short) on a percentage allocation basis. The percentages applied were derived by calculating the percentage split of feeder lengths into CBD, Urban, Rural Long, Rural Short as per the data included in the AER Economic Benchmarking RIN (Template 3.7 Operating Environment).

'Conductor Length by Material Type' is based on the proportion of conductor in each material type in the Regulatory Year. They were obtained from the EDPR conductor data set. These proportions were applied to the asset volumes from the corresponding categories in Template 5.2 Asset Age Profile.

The total Transformer MVA information was sourced from the 2019 Economic Benchmarking RIN in Template 3.5 Physical Assets.

MVA disposed was determined based on a report generated in SAP which showed all transformers which had a change in status to “disposed” in the Regulatory Year and is actual information

The total MVA replaced was calculated as the net increase in Distribution and Zone Substation Transformer MVA (per 3.5 Physical Assets Template in the Economic Benchmarking RIN) less the increase in Transformer MVA (per the 2.3 Augex Template) plus MVA Disposed (as above) and is actual information.

Estimated Information:

Information reported under Total Poles, Overhead Conductors and Underground Cables is considered Estimated Information based on the percentage allocation methodologies described above. This is considered Management’s best estimate based on the data available.

However, for the Transformer MVA ‘asset columes currently in commission’, the information is actual as it is sourced from the Economic Benchmarking RIN in Template 3.5 Physical Assets that uses actual data from the SDME system. Transformer MVA replacement is actual information as it is derived from actual sourced data as described above. Transformer MVA disposals is actial information as it is sourced from SAP.

2.3 Augex

Projects relating to the augmentation of AusNet Electricity Services' network have been included in Template 2.3 Augex. Augmentation has the meaning prescribed in the National Electricity Rules and also includes work relating to improving the quality of the network, for example, to meet regulatory obligations. Augmentation expenditure does not include gifted assets.

Data Preparation Methodology

For the Regulatory Year, information was sourced from the Asset Additions report from the Fixed Asset Register in SAP. The report included details of asset class, quantities, assignment number and total costs. The Assignment Number provides a linkage to project data and work code. The report was filtered to capture Augmentation projects only and the relevant data to report was aggregated.

Information provided is on an 'asset complete' basis (which includes life to date costs for assets completed in the Regulatory Year). This has been used as a proxy for 'project complete' information as it provides more accurate and complete data and is considered to better align with when assets are in use.

In the Asset Additions report, assets are assigned a standardised 'Regulatory Asset Tag' ("RAT") and 'Class' which identifies the asset type. Engineering expertise was used to allocate each of the asset types into the assets groupings as required by Tables 2.3.1, 2.3.2 and 2.3.3. Allocations are consistent with prior Regulatory Years. Four projects have been identified as material and is reported in Table 2.3.1.

Table 2.3.1— Augex asset data – Substations

Preparation Methodology - Non-Financial Information:

Information in relation to Substation ID, Substation Type, Project Type and Project trigger was determined by engineering planning advice. Project triggers selected relate to the primary project trigger. Project Types have been selected from the prescribed drop downs.

For Table 2.3.1, 'Voltage', 'Substation Ratings' and 'MVA/MVAR Added' were obtained from the internal policy document AMS 20-101 'Zone-Substation Transformer Cyclic Rating'. The 'Rating' or 'MVA added' refers to the equipment's normal cyclic rating (for substations).

The cyclic rating of a transformer is the peak MVA rating of the transformer based on daily loading of the transformer for a prolonged period, considered to be three months for a zone substation transformer. For this rating, the 'higher than normal loss of life' is used.

For substation ratings, 'Pre' refers to the relevant characteristic prior to the augmentation work and 'Post' refers to the relevant characteristic after the augmentation work. Where a metric does not undergo any change, or where the project relates to the establishment of a new substation, only the 'Post' column has been completed.

Note that MVA rating information was only supplied for the 'powertype' transformers and not the 'station service type' units.

In relation to Installation Volumes, the data reported is the sum of external labour hours and internal labour hours.

- For external labour, an SME provided an estimate of the contractors' hourly rate per hour.
- For internal labour, an SAP cost report was generated for the 'material' project for the Regulatory Year. Using this report, the number of internal hours was summated (based on the internal timesheet hours in the report) and the corresponding internal labour costs were summated. This data was used to calculate an average labour hourly rate.
- The average of the internal and external labour rates was applied to the internal and external labour costs (see below) in order to derive the total labour hours.

All other non-financial metrics in Tables 2.3.1 were obtained from the Asset Additions report. Data in the Asset Additions report was reviewed for reasonableness and any required adjustments were made.

Four Projects are reported in Table 2.3.1.

The augmentation component of the Morwell Zone Substation project was required to alter the voltage level that could be supplied to the open cut mine supply of Morwell East ZS. This station had to be rebuilt due to the site configuration requirements.

The remaining three projects are for the replacement works associated with the implementation of the REFCL technology into Wangartta ZS (WN), Kinglake ZS (KLK) and Seymour ZS (SMR). The replacement work consisted primarily of 22 kV switchgear replacements.

During the Regulatory Year, there were no projects be reported in Table 2.3.2.

Estimated Information - Non-Financial Information:

Installation Volumes in Tables 2.3.1 are considered Estimated Information based on the preparation approach outlined above. An estimate of the installation hours was required as the Fixed Asset Register does not provide this data.

Preparation Methodology - Financial information:

Projects have been separately included in these tables where the total cumulative spend on project assets completed during the Regulatory Year, is greater than or equal to $5 million (in nominal dollars). Projects with a total cumulative spend on project assets completed during the Regulatory Year less than $5 million (in nominal dollars) have been grouped and shown as 'non-material projects'.

Costs and project information for augmentation works where the assets have not been completed during the Regulatory Year but expenditure has been incurred prior the Regulatory Year has not been recorded.

Financial data reported was sourced from the Asset Additions report as outlined in the Data Preparation Methodology section above.

Real Terms

Expenditure has been reported in 'real' (2019) terms. This was derived by applying CPI rates obtained from the Australian Bureau of Statistics website to the project costs reported, based on the years in which costs accumulated on the relevant projects.

Data from the previous and current financial systems was obtained which showed the years in which the material project incurred costs. The percentage of the total cost incurred each year was calculated. The calculated percentages were applied to the asset complete costs to allocate project expenditure into the years in which costs were incurred. CPI rates were applied to the data to estimate the asset costs in 'real terms'.

For the 'non-material' projects, the allocation of the total 'asset complete' expenditure into the years incurred was estimated based on the material project cost allocation. This estimate was required as the 'as incurred' data can only be allocated on a total project basis (due to system limitations). CPI rates were applied to the estimated allocation of yearly costs to derive an estimate of the 'non-material' costs in real terms.

Direct Costs

In accordance with the AER guidance, only direct costs are required to be recorded. This information was estimated due to limitations in relation Financial System reports. A calculation was performed to determine the proportion of direct costs to total costs (per the 'as incurred' Financial System report). This calculation assumes that the percentage of overhead costs for all projects is consistent with the overhead & CFC as a percentage of total Augex costs incurred during the calendar year.

Installation Costs

In relation to Installation Costs, the data reported comprises of external labour costs and internal labour costs. A report was generated in SAP showing the total costs incurred on the project for Regulatory Year. Using general ledger account costs, the percentage of costs incurred that were contractor in nature and labour in nature were calculated. These percentages were applied to the cost of assets capitalised in during the Regulatory Year to provide an estimate of the installation (labour) component.

An estimate of the installation costs was required as the fixed asset register does not provide this data. The installation costs were converted to 'real terms' using the same approach outlined above for material costs.

Excluding Installation Expenditure, all other amounts reported as 'Expenditure' relates to the procurement cost of the equipment, not the installation costs.

Related Parties

Information reported in relation to Related Party Contracts and Related Party Margins has been extracted directly from the Annual Regulatory Account workings (ultimately sourced from SAP). The costs reported are also included in the Total Direct Expenditure reported.

<u>Estimated Information:</u>

Based on the information outlined above, all financial data provided is considered Estimated Information. This data is considered Management's best estimate based on the information available.

Table 2.3.3— Augex data - HV/LV Feeders and Distribution Substations

Table 2.3.3 contains information prepared on an 'asset complete' basis. This has been used as a proxy for 'as incurred' project data. This assumption has been applied as the information required is not available on an 'as incurred' basis. The 'Units Added' or 'Units Upgraded' figures are not recorded until a project is complete. Similarly, financial information is not attributed to a specific asset until a project is complete.

Based on the above, all Descriptor Metrics and Cost Metrics reported in Table 2.3.3 are considered Estimated Information. The data provided is considered Management's best estimate, based on the information available.

2.3.3 Descriptor Metrics

'Units Added' and 'Units Upgraded' for HV and LV Feeders was obtained directly from Asset Addition report. 'Units Added' and 'Units Updated' relate to material projects only.

'Units Added' and 'Units Upgraded' for Distribution Substation Augmentations was obtained from a SAP report.

2.3.3 Cost Metrics

Expenditure has been recorded on an 'asset complete' basis in nominal dollars.

In accordance with the AER guidance, only direct costs are required to be recorded. This information was estimated due to limitations in relation Financial System reports. A calculation was performed based on OHDs and CFCs as a percentage of Total Augex. This percentage was applied to the expenditure in Table 2.3.3.2 to derive an estimate of the direct costs only. This calculation assumes that the percentage of overhead costs for all projects is consistent with the overhead & CFC as a percentage of total Augex costs incurred during the calendar year.

'HV Feeder Augmentations – Overhead Lines' and 'HV Feeder Augmentations – Underground Cables'

- Financial information was sourced from the Asset Additions report and was prepared in accordance with the 'Data Preparation Methodology' outlined above.
- Data reported in this category is the summation of the costs of all HV feeder augmentation assets, where the assets were completed during the Regulatory Year and the total project expenditure (on assets completed during the Regulatory Year) was greater than or equal to $0.5 million.

HV Feeder Non-Material Projects

- Financial information was sourced from the Asset Additions report and was prepared in accordance with the 'Data Preparation Methodology' outlined above.
- Data reported in this category is the summation of the costs of all HV feeder augmentation assets, where the assets were completed during the Regulatory Year and the total project expenditure (on assets completed during the Regulatory Year) was less than $0.5 million.

LV Feeder Augmentations – Overhead Lines & LV Feeder Augmentations – Underground Cables

- Financial information was sourced from the Asset Additions report and was prepared in accordance with the 'Data Preparation Methodology' outlined above.

- Data reported in this category is the summation of the costs of all LV feeder augmentation assets, where the assets were completed during the Regulatory Year and the total project expenditure (on assets completed during the Regulatory Year) was greater than or equal to $50,000.

LV Feeder Non-Material Projects

- Financial information was sourced from the Asset Additions report and was prepared in accordance with the 'Data Preparation Methodology' outlined above.
- Data reported in this category is the summation of the costs of all LV feeder augmentation assets, where the assets were completed during the Regulatory Year and the total project expenditure (on assets completed during the Regulatory Year) was less than $50,000.

Distribution Substation Augmentations – Pole Mounted, Ground Mounted and Indoor

- The information reported is the summation of assets completed on augmentation projects on Distribution Substations (under the 3 specified types) during the Regulatory Year.
- Financial data was sourced from the Asset Addition report for the Augmentation work codes. Data was obtained at a total distribution substation level. The units added and upgraded were used to allocate the total distribution substation costs into the required categories using a percentage allocation basis. This was required as expenditure into the prescribed categories is not available.

Estimated Information:

Based on the information outlined above, all financial data provided is considered Estimated Information. This data is considered Management's best estimate based on the information available.

Table 2.3.4 – Augex Data – Total Expenditure

Preparation Methodology:

'As incurred' Augmentation Capex was obtained from the workings supporting the Annual Regulatory Accounts. This data was ultimately sourced from SAP.

In order to report the Capex in the prescribed categories, the percentage allocation of costs in Tables 2.3.1 to 2.3.3 was calculated. These percentages were applied to the 'as incurred' Augmentation Capex to estimate the data in Table 2.3.4.

Table 2.3.4 does not reconcile to the total of Tables 2.3.1 to 2.3.2 as the data is prepared on an 'as incurred' basis (whereas Tables 2.3.1 to 2.3.2 are prepared on a 'project close' basis) and estimation has been performed to derive direct costs only. Additionally, there are differences in the data as Templates 2.3.1 and 2.3.2 are presented in real terms. This is consistent with the requirements of the RIN.

Estimated Information:

Information reported in Table 2.3.4 is considered Estimated Information due to the calculations performed to derive the 'as incurred' Augex category allocations. These calculations were performed based on percentages of 'project close' augmentation data which are also considered Estimated Information.

This data is required to be estimated as system reports generated on an 'as incurred' basis do not provide sufficient augmentation works identifiers to classify the costs into the required categories. Data provided is considered Management's best estimate based on the information available.

2.5 Connections

Connections expenditure, connection rating and connection voltage have been reported for all distribution substations installed for complex connection projects. Data provided relates to non-contestable, regulated connection services (as defined in the National Electricity Rules) and includes work performed by third parties on behalf of AusNet Electricity Services. It excludes negotiated connection services and contestable works (including gifted assets in contestable works; gifted assets are not distinguishable in business systems).

All expenditure is presented in nominal dollars and has not been distinguished between standard and alternative control services. Expenditure data reported is the gross amount (not subtracting customer contributions).

Data reported in Template 2.5 Connections is distinct from data reported in Template 2.3 Augex.

AusNet Electricity Services records all customer connection costs (including augmentation costs where these are required and paid for by a customer) against specific work codes (distinct from augmentation work codes). In many instances these work codes do not align with the AER Connection definitions. At the highest level, allocations were undertaken according to the following mapping.

AusNet Electricity Services' Codes	AER Connection Subcategory
1012 MEDIUM DENSITY HOUSING - SUBDIVISION	Subdivision
1013 U/GROUND SERVICE INSTALLATION	Residential
1014 BUSINESS SUPPLY PROJECTS	Commercial/Industrial
1015 COGENERATION PROJECTS	Embedded Generation
1016/1017 PRIVATE ELECTRIC LINE REPLACEMENT	Residential Commercial Industrial
1018/1019 LOW DENSITY HOUSING	Residential Subdivision
1020 NEW SERVICE	Residential Commercial/ Industrial

Private Electric Line replacement contains Connections expenditure relating to the undergrounding of a private line. It includes only the component from the distribution system to the property boundary. The customer is responsible for the entire cost of the undergrounding on their property.

Low Density Housing connects mostly single lot developments (including where an existing single lot is being subdivided) together with some small number of multi-lot developments. Therefore, Low Density Housing was allocated using a project management report that provided a count and direct cost of both single and multi-lot developments that were physically complete (supply available) in the 12 months to December. From this extract, an estimated percentage split was generated for both costs (applied to 'as incurred' cost data) and volumes (applied to volume data). Splits were reviewed by SMEs.

Small scale solar connections are not included in co-generation projects.

Alternative control service connections and Private Electric Line replacement were allocated using the ratio of residential to commercial gross connections reported for the Regulatory Year. This ratio was obtained

from an extract of the Customer Information System and the percentage split was applied to both costs and volumes.

2.5.1 Descriptor Metrics

Preparation Methodology:

Underground/Overhead splits have been calculated as follows:

AusNet Electricity Services' Codes	AER Connection Subcategory
1012 MEDIUM DENSITY HOUSING - SUBDIVISION	Split performed with Overhead/Underground lines asset count in Fixed Asset Register
1013 U/GROUND SERVICE INSTALLATION	All underground
1014 BUSINESS SUPPLY PROJECTS	Split performed with Overhead/Underground lines asset count in Fixed Asset Register
1015 COGENERATION PROJECTS	Fixed Asset Register project specific analysis
1016/1017 PRIVATE ELECTRIC LINE REPLACEMENT	All underground
1018/1019 LOW DENSITY HOUSING	Split performed with Overhead/Underground lines asset count in Fixed Asset Register

Underground/Overhead splits for medium Density Housing, Business Supply Projects and Low Density Housing are based on actual 2019 Fixed Asset data extracts as sourced from the financial system.

'MVA added' for distribution substations has been estimated for connection services by multiplying the number of substations in each cost code by an assumed standard for the class of customers in the cost code supplied by distribution planning SMEs (1MVA for business supply projects, 0.5MVA for medium density housing and 0.2MVA for low density housing).

The number and cost of substations for each AusNet Electricity Services cost code has been estimated from an extract of the Fixed Asset Register. No other AusNet Services system contains asset data that can be identified as Customer Connection Capex.

For HV and LV augmentation metrics, 'kms added' refers to the net addition of circuit line length resulting from the augmentation work of complex connections. Costs were estimated from an extract of the Fixed Asset Register according to AusNet Services cost codes. This extract excludes Public lighting costs which are disclosed separately in Template 4.1 Public Lighting. Estimated value of Gifted Assets were removed from the Fixed Asset Additions data by comparing historical as incurred gifted asset cost data obtained from SAP with the Regulatory Year Fixed Asset Additions.

The circuit lengths for LV augmentation assets within each Connection subcategory were estimated using actual quantity data extracted from the Fixed Asset Register. The circuit lengths for HV augmentation assets within Residential and Subdivision Connection subcategories were estimated using actual quantity data extracted from the Fixed Asset Register. The circuit lengths for HV augmentation assets within Commercial/Industrial Connection subcategory were estimated using a five year historical average (using 2011-15 data). The Regulatory Year fixed asset quantities in SAP for Commercial/Industrial HV augmentations could not be relied upon for this purpose due to missing quantities for some additions. No other AusNet Services system contains asset data that can be identified as Customer Connection Capex.

For the purposes of deriving the estimated volumes for all additions reported in Table 2.5.1, some further data cleansing to the raw SAP additions data was required.

This included:-

- the cleansing of '0' volumes from the Fixed Asset Register, which are assumed to be '1' substation installed; and
- the exclusion of HV fuses, earthing and other voltage equipment from being considered as '1' substation installed since these are not 'substations' in their own right. They are individual and relatively low cost pieces of equipment needed to ensure substation units perform as intended.
- the verification of records with large volumes, for example an addition with '13' substations recorded, which are manually checked and corrected.
- the exclusion of rows containing zero value of additions which may or may not include volumes.

The volumes reported in Table 2.5.1 are considered Management's best estimate.

Mean days to connect residential customers to AusNet Services' low voltage distribution network was estimated from extracts from the Customer Information System.

The data reported in 'Volume of Customer Complaints relating to Connection Services' was extracted from 'Service Now' system. Refer to the Annual Reporting RIN basis of preparation (3.6.7 – Customer Service Metrics). The reported number of complaints is considered Actual Information.

In relation to the 'Volume of GSL Breaches for residential customers' and 'GSL Payments', data is recorded in AusNet Services' SAP software. Within SAP, the 'Review GSL Products' module holds the relevant information for these metrics. Once data has been entered into SAP, it is manually transferred to GSL spreadsheet maintained by the New Connections team. This spreadsheet is used to populate the 'Volume of GSL Breaches for residential customers' and 'GSL Payments'. AusNet Electricity Services' procedure document 'GSL Reporting' contains detailed instructions for these operations.

For connection subcategory 'Subdivision', the average cost per lot is estimated by dividing the costs from Table 2.5.2 by the number of lots (12 months to December). The methodology for calculating the number of lots for this purpose is consistent with the approach used in the 2018 CA RIN. AusNet Services' made recent changes to its policy concerning residential land developments under turnkey arrangements. These policy changes have changed the way these residential subdivisions are funded with land developers.[1] In the prior Regulatory Year, there were significantly increased volumes of 'gifted LV assets' in the raw as-incurred cost data, i.e., low voltage assets gifted from developers to AusNet Services upon completion of each estate development. This trend in increased volume of gifted LV assets has continued during the current Regulatory Year. AusNet Services has therefore obtained both as-incurred cost reports and volumes information from SAP to generate the required number of lots, excluding gifted assets. Both costs and volumes data in this calculation excluded gifted assets.

Estimated Information:

All information in Table 2.5.1 is considered Estimated Information except for GSL and customer complaint data. In particular, all cost and volume data included in Table 2.5.1 is on an 'as commissioned' basis as it is sourced from the Fixed Asset Register. This is only indicative of the incurred costs.

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This is considered Management's best estimate based on the data available.

The descriptor metric 'SUBDIVISION - COST PER LOT ($)' is prepared on an as-incurred basis and is therefore considered Actual information

2.5.2 Cost Metrics by Connection Classification

Connections expenditure is the costs to establish new connection assets and upgrades to existing connections assets necessary to meet customer connection requests. This excludes alterations to existing connection assets.

Preparation Methodology:

Total direct costs (including customer contributions) by work code have been taken from information supporting the Annual Regulatory Accounts. Alternative control connection costs have also been extracted from SAP (work code 1020 – New Services).

Total connection volumes were estimated using an extract from the SAP project information system. Alternative control connection volumes were extracted from information supporting the Annual Regulatory Accounts.

AusNet Electricity Services has not captured the costs or volumes in the Simple/Complex categories.

As noted previously, Alternative Control Service connections are allocated using the ratio of residential to commercial gross connections reported for the Regulatory Year applied to both costs and volumes. These services have been classified as Simple LV connections as they involve provision of basic connection services to LV customers who are charged a fixed fee as per the annual tariff schedule for Alternative Control Services.

To determine the required Complex LV, HV and Sub-transmission split of costs in Table 2.5.2 AusNet Services has continued applying the same approach used in AusNet Services' 2016 Category Analysis RIN which utilises as-incurred costs information obtained from SAP. A SAP expenditure report was generated containing a breakdown of as-incurred costs by AusNet Services' work code, compatible unit type and equipment type - providing sufficient information to estimate the required split of cost (by direct cost) by voltage type. This approach is considered an improvement over our previous methodology which relied on as-commissioned costs to estimate the split of as-incurred costs.

To determine the required LV, HV and sub-transmission split of volumes in Table 2.5.2 AusNet Services has used the same data source (as-incurred costs report) to estimate volumes into the required AER Connection classifications. This is a change to the previous methodology which used an extract from the Fixed Asset Register to estimate volumes. The primary reason for this change is to align the source of volumes with expenditure presented in Table 2.5.2. The estimated portion of gifted asset related volumes have been excluded.

The allocation of costs and volumes into the AER Connection categories are set out in the table below.

AusNet Electricity Services' Code	Cost/Volume Allocations	AER Connection Classification
		RESIDENTIAL
Alternative Control Residential Connections 1013 Underground Service Installation 1016 Private Electric Line Replacement	* Projects with just LV costs	SIMPLE CONNECTION LV
1013 Underground Service Installation 1016 Private Electric Line Replacement - Residential 1018 Complex Residential Supply Projects 1019 Low Density Housing -Subdivision	* Projects with just LV costs	COMPLEX CONNECTION LV
1018 Complex Residential Supply Projects 1019 Low Density Housing -Subdivision	Projects with HV costs (projects may or may not also contain LV costs)	COMPLEX CONNECTION HV (NO UPSTREAM ASSET WORKS)
		COMMERCIAL/INDUSTRIAL
Alternative Control Commercial Connections 1016 Private Electric Line Replacement - Residential	* Projects with just LV costs	SIMPLE CONNECTION LV
1016 Private Electric Line Replacement - Residential 1014 Commercial/Industrial Supply Projects	* Projects with just LV costs	COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT LV, MINOR HV WORKS) ($000'S)
1014 Commercial/Industrial Supply Projects	Projects with HV and LV costs	COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT LV, UPSTREAM ASSET WORKS) ($000'S)
1014 Commercial/Industrial Supply Projects	Projects with just HV costs	COMPLEX CONNECTION HV (CUSTOMER CONNECTED AT HV) ($000'S)
1014 Commercial/Industrial Supply Projects	Projects with just ST costs	COMPLEX CONNECTION SUB-TRANSMISSION ($000'S)
		SUBDIVISION
1012 Medium Density Housing 1019 Low Density Housing -Subdivision	Projects with just LV costs	COMPLEX CONNECTION LV
1012 Medium Density Housing 1019 Low Density Housing -Subdivision	Projects with HV costs (projects may or may not also contain LV costs)	COMPLEX CONNECTION HV (NO UPSTREAM ASSET WORKS)
1012 Medium Density Housing 1019 Low Density Housing -Subdivision	Projects with just ST costs	COMPLEX CONNECTION HV (WITH UPSTREAM ASSET WORKS)
		EMBEDDED GENERATION
	No new customer connected	SIMPLE CONNECTION LV
1015 Embedded Generation Projects	Projects with HV and LV costs	COMPLEX CONNECTION HV (SMALL CAPACITY)
	No new customer connected	COMPLEX CONNECTION HV (LARGE CAPACITY)

*The exception was the split of Underground Service Installation and Private Electric Line Replacement. Half the projects were considered residential SIMPLE CONNECTIONS and half residential COMPLEX CONNECTION LV on the basis that undergrounding on one side of the street does not have to cross the road (simple) while connections on the other side of the street have to be connected under the street

(complex). The cost split is based on an assumption that a complex jobs cost 44% more than a simple job in line with SME advice underpinned by existing contractor rates.

Estimated Information:

All information in Table 2.5.2 is considered Estimated Information. Estimates have been provided as the information requested is not separately captured by AusNet Electricity Services and therefore requires judgment by Management on how information should be obtained and presented.

This is considered Management's best estimate based on the data available.

2.6 Non-network

Non-network expenditure reported relates to direct Opex and Capex costs only. Capex and associated non-financial information has been reported on an 'as incurred' basis. Capex and Opex have been presented in nominal dollars.

Table 2.6.1 Non-network Expenditure

ICT and Communications Expenditure

Non-network IT & Communications Expenditure which is directly attributable to IT and communications assets including replacement, installation, operation, maintenance, licensing, and leasing costs at corporate offices have been reported. All costs associated with SCADA and Network Control Expenditure that exists beyond gateway devices have been excluded.

Expenditure reported has been allocated between 'Recurrent', 'Non-recurrent' and 'Client Devices Expenditure'.

Recurrent expenditure is all IT & Communications Expenditure that returns time after time, excluding any expenditure reported as Client Devices Expenditure. Temporally, expenditure that would be expected to be reasonably consistent from regulatory period to regulatory period would be classified as recurrent expenditure.

Non-recurrent expenditure is all IT & Communications Expenditure that is not Recurrent expenditure excluding any expenditure reported under Client Devices Expenditure.

Client Devices Expenditure is expenditure related to a hardware device that accesses services made available by a server. Client Devices Expenditure includes hardware involved in providing desktop computers, laptops, tablets and thin client interfaces and handheld end user computing devices including smart phones.

Preparation Methodology:

Opex: Using data extracted from the Financial Systems for the preparation of the Annual Regulatory Accounts, the total direct SCS Opex for IT and Communications Expenditure was determined.

An assessment of IT Opex was performed by a suitable SME. This provided the total Non-Recurrent IT Opex. Recurrent IT Opex was calculated as the total direct SCS Opex less the Non-recurrent portion identified.

Capex: A list of projects and the associated financial information relating to SCS Capex (excluding overheads) was extracted from the workings to the Annual Regulatory Accounts. This data was ultimately sourced from SAP. An appropriate expert performed an assessment of the nature of each of the projects (Recurrent expenditure, Non-recurrent expenditure or Client Device expenditure) and based on this assessment, the expenditure was classified into the prescribed categorisations in Table 2.6.1.

Estimated Information:

The allocation of IT Opex/Capex between recurrent and non-recurrent expenditure was estimated based on the judgment of a SME, as this information is not separately captured in SAP. This is considered Management's best estimate based on the data available.

Motor Vehicles

Motor Vehicle Expenditure is all expenditure directly attributable to motor vehicles including the purchase, replacement, operation and maintenance of motor vehicle assets registered for use on public roads and excluding mobile plant and equipment. It excludes expenditure on vehicles not generally moved large distances on public roads under their own power.

Category	Description
Car	Cars are Motor Vehicles other than those that comply with the definition of Light commercial vehicle, Heavy commercial vehicle, or Elevated Work Platform. Motor vehicles are any motor vehicle registered for use on public roads excluding motor vehicles not generally moved large distances on public roads under their own power (e.g. tractors, forklifts, backhoes, bobcats and any other road registered mobile plant).
Heavy Commercial Vehicle (HCV)	Heavy commercial vehicles (HCVs) are Motor Vehicles that are registered for use on public roads excluding Elevated Work Platform (HCVs) that: ➢ have a gross vehicle mass greater than 4.5 tonnes; or ➢ are articulated Vehicles; or ➢ are buses with a gross vehicle mass exceeding 4.5 tonnes.
Light Commercial Vehicle (LCV)	Light commercial vehicles (LCVs) are Motor Vehicles that are registered for use on public roads excluding Elevated Work Platforms that: ➢ are rigid trucks or load carrying vans or utilities having a gross vehicle mass greater than 1.5 tonnes but not exceeding 4.5 tonnes; or ➢ have cab-chassis construction, and a gross vehicle mass greater than 1.5 tonnes but not exceeding 4.5 tonnes; or ➢ are buses with a gross vehicle mass not exceeding 4.5 tonnes.
Elevated Work Platform (EWP - HCV)	Elevated Work Platform (EWP - HCV) are HCV's that have permanently attached elevating work platforms.
Elevated Work Platform (EWP - LCV)	Elevated Work Platform (EWP - LCV) are LCV's that have permanently attached elevating work platforms.

Preparation Methodology:

Opex: A report was generated from the Fleet System showing the total Motor Vehicle expenditure for the Regulatory Year. The report provides operating expenditure for each motor vehicle and specifies vehicle type. Vehicle types were aggregated into the prescribed categories in Table 2.6.1 to determine total Opex by vehicle type.

A report was generated in SAP to determine the amount of motor vehicle SCS Opex in Electricity Distribution (post-ABC Survey capitalisation). The total Opex Motor Vehicle Opex report (discussed above) was scaled down proportionately by vehicle type to match the SCS Opex amount. The ratio of SCS motor vehicle opex to total motor vehicle opex is referred to below as the "SCS Use Percentage".

Capex: A fixed asset additions list was generated in the Financial System (Fixed Asset Register) which provided details of all motor vehicles acquired during the Regulatory Year. Vehicle categorisations were allocated based on the asset number. Only vehicles relating to the Electricity Distribution business were included. The capex data was then scaled by the SCS Use Percentage.

Estimated Information:

Opex and Capex: Data reported for Motor Vehicle Capex and Opex is considered Estimated Information due to the estimation of the percentage of expenditure which relates to SCS use. Estimation is required as the data is not separately captured in the Financial or Fleet Systems.

This is considered Management's best estimate based on the data available.

Buildings and Property Expenditure

Expenditure directly attributable to non-network buildings and property assets has been reported, including the replacement, installation, operation and maintenance of non-network buildings, fittings and fixtures. It includes expenditure related to real chattels (e.g. interests in land such as a lease) but excludes expenditure related to personal chattels (e.g. furniture). As noted on page 2, AusNet Services adopted the new Lease accounting standard during the Regulatory Year. The impact is an increase in Capex (new Lease Assets) and a decrease in opex.

Total Buildings and Property expenditure has been reported split between Capex and Opex.

Preparation Methodology:

Opex:

Using SCS Opex extracted from the Financial System for the Annual Regulatory Accounts, expenditure recorded in Building Services and Property Services cost centres was obtained. The data was analysed by GL Accounts to ensure that only GL Accounts which met the AER category analysis definition for Buildings and Property expenditure were included.

Capex:

A project report was generated in the Financial System using the relevant Buildings and Property work codes and cost codes. The project report was reviewed to determine whether any projects met the definition of Buildings and Property expenditure. Projects which did not meet the definition were included in the 'Other Expenditure' section as per below.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Other Expenditure

Other Expenditure has been reported as nil (as the expenditure not reported in the prescribed 2.6.1 categories exceeds the $1 million threshold and hence, has been categorised as Motor Vehicles under Other Expenditure – General Equipment)).

Other Expenditure –General Equipment and Other Expenditure – Motor Vehicles

As $1 million or more (nominal) in capital expenditure has been incurred during the Regulatory Year for 'General Equipment' and for 'Motor Vehicles' this expenditure has been disclosed separately.

Preparation Methodology:

Using data extracted from the Financial System for the preparation of the Annual Regulatory Accounts, 'Other Expenditure - General Equipment' Capex was determined. As the amount exceeded $1 million, the data has been reported separately.

Using data extracted from the Financial System for the preparation of the Annual Regulatory Accounts, 'Other Expenditure - Motor Vehicles' Capex was determined. Data reported is the difference between Total SCS Motor Vehicle Capex (direct costs only) and Motor Vehicle Capex reported under the specified Non-Network categories.

Estimated Information:

Information provided for Other Expenditure - General Equipment is Actual Information. No estimates were required.

Information provided for Other Expenditure - Motor Vehicles is considered Estimated Information as the preparation approach outlined above is based on Motor Vehicle SCS Capex which is estimated.

Table 2.6.2 Annual Descriptor Metrics – IT & Communications Expenditure

Employee Numbers

Employee numbers are the average number of employees engaged in SCS work over the year scaled for time spent on SCS work. This metric does not include labour engaged under labour hire agreements.

Preparation Methodology:

A report showing the number of full time employees and equivalents (by month) was generated in the HR/Payroll System and a simple average was calculated. This report included Employee Numbers in total across all AusNet Service businesses for the the Regulatory Year year.

ABC survey data that provides information about work activity over the AusNet Services businesses, was used to allocate the total employee numbers between the Electricity, Gas, Transmission and unregulated businesses. This ABC survey information captures data relating to employees who do not work directly on projects. The information from ABC surveys has been applied to all employees in a cost centre, assuming

that the survey results are applicable to employees who are directly involved in as well as those who are not directly involved in projects.

The Electricity Distribution business headcount was further allocated into employees involved in SCS related work using an estimated percentage allocation. The SCS percentage allocation was calculated as the amount of Operating Costs relating to SCS divided by the Total Operating Costs. Information for the calculation was obtained from the Annual Regulatory Accounts.

Estimated Information:

The data reported is considered Estimated Information due to the assumptions involved in the percentage allocations as described above. This is considered Management's best estimate based on the data available.

User Numbers

User numbers are defined as active IT system log in accounts used for SCS.

Preparation Methodology:

The Total User Numbers (across the AusNet Services businesses) was extracted from the domain IT system for the Regulatory Year. This includes both onshore and offshore (Wipro and Capgemini) active users as well. Using percentages calculated based on employee numbers, the User Numbers were split between the Electricity Distribution, Gas Distribution, Transmission and Unregulated businesses.

The SCS percentage was then applied to the User Numbers for Electricity Distribution to derive an estimate of the variables to be reported. The SCS percentage allocation was calculated as the amount of Operating Costs relating to SCS divided by the Total Operating Costs. Information for the calculation was obtained from the Annual Regulatory Accounts.

Estimated Information:

This information is considered Estimated Information approximate percentages were applied to derive an estimate of the devices owned by AusNet Electricity Services in relation to SCS. This is considered Management's best estimate based on the data available.

Client Devices

Device numbers are defined as the number of client devices used to provide standard control services scaled for standard control services use. Client Devices are hardware devices that accesses services made available by a server.

Preparation Methodology:

Information in relation to the number of laptops and desktop computers was obtained from ICT Desktop Support and is extracted from the Microsoft System Centre Configuration Manager ("SCCM") system. The report provided the number of devices across the AusNet Services businesses.

Information in relation to handheld devices (smartphones and tablets) was obtained through SCCM to ensure that the list reflected devices that were acquired during the Regulatory Year.

The reports described above were summed to provide the total number of Client Devices across the AusNet Services businesses.

Using the same percentages applied in allocating 'Employee Numbers', average Client Devices were split between the Electricity Distribution, Gas Distribution, Transmission and Unregulated businesses. The SCS percentage was then applied to the Electricity Distribution Client Devices to derive an estimate of the variables to be reported. The SCS percentage allocation was calculated as the amount of Operating Costs relating to SCS divided by the Total Operating Costs. Information for the calculation was obtained from the Annual Regulatory Accounts.

Estimated Information:

Client device information is considered Estimated Information due the approximate percentages applied to derive an estimate of the devices owned by AusNet Electricity Services in relation to SCS. An estimate was required as the information is not separately captured by the business. This is considered Management's best estimate based on the data available.

Table 2.6.3 Annual Descriptor Metrics – Motor Vehicles

Average Kilometres Travelled

Preparation Methodology:

Information was sourced from a report generated in the Fleet System. This report provided the kilometres travelled for each vehicle (owned and leased) for the Regulatory Year. As the report was unable to generate the data for a calendar year because its is tracked on an AusNet Services Financial Year basis, the report was filtered to provide the data for the motor vehicles which met the definitions prescribed by the AER.

The data was extracted for 9 months by vehicle category and extrapolated to 12 months to derive the estimated kilometres travelled during the Regulatory Year. The average kilometres per category was then calculated by dividing the total extrapolated kilometres for all vehicles in each category, by the number of leased and owned vehicles in each category.

The average kilometers travelled per category was then scaled for SCS use. The percentage of SCS use that was applied was consistent with the 'Proportion of Total Fleet Expenditure Allocated as Regulatory Expenditure' as discussed below.

Estimated Information:

This information provided is considered Estimated Information due to the approximation of SCS use and the extrapolation of odometer data. This is considered Management's best estimate based on the data available.

Number Purchased, Number Leased and Number in Fleet

Preparation Methodology:

Information was sourced from a motor vehicle report generated from the Fleet System and vehicles which did not meet the prescribed Motor Vehicle definition were excluded.

The 'Number Purchased' was determined based on the Financial System Fixed Asset Register.

For the average ‘Number Leased’ and average ‘Number in Fleet’, the Fleet System report was used to derive the total number leased and total number in fleet for the Regulatory Year. Using data compiled in the Category Analysis submission (the total number leased and total number in fleet during the Regulatory Year was determined. A monthly average was calculated to determine the average number leased and average number in fleet.

The number of vehicles in the fleet purchased, the average number of vehicles leased and the average number of vehicles in the fleet were scaled for SCS use. The percentage of SCS use that was applied was consistent with the ‘Proportion of Total Fleet Expenditure Allocated as Regulatory Expenditure’ as discussed below.

Estimated Information:

This information provided is considered Estimated Information due to the approximation of SCS use. This is considered Management’s best estimate based on the data available.

Proportion of Total Fleet Expenditure Allocated as Regulatory Expenditure

Preparation Methodology:

The ‘Proportion of Total Fleet Expenditure Allocated as Regulatory Expenditure’ was calculated based on a report generated in SAP. The report provided Motor Vehicle Opex in Electricity Distribution and included details to enable classification of the data into SCS and other service classifications. The percentage reported is the SCS amount divided by the total costs for the Regulatory Year.

Estimated Information:

Information reported is considered Actual Information. No estimates were required.

2.7 Vegetation management

Vegetation management zones are segments of the distribution network distinguished from other vegetation management segments by material differences in recognised cost drivers.

An assessment of vegetation management zones has been performed taking into consideration areas where bushfire risk mitigation costs are imposed by legislation, regulation or ministerial order and areas of the network where other recognised drivers affect the costs of performing vegetation management work. The key driver of vegetation management costs across AusNet Services' businesses is the level of bushfire risk. Based on this, two vegetation management zones were identified in AusNet Electricity Services' network - high bush fire risk areas ("HBRA") and low bushfire risk areas ("LBRA").

The Electrical Safety (Electric Line Clearance) Regulations impose a material cost on performing vegetation management works. The cost of compliance is consistent with the information reported in Table 2.7.2.

There are no self-imposed standards per AusNet Services' Vegetation Management program.

Table 2.7.1 – Descriptor Metrics by Zone

Route Line Length within Zone

The route line length is the aggregated length in kilometres of 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 is the distance between line segments and does not include vertical components such as line sag.

Note – the route line length reported is the overhead route line length only. Underground route line length has been excluded from the data reported.

Preparation Methodology:

For the Regulatory Year, overhead line length data was extracted from the SDME Asset Management System ("SDME"). In SDME, overhead conductors are connected to poles (or nodes) which allow the calculation of span line lengths with single or multiple circuits. A report was generated from the SDME system which provided the information required for Overhead Route Line Length.

The split of total route line length between the HBRA and LBRA vegetation management zones was performed on a percentage allocation basis. The percentage applied was derived using line length information (from the Regulatory Impact Statement and used to derive the HBRA and LBRA categories. The Short and Long Rural and Urban split was also calculated based on line length information from the Regulatory Impact Statement.

Estimated Information:

The system does not distinguish route line length between the HBRA and LBRA zones; therefore an estimate is required. Using the percentage split from the Regulatory Impact Statement is considered the best allocation method available.

This is considered to be Management's best estimate based on the data available.

Number of Maintenance Spans

The 'Number of maintenance spans' is the total count of spans in the network that are subject to active vegetation management practices in the relevant Regulatory Year.

A maintenance span is the network span that is subject to active vegetation management practices in the relevant year. Active vegetation management practices do not include inspection of vegetation maintenance spans where 'inspection' is only for the purpose of identifying trees or other vegetation that require trimming or removal and include vegetation scoping works.

Urban and CBD maintenance spans refers to CBD and urban areas that are subject to vegetation management practices in the relevant Regulatory Year. CBD and urban areas are consistent with CBD and urban customer classifications.

Rural maintenance spans refer to spans in rural areas that are subject to vegetation management practices in the relevant year. Rural spans include spans in short rural and long rural feeders.

Preparation Methodology:

A 'Jobs data extract' is run from the VMS on a monthly basis. This report includes information such as Feeder, Firezone (HBRA or LBRA) and Spans Cut code (C365, C720, CCC, CRE). This report is run with the date range of the last financial operating day of the previous year to the last financial operating day of the RIN period. A span is counted as a Maintenance Span when the payment for cutting occurs in the Regulatory Year.

A count of all Cut (C365, C720, CCC, CRE) spans was determined via a pivot table, which is split into HBRA (Urban and Rural) and LBRA (Urban and Rural). In order to split the data into Urban and Rural the Systems Analyst adds a column into the spreadsheet titled "Classification' and matches the feeder name with the Urban and Rural classification provided by the AusNet Services Analytics team.

A new VMS system was introduced for the Regulatory Year which sources asset information from SDME. Previously VMS sourced data from AMFM. The transition to the new system has meant that service wire poles are not captured in SDME, therefore they are missing from the new VMS. To capture the service wires in the maintenance spans count, a pivot table is performed summing the column headed "Covered Service only Spans" = yes.

The Service Wires, which are split into HBRA & LBRA Urban and CBD & Rural are then added to the maintenance spans count.

In addition to the above, there are also a number of missing spans in SDME. A process has been developed to correct the missing data. The missing maintenance spans have been captured in a spreadsheet and added to the maintenance spans count.

Maintenance spans for the Regulatory Year is made up from three sources; Old VMS, New VMS and the Missing Pole Pairs Spreadsheet.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Total Length of Maintenance Spans

Preparation Methodology:

HBRA: The 'Total Length of Maintenance Spans' was calculated using actual data from VMS. Span Length is identified in the column headed "Span Length (m)". The data is calculated using a Pivot Table summing the total span length and dividing by 1000 to provide the total in kilometres. The data is divided into HBRA Urban and CBD and HBRA Rural.

LBRA: The 'Total Length of Maintenance Spans' was calculated using actual data from VMS. Span Length is identified in the column headed "Span Length (m)". The data is calculated using a Pivot Table summing the total span length and dividing by 1000 to provide the total in kilometres. The data is divided into LBRA Urban and CBD and HBRA Rural.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Length of Vegetation Corridors

A Vegetation corridor is a tract of land along which vegetation is maintained in order to form a passageway along the route of a power line or lines that is free of vegetation encroachment into the asset clearance space. This does not include portions of the corridor where no managed vegetation exists or where vegetation is not managed.

Preparation Methodology:

AusNet Services has calculated the Length of Vegetation Corridors based number of spans that are assessed as requiring vegetation maintenance (cutting) in the next two years and spans that require reassessment. This does not include spans that underwent vegetation maintenance (cutting) in the Regulatory Year. The 'Length of Vegetation Corridors' was calculated using information from the VMS.

HBRA: For the Regulatory Year, the total number of urban and rural PT720 and RE (reassess) vegetation maintenance spans were obtained (which represent maintenance spans which require vegetation maintenance in the next 2 years and spans which need to be reassessed using actual data from VMS. Span Length is identified in the column headed "Span Length (m)". The data is calculated using a Pivot Table summing the total span length and dividing by 1000 to provide the total in kilometres. The data is divided into HBRA Urban and CBD and HBRA Rural). This total was multiplied by the average length of a maintenance span (as derived in the calculation of 'Total Length of Maintenance Spans') to provide an estimate of the 'Length of Vegetation Corridors'.

LBRA: For the Regulatory Year, the total number of urban and rural PT720 and RE (reassess) vegetation maintenance spans were obtained (which represent maintenance spans which require vegetation maintenance in the next 2 years) and spans which need to be reassessed, using actual data from VMS. Span Length is identified in the column headed "Span Length (m)". The data is calculated using a Pivot Table summing the total span length and dividing by 1000 to provide the total in kilometres. The data is divided into LBRA Urban and CBD and HBRA Rural). This total was multiplied by the average length of a maintenance span (as derived in the calculation of 'Total Length of Maintenance Spans') to provide an estimate of the 'Length of Vegetation Corridors'.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Average Number of Trees per Maintenance Span

The 'Average number of trees per maintenance span' includes only trees that require active vegetation management to meet its vegetation management obligations. It excludes trees that only require inspections and no other vegetation management activities required to comply with AusNet Electricity Services' vegetation management obligations.

Preparation Methodology:

Vegetation Management field staff record the number of trees to be actioned (PT1, PT30, PT180, PT365) in each span into the VMS. Systems analyst runs a jobs data extract' from the VMS. Data generated is divided by the number of spans to quantify average numbers of actioned trees per maintenance span (C365, C720, CCC, CRE) which is split into HBRA (Urban and Rural) and LBRA (Urban and Rural). Our methodology does not factor in service poles or missing pole paires because data relating to the number of trees is not available.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Average Frequency of Cutting Cycle

The cutting cycle is the average planned number of years (including fractions of years) between which cyclic vegetation maintenance is performed within vegetation management zones. It has been assumed that Cutting cycles are the same as Maintenance span cycles (the planned number of years (including fractions of years) between which cyclic vegetation maintenance is performed).

Preparation Methodology:

Information in relation to the average vegetation maintenance span cycles was obtained by the vegetation systems analyst from VMS. The cycle data provided was available in the HBRA and LBRA cutting frequencies as per the Progress Report.

Estimated Information:

All information reported is Actual Information. No estimates were required.

Table 2.7.2 – Expenditure Metrics by Zone

Table 2.7.2 has been completed based on the two vegetation management zones identified above. Expenditure provided relates to direct costs; it excludes overhead expenditure and has been presented in nominal dollars. Annual vegetation management expenditure across all categories and zones sums to the total Vegetation Management expenditure in the Regulatory Year.

Preparation Methodology:

Expenditure recorded on Vegetation Management in the Distribution business is coded to specific project codes that align to different vegetation management functions. This data is posted to one work code in AusNet Electricity Services' financial system.

To populate Table 2.7.2, expenditure on each project in the Vegetation Management work code was extracted from the Financial Systems. This data extract was then subject to further analysis.

'Tree Trimming' and 'Inspection' project codes allow for a direct one-for-one allocation of data from the Financial System extract to the categories in Table 2.7.2 (both function and zone).

'Hazard Tree Cutting', 'Ground Clearance' and 'Vegetation Corridor Clearance' is allocated directly to functions from the project codes. Expenditure is allocated to the HBRA and LBRA zones based on the 'Tree Trimming' and 'Inspection' proportions (for 'Ground Clearance' and 'Vegetation Corridor Clearance'). 'Hazard Tree Cutting' was allocated to the zones based on the proportions which applied to 'hazard trees attended to'.

'Audit' and 'Contractor Liaison' expenditure is not separately identifiable in the Vegetation Management work code. To derive these amounts, the Regulatory Year's expenditure was estimated based on the number of staff in each role, multiplied by an average annual salary. An allocation of motor vehicle expenditure is also included.

The costs included in the category 'Other Vegetation Management Costs not Specified in the Sheet' reflect the balance of costs between the above categories and the total expenditure derived from the Vegetation Management work code Financial System extract. Other costs reflect activities such as trouble orders, bark patrol and track maintenance.

Differences in total between the above determined costs and the Annual Regulatory Accounts were calculated and the resulting amount was scaled on a proportional basis to ensure data reported aligns with the Annual Regulatory Accounts. The differences reflect any unregulated costs or any emergency vegetation management costs (which are separately reported in Template 2.9 Emergency Response).

Estimated Information:

All Vegetation Management expenditure reported is considered Estimated Information as the financial systems does not capture costs into the required categories. Estimations were required for category allocations of total costs, deriving the HBRA and LBRA zone splits (for all categories except 'Tree Trimming' and 'Inspection') and for calculating 'Audit' and 'Contractor liaison' costs.

This is considered Management's best estimate based on the data available.

Table 2.7.3 – Descriptor Metrics Across All Zones – Unplanned Vegetation Events

Unplanned vegetation events are system outages and fire starts caused by either vegetation grow-ins or vegetation blow-ins/fall-ins.

Preparation Methodology:

For the Regulatory Year data was prepared using information extracted from the Incident Management System.

The Number of Fire Starts Caused by Vegetation Grow-Ins has been reported as zero as prescribed clearances are maintained.

The Number of Fire Starts Caused by Blow-Ins and Fall-Ins has been reported as the total number of fire starts 'Started by any tree, or part of a tree, falling upon or coming into contact with a distribution system' per the AusNet Services' AER F-Factor RIN. There was insufficient data in the system to determine the cause of the fire starts (grow-ins, blow-ins or fall-ins) or the responsibility. As such, it has been assumed that all Fire Starts relate to Blow-Ins and Fall-Ins are AusNet Electricity Services' responsibility.

Estimated Information:

Given the system limitations as noted above, the information provided for Number of Fire Starts Caused by Blow-Ins and Fall-Ins (NSP Responsibility) is considered Estimated Information.

This is considered Management's best estimate based on the data available.

2.8 Maintenance

Maintenance relates to operational repairs and maintenance of the distribution system, including testing, investigation, validation and correction costs not involving capital expenditure.

Public Lighting has not been included in Template 2.8 Maintenance as it is an Alternative Control Service.

Table 2.8.1 – Descriptor Metrics for Routine and Non-Routine Maintenance

Asset Quantity at Year End

Asset quantity information has been provided for the total number of assets (population) at the end of the current Regulatory Year (for each asset category) and the number of assets inspected or maintained during the current Regulatory Year (for each asset category).

Preparation Methodology:

Table A

Maintenance Activity	Maintenance Asset	Unit of Measure – Asset Quantity	Relevant categories in Template 5.2
POLE TOP, OVERHEAD LINE & SERVICE LINE MAINTENANCE	POLE TOPS AND OVERHEAD LINES	NUMBER OF POLES	Asset Type: Poles Asset Category: Other (cross arm assets)
POLE INSPECTION AND TREATMENT	ALL POLES	NUMBER OF POLES	Asset Type: Poles Asset Category: All poles, excluding cross arm assets
DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE	DISTRIBUTION SUBSTATION TRANSFORMERS	NUMBER OF INSTALLED TRANSFORMERS	Asset Type: Transformers Asset Category: POLE MOUNTED ; < = 22kV ; < = 60 kVA ; SINGLE PHASE to GROUND OUTDOOR / INDOOR CHAMBER MOUNTED ; > = 22 kV & < = 33 kV ; > 40 MVA
DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE	DISTRIBUTION – OTHER EQUIPMENT	EARTH MAT	Asset Type: Transformers Asset Category: POLE MOUNTED (all) Asset Type: Switches = > 11 kV & < = 22 kV
DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE	DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN-SUBSTATIONS AND STAND-ALONE SWITCHGEAR)	NUMBER OF SWITCHES	Asset Type: Switchgear Asset Category: All
SCADA & NETWORK CONTROL MAINTENANCE	SCADA & NETWORK CONTROL MAINTENANCE	NUMBER OF SYSTEMS	Asset Type: Scada, Network Control & Protection Systems Asset Category: Field devices to Communications Network Assets – less Relays and Batteries
PROTECTION SYSTEMS MAINTENANCE	PROTECTION SYSTEMS MAINTENANCE	NUMBER OF SYSTEMS	Asset Type: Scada, Network Control & Protection Systems Asset Category: Field devices to Communications Network Assets multiplied by the percentage of Scada assets attributed to Relays and Batteries in 2015.

In relation to the asset categories listed in the above in table, data reported for ‘Asset Quantity at Year End’ was sourced from Template 5.2 Asset Age Profile. For the Regulatory Year, ‘Asset Quantity’ was calculated as the cumulative sum of the relevant categories (as listed in Table A above) in Template 5.2 Asset Age Profile.

Asset Quantity data was also obtained from the following sources -

- *Network Underground Cable (length in km)* - data was sourced from the Economic Benchmarking RIN for the Regulatory Year from Template 3.5 Physical Assets. The information was ultimately sourced from the SDME Asset Management System. The total Underground Cable length in kilometers has been reported in the Non-CBD category as AusNet Electricity Services does not own underground cable in CBD areas.

  Estimated Information:

  The information provided is considered 'actual information' as it was extracted from the SDME system

- *Pole Top, Overhead Line & Service Line, Service Lines (number of customers)* – data was calculated based on the total number of customers reported in the Regulatory Year escalated based on the number of overhead new connections in the Regulatory Year per data compiled for Template 2.5 Connections.

  Estimated Information:

  The data provided as listed under Table A above is considered Estimated Information, based on assumptions and estimates included in preparing Template 5.2 Asset Age Profile.

- *Overhead Asset Inspection, Line Patrolled (route kms)* - data was extracted from the Asset Management System SDME (for inclusion in the AusNet Services Economic Benchmarking RIN for the Regulatory Year from Template 3.7 Operating Environment).

  Estimated Information:

  The information provided is considered 'actual information' as it was extracted from the SDME system

- *Distribution Substation Equipment & Property Maintenance, Number of Distribution Substation Properties Maintained* – data was sourced from the SAP System as the number of kiosk substations, pad mounted substations, indoor substations and ground substations.

  Estimated Information:

  The information provided is considered 'actual information' as it was extracted from the SAP system.

- *Zone Substation Equipment Maintenance, Other Equipment* – data was estimated based on the number of circuit breakers plus an escalation factor to estimate other assets including 66kv isolators/ disconnectors and 66kv instrument transformers (CTs and VTs) only, which are maintained on a regular basis. The percentage estimate was performed by a relevant SME. The number of circuit breakers was obtained from SAP.

  Estimated Information:

  The information provided is considered 'estimated information' for the reasons noted above This is considered Management's best estimate.

- *Zone Substation Equipment Maintenance, Number of Zone Substation Properties Maintained* – data reported was sourced from SAP. Each Zone Substation is assumed to be one property including buildings, fences, drainage, switchyard surfaces/access roads, metallic structures etc.

  Estimated Information:

  The information provided is considered 'actual information' as it was extracted from the SAP system.

- The Asset Quantity and Asset Quantity Inspected/Maintained, Inspection and Maintenance Cycle for Number of distribution transformers within zone substations and Number of HV transformers is reported as zero as AusNet Electricity Services does not own any distribution transformers and HV transformers within a zone substation.

Estimated Information:

The data provided as listed under Table A above is considered Estimated Information, based on assumptions and estimates included in preparing Template 5.2 Asset Age Profile.

The 'number of customers' (in relation to Service Lines) is Estimated Information as the required data was not available in AusNet Electricity Services' systems. The calculation methodology and assumptions applied have been outlined above.

The quantity of Zone Substation - Other Equipment assets has been estimated using information from the Asset Management System and assumptions of an SME.

This is considered Management's best estimate based on the data available.

Asset Quantity Inspected/Maintained

Preparation Methodology

Financial and non-financial data was extracted from the SAP system based on project work codes. The financial component of the extract was reconciled to Maintenance Opex in the Annual Regulatory Accounts (to ensure completeness of the extract).

The data extracted provided project number, project description, work order, assembly code and 'Number of Records'. Assembly codes represent type of asset and type of work being performed. 'Number of Records' represents a count of Notifications. A notification represents an item of work.

Assembly codes for each maintenance work order were mapped to the prescribed Maintenance Asset Categories using a mapping table which was created by an SME and used in previous Regulatory Years. To derive the 'Asset Quantity Inspected/Maintained' the 'Number of Records' were summed for each mapped Assembly code. In some instances, the assembly codes were not considered reliable. For these exceptions, project information or work order descriptions were used to categorise the data into Maintenance Asset Category.

For the following Maintenance Asset Categories, information provided has been calculated as the sum of the 'Asset Quantity at Year End' divided by the 'Inspection Cycle' in years and 'Asset Quantity at Year End' divided by the 'Maintenance Cycle' in years –

- Service Lines
- Distribution substation transformers
- Distribution substation switchgear
- SCADA & network control maintenance.

For the following Maintenance Asset Categories, information provided has been calculated as the 'Asset Quantity at Year End' split into HBRA and LBRA and divided by the 'Inspection Cycle' in years for the respective areas -

- All Poles
- Pole Tops and Overhead Assets (Cross arms)

For these maintenance categories, the calculation performed is considered to be more indicative of the quantity inspected and maintained than information from other sources.

Estimated Information

A degree of judgment was also required to allocate the data extracted into the categories required in the templates. SMEs were engaged to derive these allocations.

All information provided is considered Estimated Information. This is considered Management's best estimate based on the data available.

Average Age of Asset Group

Preparation Methodology:

Data reported as the 'Average Age of Asset Group' was sourced from Template 5.2 Asset Age Profile. The Asset Installation dates reported were used to calculate the Average Age of the Asset Group. The judgment

of an SME was used to align the asset categories in the Asset Age Profile model to the Maintenance Asset Categories.

AusNet Electricity Services does not keep individual records for properties including the age of buildings, fences, drainage, switchyard surfaces/access roads, metallic structures etc. The average ages of Distribution substation-property and all zone substation properties are therefore based on engineering estimates, which are the same values as per the Category Analysis submission for the 2016 Regulatory Year.

Estimated Information

The information provided is considered Estimated Information based on the preparation methodology outlined above. This is considered Management's best estimate based on the data available.

Inspection Cycle and Maintenance Cycle

A 'Maintenance cycle' is the planned or actual duration between two consecutive maintenance works on an asset. An 'Inspection cycle' is the planned or actual duration between two consecutive inspections of an asset.

The 'Inspection cycle' and the 'Maintenance cycle' for each maintenance subcategory have been expressed as the number of years in the respective cycles. Where there are multiple inspection and maintenance activities, the cycle that reflects the highest cost activity has been reported.

Preparation Methodology:

Table B.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
POLE TOP, OVERHEAD LINE & SERVICE LINE MAINTENANCE	POLE TOPS AND OVERHEAD LINES
POLE TOP, OVERHEAD LINE & SERVICE LINE MAINTENANCE	SERVICE LINES
POLE INSPECTION AND TREATMENT	ALL POLES
OVERHEAD ASSET INSPECTION	ALL OVERHEAD ASSETS

The inspection cycles in relation to the above asset categories was estimated based on cycles contained in the AusNet Electricity Services' internal policy document 'Asset Inspection Manual'. The estimation was performed by a relevant SME. The Inspection Cycle for Service lines is 3 (high bushfire risk) or 5 year (low bushfire risk) years, which is a proxy for the inspection cycle that aligns with the requirement for Overhead line inspection. In practice, physical inspection and maintenance result from regular analysis of network data that are identified through faulty service connections and reports from customers of electricity supply interruption.

In relation to the Maintenance Cycle, the above listed assets are subject to 'condition based' maintenance only. No planned maintenance is undertaken. Based on this, the maintenance cycle has been populated as zero.

Table C.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
NETWORK UNDERGROUND CABLE MAINTENANCE: BY VOLTAGE	LV - 11 TO 22 KV
	33 KV AND ABOVE

As Underground cable assets are not routinely inspected or maintained, 'Inspection Cycles' and 'Maintenance Cycles' of zero have been reported.

Table D.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
DISTRIBUTION SUBSTATION EQUIPMENT & PROPERTY MAINTENANCE	DISTRIBUTION SUBSTATION TRANSFORMERS
	DISTRIBUTION SUBSTATION – OTHER EQUIPMENT
	DISTRIBUTION SUBSTATION SWITCHGEAR (WITHIN-SUBSTATIONS AND STAND-ALONE SWITCHGEAR)
	DISTRIBUTION SUBSTATION - PROPERTY

In relation to Distribution Substation Transformers, the 'Inspection Cycle' reported is based on the inspection cycle of pole mounted transformers as ground mounted transformers are not routinely inspected (unless they are at a key switch location). Pole mounted transformers are inspected as part of the overhead line routine patrol which is performed based on a 3 (high bushfire risk) or 5 year (low bushfire risk) year cycle. The inspection cycle reported is considered Management's best estimate of the required data.

Distribution Substation Transformers are not subject to a routine maintenance cycle. Generally, distribution transformers assets are run to failure (failures are pre-empted by load profile review etc.). This is supported by the minimal number of work orders for Transformer maintenance. Based on this, the 'Maintenance Cycle' has been reported as zero.

Distribution Substation Other Equipment relates to Earth Mats which are not subject to routine or non-routine maintenance.

Distribution Substation Switchgear is not routinely inspected. Based on this, the inspection cycle has been reported as zero. Maintenance is conducted on switches that have been identified as 'key switches' according to various timescales. The frequency for gas switch, ring main units maintenance is approximately 10 years. This is based on information sourced in prior years from the Asset Management Systems.

The Inspection Cycle of Distribution substation property has been reported as 3 (high bushfire risk) or 5 year (low bushfire risk) years. This is based on the inspection cycle of ground type distribution substations which are inspected as part of the bundled line patrol. They are not subject to a routine maintenance cycle.

Other Equipment is not subject to routine maintenance. Based on this, the Maintenance Cycles have been reported as zero. Inspections are on an ad hoc basis.

Table E.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
ZONE SUBSTATION EQUIPMENT MAINTENANCE	TRANSFORMERS - ZONE SUBSTATION

The Maintenance Cycle of Transformers was calculated as the average maintenance cycle based on the age of the transformer assets. A 2 year routine maintenance cycle is required for older transformers, newer transformers require a 4 year maintenance cycle and very new transformers require minor maintenance work every two years but major work every 12 years. This information was extracted from the AusNet Electricity Services' internal policy document 'PGI 02-01-04 Summary of Maintenance Intervals Distribution Zone Substations' and is also based on the knowledge of SMEs, asset conditions and manufacturer recommendations. The average cycle has been reported as data is unavailable to determine the cycle with the highest cost activity.

The inspection cycles reported for Transformers was based on the frequency of oil sampling which is performed on an annual basis for all transformers. This is based on the knowledge of SMEs, asset conditions and manufacturer recommendations.

Table F.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
ZONE SUBSTATION EQUIPMENT MAINTENANCE	ZONE SUBSTATION - OTHER EQUIPMENT

The Maintenance Cycle of Zone Substation - Other Equipment has been estimated as the number of routine maintenance performed on circuit breakers and isolators/disconnectors. The majority of the older circuit breakers are on a 4 year maintenance cycle with the remaining circuit breakers on an 8 year cycle. All isolator/disconnector maintenances are on an 8 year cycle. This information was extracted from the AusNet Electricity Services' internal policy document 'PGI 02-01-04 Summary of Maintenance Intervals Distribution Zone Substations' and is also based on the knowledge of SMEs, asset conditions and manufacturer recommendations. The average cycle has been reported as data is unavailable to determine the cycle with the highest cost activity

The inspection cycles reported for Other Equipment is inspected on an annual basis based on information in AusNet Electricity Services' policy 'PGI 02-01-04 Summary of Maintenance Intervals Distribution Zone Substations', the knowledge of SMEs, asset conditions and manufacturer recommendations.

Table G.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
ZONE SUBSTATION EQUIPMENT MAINTENANCE	ALL ZONE SUBSTATION PROPERTIES

Zone Substation civil inspections are conducted every month/three months, in general, based on information contained in internal policy 'PGI 67-01-01' and the site risk associated with stations. Also the inspections intervals are adjusted based on locations and criticality of the zone substation. The interval could vary from monthly to three monthly and even six monthly in some cases. The average has been estimated as three monthly for every zone substation. The average cycle has been reported as data is unavailable to determine the cycle with the highest cost activity

Maintenance is performed on a 'condition-basis' only. For the purposes of complying with the RIN requirements, the template has been completed as 0.5 years which was calculated as the quantity of assets in age group and expected maintenance works generated due to identified defects during each inspection for each age group.

Table H.

MAINTENANCE ACTIVITY	MAINTENANCE ASSET CATEGORY
SCADA & NETWORK CONTROL MAINTENANCE	SCADA & NETWORK CONTROL MAINTENANCE
PROTECTION SYSTEMS MAINTENANCE	PROTECTION SYSTEMS MAINTENANCE

Data provided was extracted from the AusNet Electricity Services' internal policy document 'PGI 02-01-04 Summary of Maintenance Intervals Distribution Zone Substations' as the maintenance interval for Protection Schemes. The inspection and maintenance cycles are the same for Protection System assets as inspection and maintenance is performed simultaneously.

Estimated Information:

Based on the preparation methodologies outlined above, data provided is considered Estimated Information. This is considered Management's best estimate based on the data available.

Table 2.8.2 – Cost Metrics for Routine and Non-Routine Maintenance

Maintenance expenditure has been provided for each of the prescribed maintenance categories and has been presented in nominal dollars.

Expenditure incurred for the simultaneous inspection of assets and vegetation has been included in Template 2.7 Vegetation Management and not in Template 2.8 Maintenance. Expenditure has been classified as Routine and Non-routine Maintenance Costs.

Routine maintenance costs are costs of recurrent/programmed activities undertaken to maintain assets, performed regardless of the condition of the asset. Costs of activities are predominantly directed at discovering information on asset condition, and often undertaken at intervals that can be predicted. Routine maintenance may include activities to inspect, survey, audit, test, repair, alter, or reconfigure assets.

Non-routine maintenance costs are costs of activities predominantly directed at managing asset condition or rectifying defects (excluding emergency call-outs). The timing of these activities depends on asset condition and decisions on when to maintain or replace the asset, which may vary over time.

Non-routine maintenance is activities to maintain asset condition and/or to maintain the capacity of the distribution system to distribute electricity and where the activities are not routine in nature.

Non-routine maintenance expenditure excludes activities that are designed to increase or improve the capacity of the distribution system to distribute electricity, except where the increase or improvement is incidental to the maintenance of the distribution system. It also excludes costs associated with asset removal, asset replacement, new asset installation, vegetation management and emergency response.

Preparation Methodology:

Data was sourced from SAP based on the Maintenance work codes. The data sourced from SAP is the same information used in preparing the Asset Quantities Inspected/Maintained. As such the same categorisations were applied to the corresponding financial information to determine the Maintenance Asset Category. Project work codes provide the Routine and Non-Routine information required.

Where necessary, the data was supplemented with project or work order descriptions to allocate the financial information into Asset Categories. Categorisations were performed by an SME.

The costs presented in the various rows of Table 2.8.2 are not necessarily mutually exclusive of other rows in the same table. For example, 'Network Underground Cable Maintenance' is reported both by voltage and by location, in the same table. To sum these amounts together would double count these maintenance costs. In accordance with guidance from the AER, an additional row ('Duplications') has been included in Table 2.8.2 to remove duplications.

Estimated Information:

All data provided is considered Estimated Information. A degree of judgment was also required to allocate expenditure in each work code to the categories required in the templates. SMEs were engaged to derive these allocations.

This is considered Management's best estimate based on the data available.

2.9 Emergency Response

Emergency response expenditure relates to costs incurred to restore a failed component to an operational state including all expenditure relating to the work incurred where supply has been interrupted or assets damaged or rendered unsafe by a breakdown, making immediate operations and/or repairs necessary.

Emergency response includes costs of activities primarily directed at maintaining network functionality and for which immediate rectification is necessary. These activities are primarily due to network failure caused by weather events, vandalism, traffic accidents or other physical interference by non-related entities.

Table 2.9.1 - Emergency response expenditure

Total Emergency Response Expenditure

Preparation Methodology:

For the Regulatory Year, Total Emergency Response expenditure was extracted from the Annual Regulatory Accounts. Amounts included in the Annual Regulatory Accounts were based on information sourced from specific SAP ledger cost code created to capture Emergency Response expenditure

Major Events O&M Expenditure (Major Storm)

A major storm is a tropical cyclone of Category 1 or above as classified by the Australian Bureau of Meteorology. There are no tropical cyclone occurrences in AusNet Electricity Services' network.

The categorisation of 'Major Events O&M Expenditure' also includes Major Event Days. This is consistent with advice received from the AER.

Preparation Methodology:

Refer to approach outlined for 'Major Event Days O&M Expenditure' below.

Major Event Days O&M Expenditure

Major Event Days ("MEDs") are defined as per the meaning specified in the service target performance incentive scheme ("STPIS").

Preparation Methodology:

The MEDs reported are consistent with the MED days identified for Template 6.3 Sustained Interruptions.

The MED threshold was calculated for the Regulatory Year from the daily Unplanned System Average Interruption Duration Index ("SAIDI") data between Regulatory Years 2014 and 2018 (5 years) using the annual AER RIN Template MED calculator. Calculations performed were in accordance with the requirements of the STPIS. The calculated MED threshold was then applied as the threshold for the Regulatory Year for the purpose of identifying MEDs.

Emergency response expenditure attributable to MEDs is not separately captured in the Financial System. Expenditure for the MEDs has been calculated by reviewing data in the relevant work codes, supporting information from contractor invoices and accrued expenses for the Regulatory Year. Only costs incurred or accrued have been reported in the data reported.

It is noted that there was an MED on 31 December 2019. The financial impact of the event continued in the 2020 Regulatory Year. Only costs incurred in the Regulatory Year have been reported.

Estimated Information:

All financial information provided in 2.9 Emergency Response is considered actual information.

2.10 Overheads Expenditure

Overhead Expenditure is expenditure that cannot be directly attributed to a work activity, project or work order and consists of labour, materials, contract costs and other costs. Overhead Expenditure has been disaggregated as Network Overheads and Corporate Overheads.

Table 2.10.1 – Network Overheads Expenditure and Table 2.10.2 – Corporate Overheads Expenditure

Network Overhead costs refer to the provision of management services and other related operational, network planning, asset management and compliance functions that cannot be directly associated with any specific operational activity (such as routine maintenance, vegetation management, etc.). Network Overhead includes expenditure for Network Management, Network Planning, Network Control & Operational Switching, Quality and Standard Functions, Project Governance & Related Functions and Other network operating costs.

Corporate Overhead Expenditure refers to the provision of corporate support and management services by the corporate office that cannot be directly identified with specific operational activity. Corporate overhead costs include those for executive management, legal and secretariat, human resources, finance, Non-network IT support costs and regulatory costs.

Capitalised overhead (reported under Capex) is overhead expenditure recognised as part of the cost of an asset, i.e. as capital expenditure. AusNet Electricity Services capitalises Overhead expenditure that is directly attributable to bringing an asset to its intended in-service state. Capitalised overheads were allocated into Network and Corporate Overheads based on the ABC Survey process undertaken in accordance with the CAM.

Amounts reported as Opex reflect overheads that have not been capitalised. Amounts reported under 'Other Distribution Services' are the sum of Opex and Capex overheads.

Preparation Methodology:

Using information from the Financial Systems that was used to prepare the Annual Regulatory Accounts, Overheads Expenditure was classified into Network and Corporate overheads and into service classifications.

Estimated Information:

All Opex information and 'Other Distribution Services' data is considered Actual Information. No estimates were required.

For Capex, the split of capitalised overheads into Network and Corporate Overheads was estimated using underlying ABC survey data. This is not considered to result in Estimated Information as the data used was system generated and there isn't a valid, alternative approach that would lead to materially different data being reported.

2.11 Labour

The total cost of labour reported is equal to the total labour costs reported against the Capex and Opex categories listed in Template 2.12 Input Tables.

Labour costs relating to labour hire contracts have been included within the classification levels. Labour used in the provision of contracts for both goods and services, other than contracts for the provision of labour (e.g. labour hire contracts) have not been reported.

Quantities of labour, expenditure, or stand down periods have not been reported multiple times across the labour categories.

The following 3 categorisations have been applied -

1. Corporate Overhead costs - refers to the provision of corporate support and management services by the corporate office that cannot be directly identified with specific operational activity.
2. Network Overhead costs - refers to the provision of management services and other related operational, network planning, asset management and compliance functions that cannot be directly associated with any specific operational activity.
3. Direct Network Labour - includes workers who primarily undertake field work in their job. This includes:
    - Field tradespeople including workers working in field depots (e.g. fitters and turners and mechanics working in depots).
    - Apprentices training for work that would primarily be field work (i.e. irrespective of whether most of their current work or training is not undertaken in the field).

It is noted that a broader definition of overheads is prescribed for the completion of the Labour Template than in Template 2.10 Overheads. In the Labour Template there are only four categories of 'Direct Labour' (Skilled electrical worker, Skilled non electrical worker, Apprentice and Unskilled worker). All other labour costs are treated as Overheads costs, even though the employees might directly work on projects.

The below definitions have been applied in the preparation of Tables 2.11.1 and 2.11.2.

Labour Classification Level	Description
Executive manager	A manager responsible for managing multiple senior managers. For example CEO, General Manager People and Safety, Finance & Treasury and Legal.
Senior Manager	A manager responsible for managing multiple managers who each manage work teams and projects within the organisation.
Manager	A manager responsible for managing teams of staff.
Professional	Professional workers who do not have a primary role as staff managers. These may include lawyers, accountants, economists etc.
Semi professional	Workers with some specialist training supporting fully trained professionals (e.g. draftsperson, bookkeeper etc.).
Support staff	Non-professional support staff not undertaking field work (e.g. clerical support, secretaries).
Intern, junior staff, nonfield work apprentice	Interns, junior staff and apprentices undertaking non field work. All apprentices undertaking or training to undertake field work are reported under Labour Classification Level – Apprentice.

Labour Classification Level	Description
Skilled electrical worker	Fully qualified/trained electrical workers. This will include line workers, cable jointers, electrical technicians and electricians who have completed an apprenticeship.
Skilled non electrical worker	Skilled non electrical worker employed for their skill set. Examples are tradesmen who have completed an apprenticeship such as carpenters, mechanic, painters and arborists.
Apprentice	A field worker employed as part of a government accredited apprenticeship program. This includes all apprentices who will not primarily be working in offices once fully trained (e.g. apprentices training to become electrical workers, fitters and turners, plumbers, painters, mechanics and arborists).
Unskilled worker	Field workers with limited specialist training. This includes workers who have completed short courses with no other qualifications (e.g. labourer, arborist's assistant, traffic controller, meter reader).

Table 2.11.1 – Cost Metrics per Annum

For the Regulatory Year, the following reports were used –

- Report 1: A timesheet report was generated in SAP which provided timesheet information for all employees who charged time to Electricity Distribution business projects. The report included details of labour costs, normal time/overtime/allowances and activity type information. The data was further grouped into labour category and classification as required per the Labour Template.
- Report 2: A labour hire report was generated in SAP using the Electricity Distribution Labour Hire General Ledger account. Total labour hire costs were split into RIN Labour categories using cost centres. Costs recorded on a Non-SCS cost centre (such as AMI) were excluded.
- Report 3: A labour report was generated in SAP which provided the total labour costs in the Electricity Distribution business. The data was grouped into labour category and classification for each of the required RIN labour categories. Report 1 was subtracted from the total labour report to derive the total labour costs for employees in the Electricity Distribution Business that have not completed timesheets.

For Reports 1 and 3, labour categorisations were derived based on a combination of job titles, activity types, cost centres and the AusNet Services organisational chart. Judgments were made by an appropriate expert when determining the categorisations.

In relation to Report 2, labour category and classification were based on the nature of activity that is usually under taken by the cost centre business unit.

Based on judgments made, all data presented in Template 2.11 is considered Estimated Information. Data provided is considered Management's best estimate, based on the information available.

Average Staffing Level ("ASL")

One ASL is a full-time equivalent employee undertaking SCS work receiving salary or wages over the entire year. For avoidance of doubt, a full time employee equating to one full-time equivalent ("FTE") over the course of the year that spends 50% of their time on SCS work is 0.5 ASL.

Preparation Methodology:

The total hours were divided by 1800 (reflecting the average annual hours worked - based on 48 weeks at 37.5 hours per week) to derive the number of ASLs.

Total hours were calculated as follows –

- For Report 1, total hours were obtained from timesheet data
- For Report 2, total hours were calculated as labour hire costs divided by hourly rates (i.e. the rates equivalent to the average normal time rate for employees within same labour category and classification level)
- For Report 3, total hours were calculated as labour costs by classification, divided by employee average standard rates for each of the classification.

Estimated Information:

For all FTEs, ASLs were derived using an estimation of the total annual hours worked. For labour hire employees and non-timesheet employees, further judgments were made in relation to the hourly rates used. Data provided is considered Management's best estimate of the information required based on the information available.

Total Labour Cost

'Total labour cost' is the total labour costs associated with the total ASLs in a given classification level. Labour costs are the costs of Labour hire, Ordinary time earnings, Other earnings, on-costs and taxes and superannuation.

'Ordinary time earnings' means expenditure that was required under contracts of employment with AusNet Electricity Services and which constitutes ordinary time salaries and wages. It excludes expenditure required under contracts other than employment contracts, irrespective of whether or not the contract includes a labour component.

Preparation Methodology:

Information reported in relation to 'Total labour costs' was obtained from Reports 1, 2 and 3.

However, given the requirement to reconcile Total Direct Labour Costs reported in Template 2.12 Input Tables to Template 2.11 Labour, an adjustment was made. The adjustment was calculated as the difference between these 2 templates and was allocated on a pro-rata basis across all employee classifications in Table 2.11.1. Given the need to reconcile the Labour template to the Input Tables template, data reported in the Labour template is a combination of SCS and alternative control services.

Estimated Information:

Based on the above, the information provided is considered Estimated Information. Data provided is Management's best estimate of the information required based on the information available.

Average Productive Work Hours per ASL

Productive work hours are hours worked undertaken by the employee/labour hire person's substantive job. Productive work hours include
- Supervised on the job training including supervision of apprentices, mentoring and normal employee feedback and development.
- All normal work involved in undertaking the person's substantive job including time spent on meetings and travel between different work areas.

Non-productive work hours are work hours that are non-productive such as annual leave, sick leave, training course and sessions (that are more than supervised on the job training, mentoring and normal employee feedback and development) and other non-productive work hours.

Preparation Methodology:

'Average Productive Work Hours per ASL' was calculated as the total hours (discussed above) less non-productive hours divided by ASLs. It has been assumed all hours for Reports 2 and 3 are productive hours.

Estimated Information:

This is considered Estimated Information as it has been assumed that all labour costs incurred in relation to Reports 2 and 3 relate to productive work only. Further assumptions were applied in relation to the total hours used, i.e. hourly rates applied. This is considered Management's best estimate based on the data available.

Stand Down Occurrences per ASL

'Stand down occurrences per ASL' is the average number of stand down periods per ASL in each labour classification level over the year.

A stand down period is where an employee, or worker employed under a labour hire contract, can't start a scheduled shift that would involve standard control services work at normal ordinary time wages due to prior work at the organisation (for example, due to not having sufficient time off between work shifts).

Preparation Methodology:

Stand down information was extracted from SAP Payroll Data for the Electricity Distribution Business. Data extracted was obtained by employee and classified into Labour Classification Levels based on the individual employee's classification used elsewhere in the Labour Template.

Estimated Information:

Data provided is considered Actual Information.

Table 2.11.2 – Extra Descriptor Metrics for Current Year

Average Productive Work Hours per ASL – Ordinary Time

'Average Productive Work Hours per ASL – Ordinary Time' is the average productive work hours per Regulatory Year per ASL in each classification level spent on SCS work that are 'Ordinary time earnings'.

Preparation Methodology:

For Report 1, information in relation to normal (ordinary) time is available. 'Average productive work hours per ASL – ordinary time' was calculated as total productive normal time divided by ASLs.

For Reports 2 and 3, 'Average productive work hours per ASL – ordinary time' was calculated as Total labour cost divided by hourly rates (as discussed above).

Estimated Information:

This is considered Estimated Information as it has been assumed that all labour costs incurred in relation to Reports 2 and 3 relate to ordinary, productive work only. Further assumptions were applied in relation to the total hours used, i.e. hourly rates applied. This is considered Management's best estimate based on the data available.

Average Productive Work Hours Hourly Rate per ASL – Ordinary Time

'Average Productive Work Hours Hourly Rate per ASL – Ordinary Time' is the Regulatory Year's average productive work hours (spent on SCS) hourly rate per ASL for each Classification level including labour costs that are direct on costs related to 'Ordinary time earnings'.

Preparation Methodology:

For Reports 1, 2 and 3, the rate was calculated as total ordinary time labour costs less ordinary time unproductive labour costs divided by total ordinary time productive hours.

Estimated Information:

This is considered Estimated Information as it has been assumed that all labour costs incurred in relation to Reports 2 and 3 relate to ordinary only. It is assumed that any overhead costs associated with 'Direct Network Labour' Category is non-productive and all overhead costs associated with all other category is productive work. Further assumptions were applied in relation to the total hours used, i.e. hourly rates applied. This is considered Management's best estimate based on the data available.

Average Productive Work Hours per ASL – Overtime

'Average productive work hours per ASL – Overtime' is the average overtime hours for the Regulatory Year paid per ASL for each classification level per year spent on standard control services. Overtime hours are paid productive work hours that are not 'Ordinary time earnings'.

Preparation Methodology:

For Report 1, information in relation to overtime is available. 'Average productive work hours per ASL – overtime' was calculated as total productive overtime hours divided by ASLs.

Estimated Information:

Data provided is considered Estimated Information as it has been assumed that all labour costs incurred in relation to Reports 2 and 3 relate to ordinary time only.

Average Productive Work Hours Hourly Rate per ASL – Overtime

'Average Productive Work Hours Hourly Rate per ASL' is the average productive work hours (spent on SCS) hourly rate per ASL for each classification level (including labour costs that are direct on costs related to productive overtime hours that are not 'Labour Costs – ordinary time earnings').

Preparation Methodology:

The average hourly rate per ASL for each labour classification was obtained from Report 1 using total overtime labour costs less unproductive overtime labour costs, divided by total overtime productive hours.

Estimated Information:

This is considered Estimated Information as it has been assumed that all labour costs incurred in relation to Reports 2 and 3 relate to ordinary only.

2.12 Input tables

Information reported in Template 2.12 Input Tables relates to direct costs for Standard Control and Alternative Control Services. Data reported excludes overheads and is presented on an 'as incurred' basis. Contract Costs are presented inclusive of any applicable Related Party Contract Cost and Related Party Contract Margin.

The summation of Direct Materials, Direct Labour, Contract Costs, Other Costs and Related Party Expenditure for each category reconcile to total expenditure amounts reported in each of the respective templates.

Direct Costs

Preparation Methodology:

Vegetation Management, Routine and Non-Routine Maintenance, Augmentation, Connections, Emergency Response, Public Lighting, Metering, Fee-based Services, Quoted Services, Replacement and Non-Network Expenditure

Information was obtained from the workings to the Annual Regulatory Accounts and the workings to other Category Analysis RIN Templates (ultimately sourced from the Financial System). Capex and Opex reports were run based on work codes which provided a split of costs into Direct Materials, Direct Labour, Contract Costs, Other Costs and Related Party Expenditure.

Work codes were aligned to each of the Input Table categories (Vegetation Management, Routine Maintenance, etc.). Where the costs on the work codes did not directly align with the costs included in the respective Templates (due to adjustments), the work code data was proportionately scaled to align with the Template costs reported. This approach provided the Direct Material, Direct Labour, Contract and Other splits by Input Table category (Vegetation Management, Routine Maintenance, etc.).

For the categories in the Input tables which required sub-categorisations (e.g. HBRA, LBRA, Pole Top, etc.), the scaled work code data was allocated into the subcategories based on the proportion of costs allocated into the subcategories within the respective Templates.

Overheads

The information was sourced from the Financial System and the workings to the Annual Regulatory Accounts. Data was split between Network Overheads and Corporate Overheads based on the nature of the costs.

Estimated Information:

Data provided for Connections, Emergency Response, Quoted Services, Fee Based, Public Lighting, Metering, Non Network and Overheads is considered Actual Information. All other category information provided is considered Estimated Information due to the proportionate scaling or sub-category allocations required. This is considered Management's best estimate based on the data available.

Related Party Costs and Margin

Preparation Methodology:

Related Party Costs were obtained from the workings to the Annual Regulatory Accounts (ultimately sourced from SAP) and were allocated into the categories required using project work codes.

Where Related Party Costs were required to be reported across sub-categories, the sub-categorisations were derived based on the percentage allocations of contractor costs.

Amounts reported under 'Related Party Contract Expenditure' represent the total related party costs, inclusive of margins. Note that related party expenditure was deducted from the 'Contractor Costs' in the template. The margins are also separately shown.

Estimated Information:

Related Party data provided in relation to Augmentation, Replacement and Maintenance is considered Estimated Information due to the sub-category allocations required. This is considered Management's best estimate based on the data available. All other information provided is considered Actual Information.

4.1 Public lighting

Public lighting information relates to non-contestable, regulated public lighting services only and excludes contestable services and negotiated public lighting services.

Table 4.1.1 – Descriptor Metrics over Current Year

Information contained in the Asset Management Systems as well as the Fixed Asset Register does not distinguish between gifted assets and non-gifted assets. Based on this, the data reported is an estimate of the non-gifted asset information required.

Preparation Methodology:

Information in relation to the 'Current Population of Lights' was obtained from the SDME Asset Management System. An SDME report was generated for the Regulatory Year which provided total light quantities by watts and light type.

Data reported is required to be exclusive of gifted assets. Based on the knowledge of an SME, the year on year movement in lights is considered to represent gifted assets (e.g. the annual growth in light population is attributable to gifted assets only). On this basis, the 'Current Population of Lights' as at the end of the prior Regulatory Year is deemed to provide a reasonable estimate of the non-gifted light population for the current Regulatory Year.

Estimated Information:

Information provided is considered Estimated Information as the gifted light population is not separately identifiable. This is considered to be Management's best estimate based on the data available.

Table 4.1.2 – Descriptor Metrics Annually

Gross public lighting expenditure (before subtracting customer contributions) has been reported, on an 'as incurred' basis, in nominal terms. Work performed by third parties on behalf of AusNet Electricity Services has been included in the metrics reported. Expenditure on public lighting has not been distinguished between standard and alternative control services in this template.

Light Installation – Volume of Works and Expenditure

Light Installation is an installation on a major or minor road for the purpose of establishing new luminaires, including associated components such as bracket and lamp. The installation may also include poles dedicated to public lighting services and underground or overhead cabling dedicated to public lighting services.

Preparation Methodology:

The total of 'Major Road Light Installation Volume' and 'Minor Road Light Installation Volume' have been reported as zero as it has been assumed that all growth in public lighting luminaries is attributable to gifted assets.

'Number of Poles Installed' was obtained from the AER Economic Benchmarking RIN (extracted from the SDME system) as the yearly movement in 'Public Lighting poles' population.

‘Total Cost’ was sourced from information in the Financial System. A report was generated from the system for the Regulatory Year based on the relevant Public Lighting work codes. Costs reported are direct costs only (gross of capital contributions) and are on an ‘as incurred’ basis. Gifted Assets were excluded.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Light Replacement - Volume of Works and Expenditure

Preparation Methodology:

The ‘Major Road Light Replacement Volume’ and ‘Minor Road Light Replacement Volume’ (for Light Replacement) data for the Regulatory Year was obtained from an internal report. This report was compiled using information obtained from the external contractor who manages AusNet Electricity Services’ public lighting assets.

The ‘Number of Poles Installed’ was obtained from SAP using a report filtered to capture public lighting. The data reported is a count of work order records.

‘Total Cost’ was sourced from information in the Financial System. A report was generated from the system for the Regulatory Year, using Public Lighting work codes. Costs reported are direct costs only (gross of capital contributions) and are on an ‘as incurred’ basis. Gifted Assets were excluded.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Light Maintenance - Volume of Works and Expenditure

Preparation Methodology:

The ‘Major Road Light Maintenance Volume’ and ‘Minor Road Light Maintenance Volume’ – Light Maintenance data for the Regulatory Year was obtained from an internal report. This report was compiled using information obtained from the external contractor who manages AusNet Electricity Services’ Public Lighting assets.

The ‘Number of Poles Installed’ has been reported as zero as poles are not installed or replaced under maintenance works.

‘Total Cost’ was obtained from the Annual Regulatory Accounts, ultimately sourced from SAP for the Regulatory Year on a work code basis.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Quality of Supply

Preparation Methodology:

Complaints data is stored within AusNet Electricity ‘Service Now’ (SNOW) system.

A customer complaint is considered a written or verbal expression of dissatisfaction about an action, or failure to act, or in respect of a product or service offered or provided by an electricity network distributor.

'Mean days to Rectify/Replace Public Lighting Assets' was obtained from data reported in the Annual Regulatory Accounts for the Regulatory Year. The data reported in the Annual Regulatory Accounts was ultimately sourced from the PowerOn System and reflects the mean business days to rectify/replace public lights.

The 'Volume of GSL Breaches' and 'GSL Payments' was obtained from data reported in the Annual Regulatory Accounts for the Regulatory Year. The data reported in the Annual Regulatory Accounts was determined by reviewing the data provided by AusNet Electricity Services' public lighting contractor. In relation to GSLs, data has not been reported where a GSL scheme does not exist for a public lighting service.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Table 4.1.3 – Cost Metrics

Preparation Methodology:

Information reported in relation to the 'Average Unit Cost for Public Lighting Services' was based on data obtained from contract rate schedules. The rate schedules provided the unit rates of light types for each region in AusNet Electricity Services' distribution network.

For Major Lights, the contract rate schedules contain one rate for each of the 3 regions in AusNet Electricity Services' distribution network. The average of the 3 region rates was calculated and assumed to be consistent across all major light types.

For Minor lights, contract rate data was available for 3 light types. The average contract rate across the 3 regions for each of these 3 light types was calculated.

Note – the average unit costs for Light Installation on major and minor roads does not include the cost of the installation of brackets.

Estimated Information:

For all major road categories, the 'Average Unit Cost' metric is considered Estimated Information, as one rate has been assumed to reflect the 'Average Unit Cost' for major road light types. This estimation has been used as information in relation to the 'Average Unit Cost' of all major road light types is not available in the contract rate schedules.

For all minor road categories, an 'Other Minor' light type has been included which estimates the 'Average Unit Cost' for all light types where specific rate information was not available in contract rate schedules. This is considered estimated information. This is considered to be Management's best estimate based on the data available.

4.2 Metering

Data reported relates to non-contestable, regulated metering services only. This includes work performed by third parties on behalf of AusNet Electricity Services. Data in relation to contestable metering services has not been provided.

Meter type 4 is defined as a remotely read interval meter with communications functionality that is:

- designed to transmit metering data to a remote location for data collection; and
- does not, at any time, require the presence of a person at, or near, the meter for the purposes of data collection or data verification (whether this occurs manually as a walk-by reading or through the use of a vehicle as a close proximity drive-by reading), including, but not limited to, an interval meter that transmits metering data via direct dialup, satellite, the internet, general packet radio service, power line carrier, or any other equivalent technology.

Meter type 4 includes metering assets and services introduced with the Advanced Metering Infrastructure ("AMI") rollout.
Meter type 5 is defined as a manually read interval meter that records interval energy data, which is not a remotely read interval meter.
Meter type 6 is defined as a manually read accumulation meter which measures and records electrical energy in periods in excess of a trading interval.

Table 4.2.1 – Metering Descriptor Metric

Preparation Methodology:

Information was sourced from SAP and was classified into the prescribed categories by an SME. The information reported in the Regulatory Year is the cumulative population of meters.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Table 4.2.2 – Cost Metrics (Volume)

Preparation Methodology:

All Volume data was obtained from SAP.

No volumes have been reported in New Meter Installations, as these are an Alternative Control Service as per the 'Victorian AMI 2012–2016 Budget and Charges Determination', and thus are reported in Template 4.3 'Fee-based services' as new connections.

Estimated Information:

Data reported is considered Actual Information. No estimates were required.

Table 4.2.2 – Cost Metrics (Expenditure)

Preparation Methodology:

Meter Operating Expenditure:

In relation to Meter Opex, the total expenditure and the cost per meter type was determined for each of the required service subcategories (based on the process outlined below). Using this information, an estimate of the expenditure by meter type was derived.

Meter Testing, Meter Investigation, Scheduled Meter Reading, Special Meter Reading, Meter Maintenance, Remote Meter Reading, Remote Meter Re-configuration, IT Infrastructure Opex & Communications Infrastructure Opex

Meter Operating Expenditure - Total Cost Calculations:

Cost data was extracted from the Financial System and the workings to the Annual Regulatory Accounts. Data reported relates to all direct and indirect Metering Opex – both SCS and ACS costs. An analysis of the data was performed by an SME to allocate the respective cost of each service into the subcategories prescribed.

Meter Operating Expenditure - Costs per Meter Type:

Costs were reported across the Meter Types based on a pro rata allocation of the volumes reported for each type.

Other Metering Opex

Other Metering relates to other Opex costs associated with metering which are not separately disclosed in Table 4.2.2. This includes SCS metering costs and support and management costs. These costs have been reported against Meter Type 4 and are considered Actual Information as no estimates were required. Costs were sourced from the workings to the Annual Regulatory Accounts (based on information obtained from the Financial System).

Estimated Information – Operating Expenditure:

The total costs in relation to Meter Testing, Meter Investigations, Scheduled Meter Reading, Special Meter Reading and Meter Maintenance is considered Actual Information. However the derived allocation of these costs into the prescribed meter types results in the information provided is Estimated Information. Similarly, the total of Remote Meter Reading and Remote Meter Re-configuration is Actual information but the split of these costs into the 2 categories is estimated based on volume data. This is considered to be Management's best estimate based on the data available.

Data provided in relation to IT Infrastructure Opex and Communications Infrastructure Opex and Other metering is considered Actual Information.

Meter Capital Expenditure:

Preparation Methodology:

In relation to Meter Capex, the total expenditure and the cost per meter type was determined for each of the required service subcategories (based on the process outlined below). Amounts are shown exclusive of overheads.

Meter Purchase

Meter purchase relates to the direct material cost of purchasing the meter, communication cards and antennas for installation or replacement. This includes the cost of delivery to AusNet Electricity Services' store, including testing of equipment and inclusion of spare parts. All meters purchased were in relation to meter type 4. Costs of meters are separately identifiable from installation costs from the Financial System. The materials component of all Meter Replacements has been included in Meter Purchase.

Meter Replacement

Meter replacement relates to the replacement cost of a meter and associated equipment at a site with existing metering infrastructure. Meter replacement only includes the installation cost to replace an existing meter and/or communication card as the costs of the replacement meter and communication card are disclosed under Meter Purchase. Data was sourced from the workings to the Annual Regulatory Accounts (based on information obtained from the Financial System).

IT Infrastructure Capex

IT Infrastructure Capex relates to costs associated with the AMI IT work codes. Costs were sourced from the workings to the Annual Regulatory Accounts (based on information obtained from the Financial System).

Communications Infrastructure Capex

Communications Infrastructure Capex relates to costs associated with the AMI communications work code. Costs were sourced from the workings to the Annual Regulatory Accounts (based on information obtained from the Financial System).

Estimated Information – Capital Expenditure:

Data reported is considered Actual Information. No estimates were required.

4.3 Fee-based Services

Fee-based services are provided for the benefit of individual customers rather than uniformly supplied to all network customers. Some services of this type are homogenous in nature and scope. This means that these services are provided on a fixed fee basis.

The following are the fee-based services that were listed in AusNet Services' annual tariff proposal of each relevant year:

Field Officer Visits

Field Officer visits are provided to customers, retailers and other parties seeking the following range of Services:

- Reconnection (Fuse Insertion New Customer);
- Customer Transfer;
- Fuse Removal (for any purpose as requested by the customer, the customer's retailer, or electrical contractor); and
- General information on the nature of a customer's usage (e.g.: residential, small commercial).

New Connections

AusNet Services provides connection services to customers making connection of a new premise to the network. This service includes the provision of a service cable in areas with overhead supply and making a connection in a pit for customers in underground supply areas or where a customer requests an underground connection in an overhead supply area.

Service Truck Visits

Service Truck visits are provided to customers, retailers and other parties seeking services such as, but not limited to, the following:

- Supply alterations, additions and upgrades to service and installation assets;
- Fuse removal/insertion where supply is greater than 100 amps; and
- Dropping of service lines for safety reasons while work such as the removal of tree limbs is carried out.

Meter Equipment Test

Where metering data is in dispute AusNet Services will conduct an "in situ" test of the meter. Where the meter is found to be faulty, the prepaid charge will be refunded and a replacement meter installed at no charge to the customer. This service also includes the conversion of a standard meter to a solar meter as well as anti-islanding tests for embedded generators.

Table 4.3.1 – Cost Metrics for Fee-based Services

Preparation Methodology:

The financial information was sourced from the workings to the Annual Regulatory Accounts and grouped in the categories reported (as listed above) by a SME.

Information in relation to the volumes of Field Officer Visits, New Connections and Service Truck Visits was calculated using the billing information contained in the workings to the Annual Regulatory Accounts. The reported data was derived by calculating the number of sales invoices and other sales transactions for each of the above fee-based categories in the Regulatory Year. It has been assumed that one sales invoice/transaction is equal to one fee-based service volume and cost.

In relation to Meter Equipment, the definition includes – Meter Tests, Meter Conversions and Embedded Generator Services.

- Volume data for Meter Tests was sourced from the billing information report (contained in the workings to the Annual Regulatory Accounts). It has been assumed that one sales invoice/transaction is equal to one fee-based service volume and cost.
- For Meter Conversion services, the volume data has been estimated as the number of solar installations in the Regulatory Year. Information in relation to solar installations was obtained from the SAP system, which is the main inventory and customer management system. It has been assumed that all solar installations relate to Meter Conversions. This is considered a reasonable assumption given that solar panel installations by customers are the main driver for meter conversions.
- The volume of Embedded Generator fee-based services was estimated by calculating the total number of sales invoices in the relevant GL account in SAP. It has been assumed that one sales invoice is equal to one fee- based service volume.

Estimated Information:

The non-financial information presented in Table 4.3.1 is considered Estimated Information based on the preparation approach outlined above.

This is considered Management's best estimate based on the data available.

All other information reported is considered Actual Information,

4.4 Quoted Services

Quoted Services are services for which costs are recovered through quoted prices as the nature and scope of these services are specific to individual customers' needs and vary from customer to customer.

AusNet Services provides various Quoted Services including emergency works where the customer is at fault and immediate action needs to be taken by the Distribution Network Service Provider, supply enhancement at the customer's request, auditing of design and construction and specification and design enquiry.

Table 4.4.1 – Cost Metrics for Quoted Services

Preparation Methodology:

The financial information was sourced from the workings to the Annual Regulatory Accounts.

Information in relation to volumes of quoted services was obtained from the workings to the Annual Regulatory Accounts based on information sourced from SAP. The reported data was derived by calculating the number of sales invoices and other sales transactions for recoverable works in the Regulatory Year. It has been assumed that one sales invoice/transaction is equal to one quoted service volume and cost.

Estimated Information:

The non-financial information presented in Table 4.4.1 is considered Estimated Information based on the preparation approach outlined above.

This is considered Management's best estimate based on the data available.

All other information reported is considered Actual Information.

5.2 Asset age profile

The age profile for assets currently in commission has been provided for each prescribed asset category. Data reported corresponds with the Regulatory Year's historical replacement volumes and cost data in Template 2.2 Repex.

Economic life is the estimated period after installation of the new asset during which the asset will be capable of delivering the equivalent effective service as it intended to at its installation date. The period of effective service considers the life cycle costs between keeping the asset in commission and replacing it with its modern equivalent. Life cycle costs of the asset include those associated with the design, implementation, operations, maintenance, renewal and rehabilitation, depreciation and cost of finance.

'Installed assets – quantity currently in commission by year' is the number of assets currently in commission and the year they were installed.

Table 5.2.1 – Asset Age Profile

Preparation Methodology:

Information for all Asset Groups was sourced from the SAP System, with the exception of the Communications Network Assets category where data was also sourced from the GIS system and Public Lighting Luminaries & Poles, Overhead Conductor and Underground Cable where data was sourced from the SDME Asset Management System.

It should be noted that the data has been subject continuing reviews and cleansing across Regulatory Years.

AusNet Electricity Services' asset categories do not directly align with the prescribed AER asset categories. In order to populate Table 5.2.1, engineering judgment has been applied to align assets in the required categorisations. Where AusNet Electricity Services identified assets that are significantly different to the asset categories prescribed by the AER, 'Other' categories have been included in Table 5.2.1 with a suitable description.

The quantity of assets included in the age profile for each year is the number of assets with an installation date in that year. For certain asset categories, the data in SAP has incomplete installation information. For these asset categories, assumptions have been applied to categorise the data into the required installation dates. Further details are outlined in the table below.

Asset Group	Assumptions Applied
Poles	Pole assets with no installation years have been allocated into installation years using percentage allocations based on the prior year age profile reported. It has been assumed that Pole assets with no installation year were not installed in the Regulatory Year. Poles included in the 'staking of a wooden' pole category are also included in the Other wood pole categories. That is the numbers given in each of the wood pole categories includes both staked and unstaked poles with the staked wooden poles are also counted in the 'staking of a wooden pole' category.
Overhead Conductors	Total quantity of installed assets was extracted from SDME. Assets installed in 2018 were extracted from SAP. All other assets (the total quantity less assets installed in the Regulatory Year) were allocated into installation years based on percentage allocations which were derived using the prior the Regulatory Year's asset age profiles.
Underground Cables	Total quantity of installed assets was extracted from SDME. The age profile of Underground Cables is based on detailed engineering analytics of the cable characteristics.
Service Lines	Total quantity of installed assets was extracted from SAP. The allocation between Residential and Commercial & Industrial was calculated based on a percentage split in accordance with the number of customers in the respective asset categories described. This percentage was determined using data reported in the AusNet Services Category Analysis RIN, Connections template. Assets installed in the Regulatory Year were extracted from SAP. All other service cable types were assigned into installation years based on the percentage allocations which were derived using the prior the Regulatory Year's asset age profiles. It was identified that historically, service lines quantities have been under reported under reported and this has been corrected this year.
Transformers	Total quantity of installed assets was extracted from SAP and, where necessary, assumptions were applied to classify SAP data into the Transformer Asset Categories based on the equipment description and other attributes in SAP. Assets installed in the Regulatory Year were extracted from SAP. All other assets were allocated into installation years based on percentage allocations which were derived using the prior the Regulatory Year Asset Age profiles. For all 'Ground Outdoor/Indoor Chamber Mounted; <22kV' transformer categories, transformers <=22kV rather than <22kV were reported, as it was assumed that this is a typo otherwise all of these transformers would have been reported in the single line " >=22kV & <=33kV; <=15MVA". The transformers reported in these categories are all distribution substation transformers. The ' >=22kV & <=33kV' categories have been reserved for the reporting of power transformers located in zone substations.

Asset Group	Assumptions Applied
	The assets with invalid installation dates are distributed as per the prior the Regulatory Year's asset age profile for the relevant asset category.
Switchgear	Total quantity of installed assets was extracted from SAP and, where necessary, assumptions were applied to classify SAP data into the Switchgear Asset Categories based on the equipment description and other attributes in SAP. For "<= 11kv" assets, assets installed in the Regulatory Year were determined based on the year on year movement in assets quantities. For all other categories, the assets installed in the Regulatory Year were extracted from SAP. All other assets were allocated into installation years based on percentage allocations which were derived using the prior the Regulatory Year's asset age profiles.
Public Lighting	For Luminaries and Poles, data was extracted from SDME. The net movement in Luminaries and Poles from prior the Regulatory Year to the current Regulatory Year per the Economic Benchmarking Report (Physical Assets template) was populated in the the Regulatory Year installation year. For Luminaries and Poles, all other assets were allocated into installation years using the prior the Regulatory Year's Asset Age profile allocations. The total number of Brackets was extracted from SAP for the following categories and was split into the below categories based on the ratio of Public Lighting Poles on Major and Minor Roads. Brackets were allocated into installation years based on percentage allocations which were derived using the prior the Regulatory Year's asset age profiles.
Other	Data was extracted from SAP for all categories. Assets with no installation years have been allocated into installation years using percentage allocations based on the prior year age profile reported.

The Economic Life and Standard Deviation for each asset has been based on asset lives included in the 2012 Repex Model (model template provided by the AER). The asset life data in the 2012 Repex Model were developed based on engineering judgment from SMEs within the business. The asset categories in the 2012 Repex model have been aligned with the AER asset categories to populate the required Economic Life information.

For the Asset Category 'Poles – Other', the Economic Life and Standard Deviation are the weighted average values of all pole top structures associated with its voltage levels.

For Overhead Conductors, the Economic Life was obtained from the internal AusNet Electricity Services policy document Asset Management Strategy Document 'AMS 20-52 Conductor' due to limitations in the system data for Overhead Conductors (as outlined above).

Estimated Information:

Data provided in Table 5.2.1 is considered Estimated Information.

As outlined above, estimates and assumptions have been applied to align the data extracted from SAP with the prescribed AER asset categories and where necessary, to profile the data into installation dates. Additionally, the Economic Life for each asset was estimated based on information in the 2012 Repex Model (model template provided by the AER). Assumptions were applied to align the categories in this model into the prescribed categories.

This is considered to be Management's best estimate based on the data available.

5.3 MD - Network level

Table 5.3.1 – Raw and Weather Corrected Coincident Maximum Demand at Network Level (Summed at Transmission Connection Point)

Raw Network Coincident Maximum Demand, Date MD Occurred, Half Hour Time Period MD Occurred, Winter/ Summer Peaking and Embedded Generation

Maximum demand has the meaning prescribed in the National Electricity Rules. Maximum demand refers to 30 minute demand unless otherwise indicated.

Preparation Methodology:

Information was sourced from the National Energy Market Meters (Terminal Station, Boundary and Generator Meters) by Network Level. The network meters have been reconciled with AEMO and AusNet Protection department to ensure all applicable meters are accounted for in calculating the Maximum Demand on the network.

Daily coincidental maximum demand date and time was extracted for the network for all days in the Regulatory Year. Using this information, the maximum MVA and the attributes at the time of peak (MW, MVA) were determined for each zone substation.

Embedded Generation data was sourced from an Oracle SQL database which is populated using Kinetiq (billing) data. The meter data for each 30 minute period (for the coincidental and non-coincidental time periods) for each applicable zone substation is extracted using a SQL query. For coincidental this is the summation of all embedded generation, into the network (Scheduled, Non Scheduled and Solar Generation) at the time that the network peaks.

Estimated Information:

Information provided is considered Actual Information. No estimates or assumptions were applied.

Weather corrected (10% POE, 50% POE) network coincident MD

Preparation Methodology

AusNet Services' POE10 and POE50 demand forecasts are developed at a feeder level. Each feeder has its own temperature-demand relationship calculated, resulting in an 's-curve' for each feeder (where demand increases with temperature on a non-linear basis and then saturates once the temperature reaches a certain point). This means that at a transmission connection point level, weather-correcting demand data is a very complex process. For RIN reporting purposes, weather correction uses the average of five feeders's-curves (PHM33, CLN23, BDL4, BGE22, BN1) to estimate the temperature-demand relationship for all zone substations.

The following methodology has been used to estimate weather-corrected demand:

- Divide the recorded demand by a ratio of (1) the position on the averaged s-curve for the temperature on the maximum demand day as recorded by the Bureau of Meteorology at the Scoresby Research Institute weather station and (2) the relevant POE temperature (38 degrees for POE50 and 46 degrees for POE10). For example, maximum demand recorded on a day with

a recorded temperature of lower than 38 degrees will be adjusted up for POE50 purposes, depending on where on the curve the maximum demand day sits, relative to 38 degrees

Estimated Information:

Weather corrected maximum demand is considered Estimated Information based on the preparation method outlined above.

This is considered Management's best estimate based on the data available.

5.4 MD & utilisation - spatial

Table 5.4.1 – Non-coincident Maximum Demand

Sub-transmission Substations

Non-coincident maximum demand has not been reported at the sub-transmission substation level as AusNet Electricity Services does not own any sub-transmission substations above 33kv. This is consistent with the definition in the RIN which defines sub-transmission substations as “A substation on a distribution network that transforms any voltage to levels above 33 kV.”

Zone Substation

Non-coincident maximum demand has been reported at the zone substation level.

Substation Rating

Substation rating refers to normal summer cyclic rating (“SCR”).

Preparation Methodology:

Substation rating information was sourced from AusNet Services’ 2019 Distribution Annual Planning Report, published December 2019.

Estimated Information:

Information provided is considered Actual Information, no estimates or assumptions have been applied.

Raw Adjusted Maximum Demand (MW), Raw Adjusted Maximum Demand (MVA), Date MD Occurred, Half Hour Time Period MD Occurred, and Winter/ Summer Peaking and Embedded Generation

Preparation Methodology:

Information was sourced from the OSI Pi (SCADA) system.

A list of all zone substations and feeders was compiled based on a combination of the latest round of zone substation forecasts to ensure all zone substations in the reporting period were accounted for.

Daily non-coincidental maximum demand data was provided by network planners. This data was sourced from SCADA and, using this information, the maximum demand day at each substation was identified. The attributes at the time of peak (MW, MVA, Date, Time) were determined for each zone substation

30 minute maximum demand data was extracted from SCADA and OSI Pi for each zone substation, providing daily coincidental maximum demand information (date, time). Daily coincidental maximum demand data was extracted from SCADA for each site for the entire period. Using this information, the maximum MVA and the attributes at the time of peak (MW, MVA) were determined for each zone substation.

For embedded generation, data was extracted by an SME from an Oracle SQL database (which is populated using both Kinetiq (billing) data and Interval Data). For non-coincidental data at each zone substation, the “globalm” and “network_prd” demand exports are added together for the overall embedded generation as the data is split into different types of meters and customers.

Estimated Information:

Information provided is considered Actual Information. No estimates or assumptions were applied.

Weather corrected MD (50% POE, 10% POE, Non-Coincident, Coincident, MW/MVA)

Preparation Methodology:

AusNet Services' POE10 and POE50 demand forecasts are developed at a feeder level. Each feeder has its own temperature-demand relationship calculated, resulting in an 's-curve' for each feeder (where demand increases with temperature on a non-linear basis and then saturates once the temperature reaches a certain point). This means that at a zone substation level, weather-correcting demand data is a very complex process. For RIN reporting purposes, weather correction uses the average of five feeders' s-curves (PHM33, CLN23, BDL4, BGE22, BN1) to estimate the temperature-demand relationship for all zone substations.

The following methodology has been used to estimate weather-corrected demand:

- Assign each zone substation to one of AusNet Services' three regions: central, east and north
- Obtain daily maximum temperature data from the Bureau of Meteorology for three weather stations within these regions: Scoresby Research Institute (central), East Sale Airport (east), Wangaratta Aero (north)
- If the zone substation is winter-peaking, assume that the weather-corrected demand is the same as the recorded demand
- If the zone substation is summer peaking, but the temperature on the date that maximum demand was recorded was below 23 degrees, assume that the weather-corrected demand is the same as the recorded demand
- If the zone substation is summer peaking and the temperature on the date that maximum demand was recorded was above 23 degrees:
    - Divide the recorded demand by a ratio of (1) the position on the averaged s-curve for the temperature on the maximum demand day and (2) the relevant POE temperature (38 degrees for POE50 and 46 degrees for POE10). For example, maximum demand recorded on a day with a recorded temperature of lower than 38 degrees will be adjusted up for POE50 purposes, depending on where on the curve the maximum demand day sits, relative to 38 degrees.

Estimated Information:

Weather corrected maximum demand is considered Estimated Information based on the preparation method outlined above.

This is considered Management's best estimate based on the data available.

6.3 Sustained Interruptions

An interruption is any loss of electricity supply to a customer associated with an outage of any part of the electricity supply network, including generation facilities and transmission networks, of more than 0.5 seconds, including outages affecting a single premise. The customer interruption starts when it is recorded by equipment such as SCADA or, where such equipment does not exist, at the time of the first customer call relating to the network outage. An interruption may be planned or unplanned, momentary or sustained. It does not include subsequent interruptions caused by network switching during fault finding. An interruption ends when supply is again generally available to the customer.

Both planned and unplanned interruptions to supply have been reported. A planned supply interruption is where AusNet Electricity Services planned the interruption to supply and customers were notified in advance.

An unplanned interruption is an interruption due to an unplanned event. An unplanned event is an event that causes an interruption where the customer has not been given the required notice of the interruption or where the customer has not requested the outage.

The following events may be excluded when calculating the revenue increment or decrement under the service target performance incentive scheme ("STPIS") when an interruption on the distribution network has not already occurred or is concurrently occurring at the same time:

a) load shedding due to a generation shortfall
b) automatic load shedding due to the operation of under frequency relays following the occurrence of a power system under-frequency condition
c) load shedding at the direction of the Australian Energy Market Operator ("AEMO") or a system operator
d) load interruptions caused by a failure of the shared transmission network
e) load interruptions caused by a failure of transmission connection assets except where the interruptions were due to inadequate planning of transmission connections and the DNSP is responsible for transmission connection planning
f) load interruptions caused by the exercise of any obligation, right or discretion imposed upon or provided for under jurisdictional electricity legislation or national electricity legislation.

An event may also be excluded where daily unplanned SAIDI for AusNet Electricity Services' distribution network exceeds the major event day boundary, as set out in the STPIS scheme, when the event has not been excluded under clause 3.3(a) of the AER STPIS guidelines.

For the purpose of completing Table 6.3.1 Sustained Interruptions to Supply, the following definitions were applied:

Category	Description
Feeder Classification	CBD feeder: a feeder supplying predominantly commercial, high-rise buildings, supplied by a predominantly underground distribution network containing significant interconnection and redundancy when compared to urban areas. Urban feeder: 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.

Category	Description
	Short rural feeder: a feeder which is not a CBD or urban feeder with a total feeder route length less than 200 km. Long rural feeder: a feeder which is not a CBD or urban feeder with a total feeder route length greater than 200 km.
Effect on unplanned SAIDI (by feeder classification)	The sum of the duration of each unplanned sustained customer Interruption in minutes divided by the total number of distribution customers. USAIDI excludes momentary interruptions (of less than one minute duration).
Effect on unplanned SAIFI (by feeder classification)	The total number of unplanned sustained customer interruptions divided by the total number of distribution customers. Unplanned SAIFI excludes momentary interruptions (of less than one minute duration). SAIFI is expressed per 0.01 interruptions.
MED ("Major Event Days")	Has the same meaning as specified in the STPIS scheme.

Note - AusNet Services' Outage Management System (Poweron) reports momentary interruption as loss of supply interruption continuing for a period of less than one minute, consistent with the Distribution Code. The STPIS RIN report definition of a momentary interruption is a loss of supply with duration of one minute or less. The calculated errors in SAIDI, SAIFI and MAIFI were all less than 1.0%, hence reported values are considered accurate and actual information for reporting purposes.

Table 6.3.1 - Sustained interruptions to supply

Preparation Methodology:

The Network Outage Summary report was extracted from the Poweron Fusion system. From this report, Unplanned outage data was obtained by Incident Reference Number.

For each unique Incident Reference Number, the Minutes-Off Supply ("MOS") and Number of Customers Interrupted ("Cust-Int") were aggregated. Each record identifies the feeder name and outage cause.

Using the feeder name, and with reference to the 2019 AER RIN Annual Reliability Reports, the feeder classification information was added to each outage record. Feeder classification information is maintained in the Poweron Fusion reports.

Using the data described above, the following calculations were performed for each outage record -

- Average Duration = MOS / Cust-Int
- USAIDI = MOS / Number of Customers by Feeder Classification
- USAIFI = Cust-Int / Number of Customers by Feeder Classification

The 'Number of Customers' by feeder classification was obtained from the AER RIN Annual Performance Reports and was calculated as (1 January 2019 count + 1 January 2020 count)/2.

In relation to MEDs, the MED threshold was calculated for the Regulatory Year from the daily Unplanned SAIDI data between Regulatory Years 2014 and 2018 (5 years) using the annual AER RIN Template MED calculator. Calculations performed were in accordance with the requirements of the STPIS. The calculated MED threshold was then applied as the threshold for the Regulatory Year for the purpose of identifying MEDs.

For each record, the outage cause (per the system data) was aligned with the options in Table 6.3.1 ‘Reason for Interruption’ and ‘Detailed Reason for Interruption’. Where the ‘Reason for Interruption’ was unknown, this has been identified and the ‘Detailed Reason for Interruption’ has been listed as ‘Unknown’. All other ‘black outs’ under ‘Detailed Reason for Interruption’ are in accordance with the template guidelines prescribed by the AER. The table below shows the mapping of existing Poweron outage cause codes to the AER RIN Category Analysis Reason for Interruption. A second mapping table is required to provide details on Asset Failures. These tables allow for the automation of the Supply Interruption report out from the data source Poweron.

An enhanced process was introduced during 2017 which captures validated outage causes from an asset failure master database. This database is manually updated by Network Performance and Intelligence team. Where there is conflict between mapped and validated codes, the latter is reported.

Mapping Table for Poweron Cause Codes and RIN Category Analysis

Poweron Cause Group		Cause Code	Cause Description	RIN Category Analysis Reason for interruption	Detailed reason for interruption
A	Animal/Bird	ABS	Animal/Bird on Structure	Animal	Animal impact
		ABM	Animal/Bird midspan	Animal	Animal impact
C	Public Tree	CBO	Public Tree Branch outside clearance	Vegetation	Blow-in/Fall-in - NSP responsibility
		CRO	Public Tree broken at roots outside clearance	Vegetation	Blow-in/Fall-in - NSP responsibility
		CBI	Public Tree Branch inside clearance	Vegetation	Grow-in - NSP responsibility
		CRI	Public Tree broken at roots inside clearance	Vegetation	Grow-in - NSP responsibility
		CTF	Tree felling (by 3rd Party)	Vegetation	Grow-in - NSP responsibility
		CTK	Tree Bark	Vegetation	Grow-in - NSP responsibility
E	Private Tree	EBO	Private Tree Branch outside clearance	Vegetation	Blow-in/Fall-in - NSP responsibility
		ERO	Private Tree broken at roots outside clearance	Vegetation	Blow-in/Fall-in - NSP responsibility
		EBI	Private Tree Branch inside clearance	Vegetation	Grow-in - NSP responsibility
		ERI	Private Tree broken at roots inside clearance	Vegetation	Grow-in - NSP responsibility
		ETF	Tree felling (by 3rd Party)	Vegetation	Grow-in - NSP responsibility
		ETK	Tree Bark	Vegetation	Grow-in - NSP responsibility
W	Weather	WLT	Weather Lightning	Weather	(blank)
		WOF	Weather Other or external fire	Weather	(blank)
		WSN	Weather Snow/Ice	Weather	(blank)
		WHA	Weather High Activity ?? (emergency storm use only)	Weather	(blank)
H	Human	HVD	Human (operated) Vehicle Damage to Asset (incl. pole, service, etc.)	Third party	Vehicle impact
		HUD	Underground Asset Dug up by Human	Third party	Dig-in
		HVA	Human Vandalism (& stolen Fuses)	Third party	Unauthorised access
		HER	Human Error	Network business	Switching and protection error
F	Equipment Malfunction	FEO	Malfunction Electrical Overload/	Overload	(blank)
		FSM	Malfunction Switchgear /Incorrect Operation	Asset Failure	(See Details for Asset Failures table)
		FHM	Malfunction Mechanical Failure	Asset Failure	(See Details for Asset Failures table)
		FVV	Malfunction Varified Voltage Complaint	Asset Failure	(See Details for Asset Failures table)
		FFM	Malfunction Fuse incorrect operation	Asset Failure	(See Details for Asset Failures table)
D	Deteriorated Equipment	DCR	Deterioration Corrosion	Asset Failure	(See Details for Asset Failures table)
		DRT	Deterioration Rotten	Asset Failure	(See Details for Asset Failures table)
		DTM	Deterioration Termites	Asset Failure	(See Details for Asset Failures table)
		DEC	Deterioration Electrical Connection Failure	Asset Failure	(See Details for Asset Failures table)
		DPF	Deterioration Pole Fire	Asset Failure	(See Details for Asset Failures table)
		DSC	Deterioration Sagging Conductor	Asset Failure	(See Details for Asset Failures table)
		DIP	Deterioration Insulator Pollution/Tracking	Asset Failure	(See Details for Asset Failures table)
N	No Fault of AusNet Asset	NFC	False call by customer	Other	False call by customer
		NFI	Fuse Insertion	Other	Fuse Insertion
		NTV	TV interference	Other	TV interference
		NOA	Other Authority Assets	Other	Other Authority Assets
		NCS	Customer Side Fault	Other	Customer Side Fault
		NDU	Duplicate	Other	Duplicate
		NTX	Transmission Failure (no fault on Dist Assets)	5 - Exclusion (STPIS 3.3(a))	(blank)
		NLS	Load Shedding	2 - Exclusion (STPIS 3.3(a))	(blank)
		NDC	Inter distributor connection failure	4 - Exclusion (STPIS 3.3(a))	(blank)
		NPO	Normal Planned outage	Other	Other
		NND		Other	Other
		NNF		Other	Other
		NNO		Other	Other
		NOT	Other (Detail in comments)	Other	Other

M	Metering	MAB	Metering Abolished Meter and Service	Other	Metering
		MTI	Metering Timeswitch Faulty	Other	Metering
		MRC	Metering Reconnection (After Fault)	Other	Metering
		MMT	Metering Fault	Other	Metering
L	Public Lighting	LJF	Major Light Failure (>130W)	Other	Public Lighting
		LNF	Minor Light Failure (<130W)	Other	Public Lighting
		LHF	Non-Standard (heritage) Light Failure	Other	Public Lighting
		LOK	Lights ok on arrival	Other	Public Lighting
U	Unclassified	UNC	Unclassified (detail in comments)	Unknown	Unknown

Details for Asset Failures

For Asset Failures:

Poweron Classification	Location Description containing...	Asset Effect Code	Comments containing...	Detailed reason for interruption
LV Fuse Trip				Distribution Substation
Switch Isolation	SWCHAC			HV
	SWCHGAS			HV
	SWCHFUSE			HV
	SWCHL/INT			HV
	SWCHISOL			HV
	HV Fused Isolator			Distribution Substation
	SWCHINDSW			Distribution Substation
	Trans LV	BF		Distribution Substation
		BN		Distribution Substation
		CB	read comments field details	LV or HV
		CL		Distribution Substation
		DB		Distribution Substation
		DEC	read comments field details	LV or HV
		DRT	read comments field details	LV or HV
		DSC	read comments field details	LV or HV
		FE		Distribution Substation
		FH		Distribution Substation
		FHM	read comments field details	LV or HV
		FL		Distribution Substation
		FSM	read comments field details	LV or HV
		IF		HV
		JB		Distribution Substation
		LA		Distribution Substation
		ND		Other
		NS		LV
		OS		LV
		OT	read comments field details	LV or HV
		PB		LV
		SW		Distribution Substation
		TE		Distribution Substation
		UC		LV
		XB	read comments field details	LV or HV
Unknown			read comments field details	LV or Distribution Transformer
Single Customer			sub, trani, tx, s/s along with box, folcb, isol, fmb, etc	Distribution Substation
			meter, service, neutral screen	LV
			pole, POA along with box, folcb, isol, fmb, etc	LV

			others.	LV
Drop Out Fuse Trip	SWCHFUSE			HV
	Fuse			HV
	Live line clamp			HV
	all others with 21xxxxxxxx sub# series			Distribution Substation

Estimated Information:

Information reported is considered Actual Information. No estimates were required.