

# Jemena Electricity Networks (Vic) Ltd

## 2016-20 Electricity Distribution Price Review Regulatory Proposal

### Revocation and substitution submission

Attachment 7-6 Load demand forecast 2015

Public

6 January 2016



# Jemena Electricity Networks (Vic) Ltd

## Load Demand Forecasts 2015

Public

17 December 2015



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## GLOSSARY

## GLOSSARY

Term	Definition
Annualised average growth rate	The compound average growth rate, which is the year-over-year growth rate over a specified number of years
Probability of Exceedance (PoE)	The likelihood that a given level of maximum demand forecast will be met or exceeded in any given year: <ul style="list-style-type: none"><li>• 50 PoE maximum demand is the level of annual demand that is expected to be exceeded one year in two.</li><li>• 10 PoE maximum demand is the level of annual demand that is expected to be exceeded one year in ten.</li></ul>
N-1 condition	Single credible contingency condition, i.e. one item of critical plant out of service.
Station transformer (N-1) cyclic rating	The permissible daily peak demand to which the transformer(s) may be subjected over summer or winter period following outage of a major plant item at the station.
Station transformer (N-1) 24-hour emergency rating	The permissible peak demand to which the transformer(s) may be subjected over one daily load cycle, after which the transformer load must be reduced to its station transformer (N-1) cyclic rating following outage of a major plant item at the station.
Urban growth boundary	The urban growth boundary (UGB) indicates the long-term limits of urban development and where non-urban values and land uses should prevail in metropolitan Melbourne
50% PoE ambient temperature (summer)	An average daily ambient temperature of 29.4°C derived by NIEIR and adopted by JEN, with a typical maximum ambient temperature of 38.0°C and an overnight ambient temperature of 20.8°C
10% PoE ambient temperature (summer)	An average daily ambient temperature of 32.9°C derived by NIEIR and adopted by JEN, with a typical maximum ambient temperature of 42°C and an overnight ambient temperature of 23.8°C
50% PoE and 10% PoE ambient temperature (winter)	Winter ambient temperature under 10% PoE and 50% PoE are treated the same, referring to an average daily ambient temperature of 7°C, with a typical maximum ambient temperature of 10°C and an overnight ambient temperature of 4°C

## ABBREVIATIONS

<b>Abbreviation</b>	<b>Expanded Name</b>
AEMO	Australian Energy Marker Operator
AER	Australian Energy Regulator
DNSP	Distribution Network Service Provider
EDPR	Electricity Distribution Price Review
GSP	Gross State Product
GWh	Giga Watt hour
HV	High Voltage
JEN	Jemena Electricity Network
MW	Mega Watt
MVAr	Mega Volt Ampere - reactive
MVA	Mega Volt Ampere
NER	Neutral Earthing Resistor
PoE	Probability of Exceedance
PV	Photovoltaic
Tx	Transformer
URD	Underground Residential Distribution

# EXECUTIVE SUMMARY

Jemena is the licensed electricity distributor for the northwest of Melbourne's greater metropolitan area. The Jemena Electricity Networks (JEN) service area covers 950 square kilometres of northwest greater Melbourne and includes the Melbourne International Airport, which is located at the approximate physical centre of the network, and some major transport routes. The network comprises over 6,000<sup>1</sup> kilometres of electricity distribution lines and cables, delivering approximately 4,400 GWh of energy to over 320,000 homes and businesses for a number of energy retailers. The network service area ranges from Couangalt, Clarkefield and Mickleham in the north to Williamstown and Footscray in the south and from Hillside, Sydenham and Brooklyn in the west to Yallambie and Heidelberg in the east. A map of Jemena's service area, which also shows the zone substations supply area with different growth rates, is provided in Appendix A.

JEN has developed the 50% and 10% probability of exceedance (PoE) maximum demand forecasts at the network level (10-year forecast), transmission connection points or terminal stations (10-year forecast), zone substations (10-year forecast) and HV distribution feeders (6-year forecast), as part of its distribution annual planning review.

The methodology for preparing maximum demand forecasts calls for two independent sets of forecasts, spatial level (ie bottom-up) forecast and system level (ie top-down) forecast. The spatial level forecast is prepared by JEN, where historical data, local developments information and various Precinct Structure Plans conducted by Metropolitan Planning Authority<sup>2</sup> are used to build up the forecasts at the feeder level to zone substation level and then to terminal station level, whereas the system level forecast is prepared by an external (macro) economic forecaster (ACIL Allen Consulting<sup>3</sup>) using econometric techniques. The spatial level forecast is then reconciled to the system level forecast to produce the final set of maximum demand forecasts in which JEN adopts in planning its network.

### Key Highlights

As a whole, the growth in demand across JEN's network is slowing, with the total network maximum demand forecast to grow at an average rate of just 1.02% per annum over the next five years (2016 to 2021).

Table ES-1 and Figure ES-1 show the historical observed actual and 10-year forecasts (50PoE and 10PoE) of JEN total network (ie all JEN network customers' maximum coincident load demand aggregated at the system level).

<sup>1</sup> Does not include low voltage services.

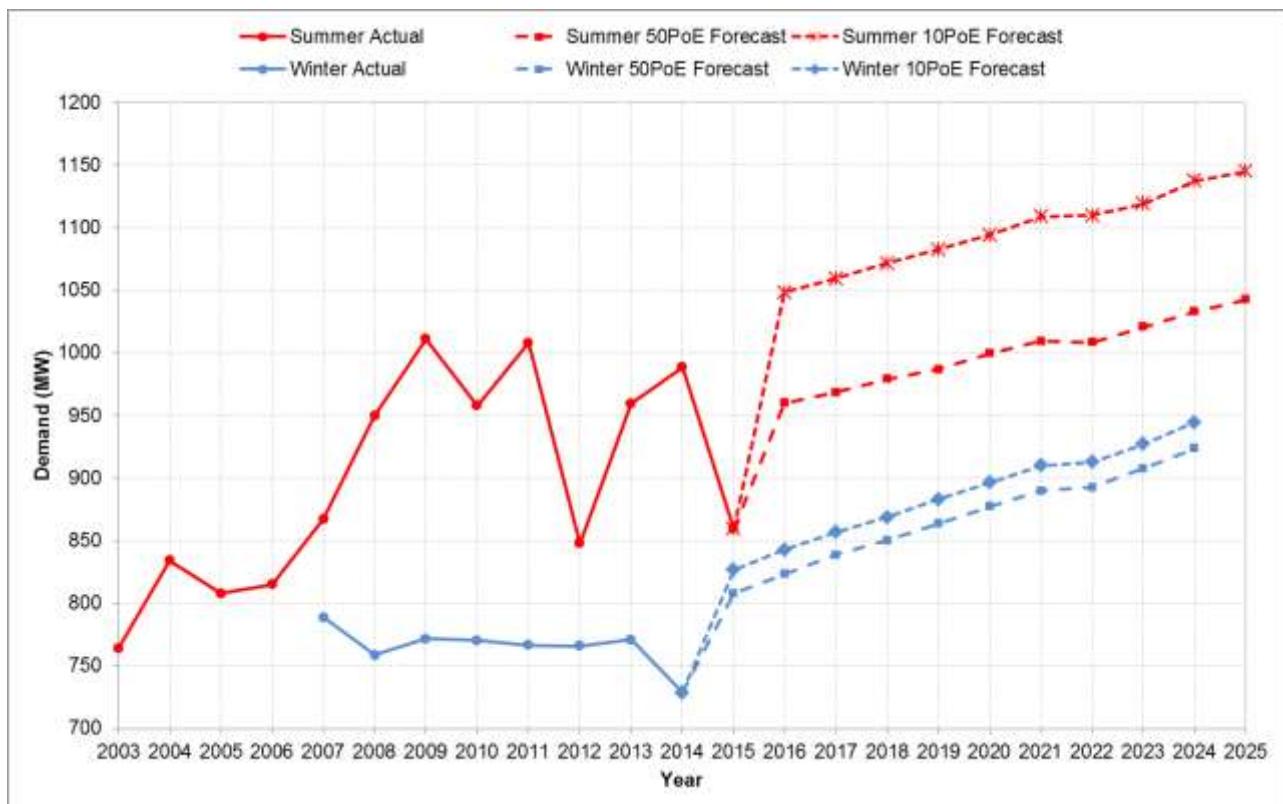
<sup>2</sup> Refer to link, <http://www.planmelbourne.vic.gov.au/Plan-Melbourne>, for Plan Melbourne report.

<sup>3</sup> Refer to "Electricity Demand Forecasts, November 2014" report prepared by ACIL Allen Consulting for the system level forecast.

**Table ES-1: JEN Total Network Maximum Demand Forecast**

Demand (MW)	Actual		Forecast										Average annual growth	
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016-21	2016-25
Summer (50PoE)	988	859	960	968	979	987	1000	1009	1008	1021	1033	1042	1.02%	0.92%
Winter (50PoE)	729	808	823	838	850	863	877	890	892	908	924		1.66%	1.50%
Summer (10PoE)	988	859	1048	1059	1072	1083	1094	1109	1110	1119	1138	1145	1.13%	0.98%
Winter (10PoE)	729	827	843	857	869	883	896	910	913	927	945		1.63%	1.49%

Maximum demand is forecast to grow over the forecast period largely driven by a projected return to trend GDP growth and a stabilisation of electricity prices. The projected growth is slightly slower than the 2014 forecast, due to a downward revision in the economic outlook. At the 50PoE level, the projection is for annual growth of 0.92 per cent compared to 1.35 per cent in previous year.

**Figure ES-1: JEN Total Network Maximum Demand Forecast**

Despite the general slowing in demand growth at the network level, there are areas within the network where maximum demand growth is forecast well beyond the network average level while other parts of the network are forecast to experience reductions in maximum demand as a result of manufacturing closures (e.g, Ford Motors in Broadmeadows).

## EXECUTIVE SUMMARY

In general, areas where JEN expects a strong growth is in the northern half of the network. This is largely due to new developments associated with urban sprawl towards the edge of the Urban Growth Boundary. As a result of this urban sprawl and the recent extension of the Urban Growth Boundary, JEN expects to see continued strong growth in the areas currently supplied by Kalkallo (maximum demand forecast to grow at 8.8% per annum over the next five years), Somerton (4.0%), Sydenham (2.1%), Sunbury (3.0%), and Coolaroo (1.9%) zone substations. Some pockets within established inner suburbs are also experiencing strong growth as a result of amendments to the planning schemes to high density living. The high growth is predominately driven by the development of high rise residential and office buildings, and the expansion of community facilities and services, such as around Footscray Central Activities Area, Essendon Airport and Melbourne International Airport. As a result, JEN is forecasting high growth in maximum demand for areas currently supplied by [c-i-c] [c-i-c] per annum over the next five years), Tullamarine (5.5%), Fairfield (2.8%), Footscray East (2.3%), Airport West (2.1%), and Coburg South (1.7%) zone substations.

Other parts of the network, generally in the south, are expecting to experience low growth to reductions in maximum demand. Table ES-2 below summarises supply areas with different growth rates expected over the next five years.

**Table ES-2: Supply area average annual growth over the next five years (2016-2021)**

Season	Supply Area Average Annual Growth (2016-2021)			
	Strong growth (> 5% pa)	High growth (3-5% pa)	Medium growth (1-3% pa)	Low growth or decline (<1% pa)
Summer	Kalkallo, Tullamarine, Watsonia	[c-i-c] Somerton, Sunbury	Airport West, Coburg South, Coolaroo, Fairfield, Flemington, Footscray East, Sydenham, Yarraville	[c-i-c] ]Braybrook, Broadmeadows, Broadmeadows South, Coburg North, East Preston (66/6.6kV), East Preston (66/22kV), Essendon, North Essendon, Footscray West, Heidelberg, North Heidelberg, [c-i-c] ]Newport, Pascoe Vale, Preston, St Albans. Thomastown, Tottenham, [c-i-c] [c-i-c]

# 1. INTRODUCTION

## 1.1 PURPOSE

The purpose of this report is to inform the relevant JEN internal stakeholders of forecast maximum summer and winter load demands at each JEN owned and customer owned zone substation located within the JEN supply area, and on each individual distribution feeder including those supplied from substations owned by another distribution business. It also provides station configuration, capabilities and maximum prospective fault levels at each JEN owned zone substation and information on major network and load changes.

Some of the primary uses of this report include:

- Assessment of network adequacy to meet anticipated load demand to form the basis for development of the 6-year Network Capacity Capital Expenditure Budget for the Jemena Electricity Network. The forecasts are also used for the Transmission Point of Connection Load Forecasts for AEMO in compliance with the National Electricity Rules requirement and are used for augmentation planning of terminal stations;
- Assessment of the network capability for new and/or additional customer initiated supply request by the Customer Initiated Capital project planners and Network Planning engineers;
- Planning of daily operation of the network, including summer contingency preparation works under both planned and unplanned outages by the JEN Control Centre;
- Assessment of the condition of zone substations circuit breakers and determine when maintenance is necessary for fault interruption duty by the Primary Plant Distribution Systems department. When a circuit breaker is required to trip as a result of protection operation, the circuit breaker deteriorates at a rate dependent on the magnitude of the fault current interrupted; and
- Review of protection settings by the Secondary Plant department. It should be noted that further fault studies are generally required.

## 1.2 SCOPE

This report presents 50% and 10% probability of exceedance forecasts as follows:

- Ten year system level forecasts
- Ten year terminal station forecasts (JEN load only)<sup>4</sup>
- Ten year zone substation forecasts (for both JEN owned and customer owned) within JEN distribution area
- Six year feeder forecasts (all JEN load on feeders, including those feeders supplied by other DNSP zone substations).

The maximum load demand forecasts, grouped together on a zone substation basis, are listed alphabetically.

A summary of the forecasting process used to develop these forecasts, including key drivers of demand, is provided in Section 2.

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<sup>4</sup> Jemena has shared responsibility with AusNet Services and other DNSPs for terminal station planning. Please refer to “*Transmission Connection Planning Report*”, available from <http://jemena.com.au/industry/electricity/network-planning>, for terminal station forecasts.

## 1 — INTRODUCTION

In addition, prospective 2015/16 maximum fault levels for each JEN zone substation are provided. Please note that prospective maximum fault levels have been provided for use as a guide only and should be confirmed with the Network Capacity Planning & Assessment department prior to committing expenditure or technical investigations.

### 1.3 RESPONSIBILITIES

This report is produced annually by the Network Capacity Planning & Assessment department. For further information on this publication, please contact either Tan Bui, on telephone (03) 9173 8283 or Ashley Lloyd, on telephone (03) 9173 8279.

## 2. FORECASTING PROCESS OVERVIEW

### 2.1 BEST PRACTICE DISTRIBUTION LOAD FORECASTING

This section outlines the AER and its consultant's (ACIL Tasman Consulting, now known as ACIL Allen Consulting) view during the Price Review 2011-15, as the key features of best practice distribution load forecasting methodologies.. The presence of such methodological features (as explained for each below) is an important factor in determining whether JEN has, pursuant to clauses 6.5.6(c)(3) and 6.5.7(c)(3) of the NER, produced forecasts that reasonably reflect a realistic expectation of the demand forecast and cost inputs to achieve the operating expenditure objectives and capital expenditure objectives, respectively.

AER's consultant (ACIL Tasman) considered the following features necessary to produce best practice maximum demand, energy and customer number forecasts:

- Accuracy and unbiasedness – careful management of data (removal of outliers, data normalisation) and forecasting model construction (choosing a parsimonious model based on sound theoretical grounds that closely fits the sample data).
- Transparency and repeatability – as evidenced by good documentation, including documentation of the use of judgment, which ensures consistency and minimises subjectivity in forecasts.
- Incorporation of key drivers—including economic growth, population growth, growth in the number of households, temperature and weather related data (where appropriate), and growth in the numbers of air conditioning and heating systems.
- Model validation and testing—including assessment of statistical significance of explanatory variables, goodness of fit, in-sample forecasting performance of the model against actual data, diagnostic checking of the old models, out of sample forecast performance.

AER's consultant (ACIL Tasman) also considered the following elements to be relevant to maximum demand forecasting:

- Spatial (bottom up) forecasts validated by independent system level (top down) forecasts – best practice forecasting requires these forecasts to be prepared independently of each other. The impact of macroeconomic, demographic and weather trends are better able to be identified and forecast in system level data, whereas spatial forecasts are needed to capture underlying characteristics of areas on the network. Generally, the spatial forecasts should be constrained (or reconciled) to system level forecasts.
- Weather normalisation – correcting historical loads for abnormal weather conditions is an important aspect of demand forecasting. Long time-series weather and demand data are required to establish a relationship between the two and conduct weather correction. Weather correction is relevant to both system and spatial level forecasts, and the system level weather correction processes are more sophisticated and robust.
- Adjusting for temporary transfers—spatial data must be adjusted for historical spot loads arising from peak load sharing and maintenance, before historical trends are determined.
- Adjusting for discrete block loads—large new developments (for example, shopping centres, housing developments) should be incorporated into the forecasts, taking into account of the probability that each development might not proceed. Only block loads exceeding a certain size threshold should be included in the forecasts, to avoid potential double counting, as historical demands incorporate block loads.
- Incorporation of maturity profile of service area in spatial time series – recognising the phase of growth of each zone substation, taking into account of the typical lifecycle of a zone substation, depending on its age, helps to inform likely future growth rates.

## 2 — FORECASTING PROCESS OVERVIEW

In addition to the features identified above, the AER considers that accuracy and consistency of forecasts at different levels of aggregation also affects the overall reasonableness of the forecasts, as accuracy at the total level may mask errors at lower levels (for example, at each zone substation or tariff class) that cancel each other out. The AER also considers that the use of the most recent input information is necessary in developing reasonable expectations of future conditions.

Following the AER Final Determination 2011-15, JEN reviewed its load demand forecast methodology and has incorporated the AER and its consultant's view of the features outlined above. JEN considers its current methodology adopted is in line with the AER's view of 'best practice methodology'. JEN's load forecast methodology is outlined in the next section.

### 2.2 FORECASTING METHODOLOGY

Load demand forecasting is critical to a network's operation as it is a principal driver of capital expenditure. However uncertainty always surrounds forecasts due to the inherent unpredictability of factors such as ambient temperatures, weather patterns and, in particular, loads. Load growth can vary from year to year and is not uniform across the whole network. It is not unusual to find parts of the network which grow at three or four times the average network growth rate, while other parts of the network could experience no growth at all.

The process for preparing peak demand forecasts calls for two independent sets of forecasts to be prepared annually, spatial level (ie bottom-up) forecast and system level (ie top-down) forecast. The spatial level forecast is prepared internally by JEN and the system level forecast is prepared by an independent external (macro) economic forecaster (ACIL Allen Consulting).

The spatial forecasts are built up from a feeder level to zone substation level and then to terminal station level, taking into account diversity at each level of aggregation. The forecasts are based on trends identified by looking backwards at historical data and looking forwards at drivers in the future that influence load growth. The forward looking drivers include known future loads, knowledge of local information such as proposed major industrial and commercial developments, predicted housing and industrial lot releases, proposed embedded generation and other items such as economic forecasting, council planning and various Precinct Structure Plans conducted by Metropolitan Planning Authority<sup>5</sup> are also taken into account. Two forecast scenarios are produced; one for summer, and one for winter peak demand conditions, each with a 10% and a 50% probability of exceedance (POE).

The system level forecasts were prepared by an independent external forecaster, ACIL Allen Consulting. The forecasts were prepared using econometric techniques using the methodology ACIL Allen prepared for the Australian Energy Market Operator to use in forecasting demand at the terminal station (connection point) level<sup>6</sup>. These system level forecasts include a summer and winter demand forecast at each of JEN's terminal stations as well as the total network demand for the 10%, 50% and 90% PoE levels. The drivers of demand used in the model includes:

- Economic outlook for Victoria and Jemena supply area, as measured by Victorian Gross State Product (GSP) growth rate (%).
- Photovoltaic (PV) generation capacity.
- Electricity prices.
- Variations in temperature pattern (weather).

<sup>5</sup> Refer to link, <http://www.planmelbourne.vic.gov.au/Plan-Melbourne>, for Plan Melbourne report.

<sup>6</sup> see ACIL Allen Consulting, "Connection point forecasting - a nationally consistent methodology for forecasting maximum electricity demand", 28 June 2013, available from [www.aemo.gov.au](http://www.aemo.gov.au)

In summary, the system level forecast methodology adopted by ACIL Allen Consulting includes:

- regression models were estimated to quantify the relationship between electricity demand and its drivers
- those models were used with projections of the drivers to produce baseline forecasts.
- separate models were prepared for each terminal station (bottom up) and for demand in JEN's region as a whole (top down) and the terminal station forecasts were reconciled with the system level forecasts.
- A post model adjustment was made to the residential forecasts to account for the impact of ongoing take-up of solar PV systems. Adjustments were also made to the terminal station models before reconciliation to account for a small number of large loads anticipated in certain parts of JEN's network. The process was conducted separately for summer and winter to produce independent forecasts of maximum demand in these seasons. For further detail, please refer to ACIL Allen report "Electricity Demand Forecasts"<sup>7</sup>.

JEN reconciles its spatial forecasts to the system level forecast at the total network level to produce the final set of maximum demand forecasts. As a result, the JEN internal spatial forecast is equal to the independent external system forecast at the total network level. JEN adopts its internal spatial forecast for planning its network due to the requirement for forecasts at the feeder and zone substations levels. For further detail of the load forecast methodology, refer to "JEN PR 0507 Load Demand Forecast Procedure"<sup>8</sup>.

## 2.3 DRIVERS OF DEMAND

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Key drivers of demand include economic activity, photovoltaic (PV) generation capacity, electricity prices and weather.

### 2.3.1 ECONOMIC ACTIVITY

Growth in economic activity is a major driver of rising incomes. Demand for electricity is, in part, driven by the ownership of appliances that can be used in peak demand conditions. Two important examples are air-conditioners, and electric space heating. Economic activity is likely to interact with temperature in its impact on maximum demand.

Several economic growth projections were considered for the application in the forecasting model. The Victorian Government's forecasts of GSP were initially selected as the basis for forecasting maximum demand in JEN's region. The Victorian Government forecasts represent the centre of the available GSP forecasts. However, in the AER's Preliminary Determination for the 2016-20 Electricity Distribution Price Review (EDPR), the AER expressed a preference that AEMO's inputs be used in the forecasting model.

Subsequently, AEMO's 2015 economic forecasts from the National Electricity Forecasting Report, as shown in Figure 2–1 below, have been used for this forecast. In most years, AEMO's growth assumptions are less optimistic than the Victorian Government's forecasts of GSP.

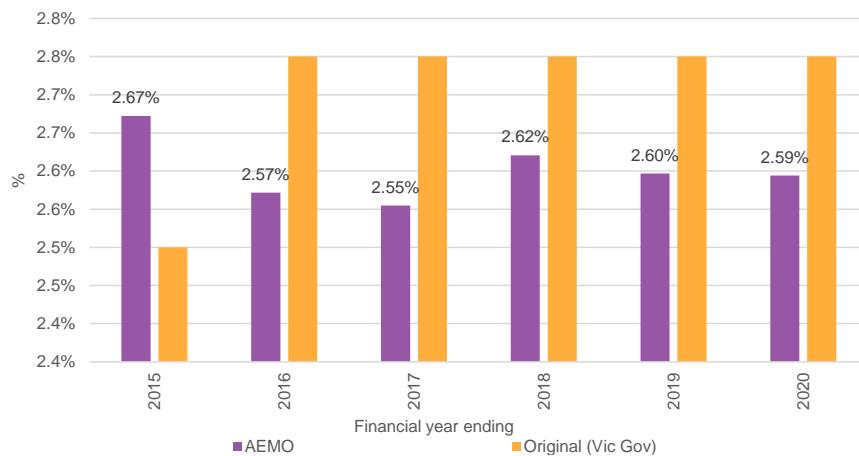
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<sup>7</sup> ACIL Allen Consulting, "Electricity Demand Forecasts", November 2015

<sup>8</sup> Jemena, "JEN PR 0507 Load Demand Forecast Procedure", February 2013

## 2 — FORECASTING PROCESS OVERVIEW

**Figure 2–2: Economic Growth Projections<sup>9</sup>**



### 2.3.2 PV GENERATION CAPACITY

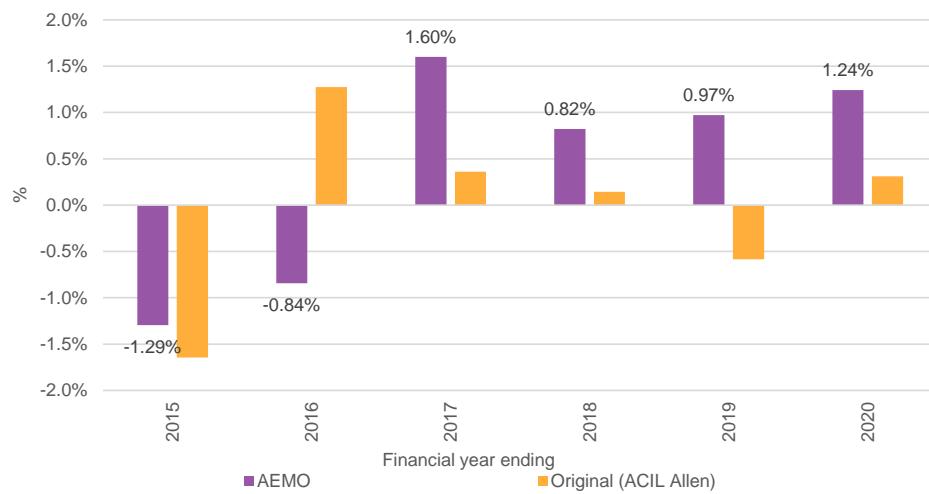
The take-up and usage of rooftop PV systems has a negative impact on demand at the terminal station level. This is because energy generated from these systems is used to offset demand from the owner of the system. Excess energy generated from these systems is also exported to other households within JEN's distribution region without passing through a terminal station. Hence all generation from PV systems can be considered to offset demand. Increased uptake of rooftop PV is a relatively recent phenomenon. Changes in the uptake level of rooftop PV can be attributed to the range of financial incentives households have been offered to install such systems from 2009 onwards. ACIL Allen has projected that the average annual growth in the impact of Solar PV generation on summer maximum demand over the next 10 years will be 18.8%.

### 2.3.3 ELECTRICITY PRICES

Another likely driver of demand is the price of electricity. Higher electricity prices would be expected to decrease maximum demand by creating incentives for customers to become more energy efficient (through appliances and housing design).

Forecasts of real electricity prices are an input into the forecasting models. In 2014 forecast, ACIL Allen forecast electricity prices internally, treating each component separately (i.e. wholesale, network and other costs including retail margin). However, on this occasion the AER's preference is that AEMO's inputs be used in the forecasting model. Consistent with the economic forecasts selection, AEMO's 2015 electricity price forecasts from the National Electricity Forecasting Report, as shown in Figure 2–3 below, have been used for this forecast.

<sup>9</sup> Source: ACIL Allen Consulting

**Figure 2–4:** Forecast change in real electricity prices<sup>10</sup>

### 2.3.4 WEATHER

The weather is also a key driver of demand in both summer and winter. In winter, demand that varies with weather conditions is driven primarily by the heating requirement. Generally, cooler seasons would be associated with a greater heating requirement, and therefore a greater maximum demand. In summer this pattern is reversed, with cooling becoming the driver of weather-related demand. The impact of weather is strongly related to the availability of appliances, and hence economic activity. The impact of weather may also change depending on whether the day's conditions are at the end of a warm or cool streak. Forecasts of weather are not used within the maximum demand forecasting. Rather, historical weather conditions since 1970 are used to develop a confidence interval around maximum demand forecasts. Weather measurements were taken from the Melbourne Airport weather station, as reported to the Bureau of Meteorology website.

<sup>10</sup> Source: ACIL Allen Consulting

## 3 — LOAD FORECAST HIGHLIGHTS

### 3. LOAD FORECAST HIGHLIGHTS

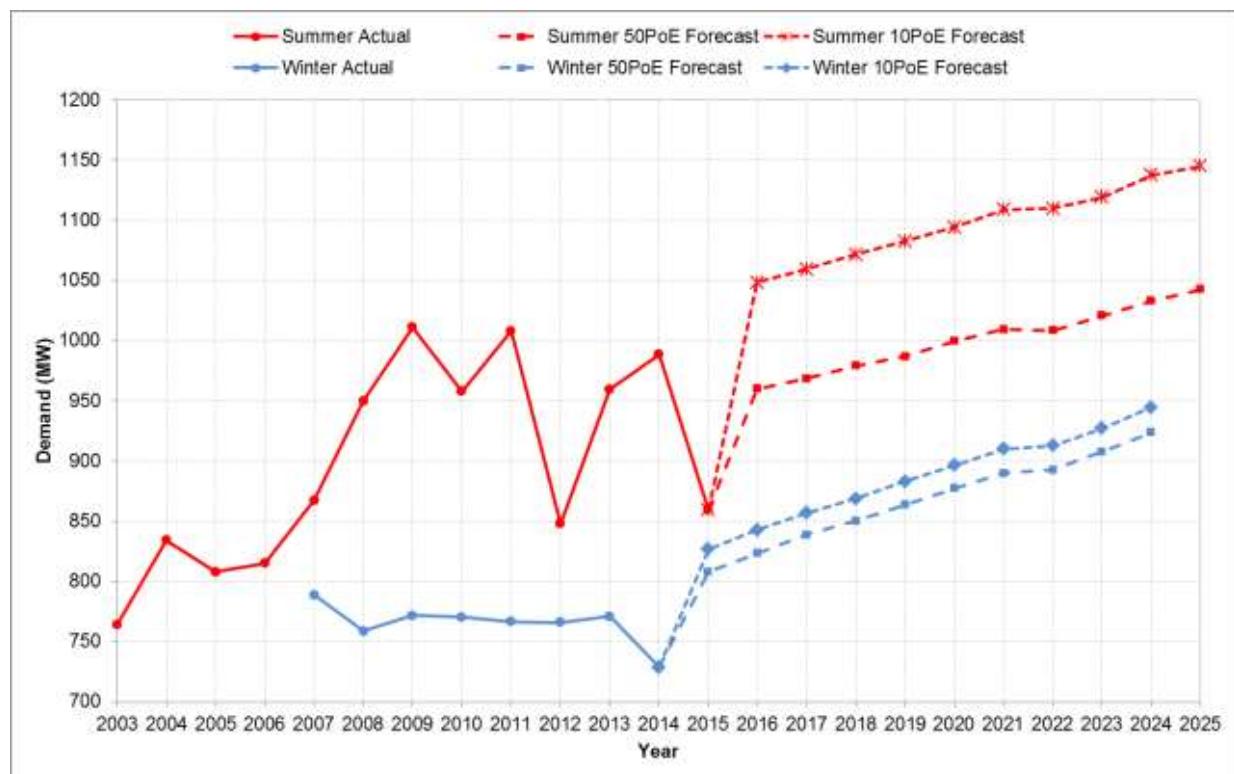
As a whole, the growth in demand across JEN's network is slowing, with the total network maximum demand forecast to grow at an average rate of just 1.02% per annum over the next five years (2016 to 2021). Table 3–1 and Figure 3–1 show the historical observed actual and 10-year forecasts (50PoE and 10PoE) of JEN total network (ie all JEN network customers' maximum coincident load demand aggregated at the system level).

**Table 3–1: JEN Total Network Maximum Demand Forecast**

Demand (MW)	Actual		Forecast										Average annual growth	
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016- 21	2016- 25
Summer (50PoE)	988	859	960	968	979	987	1000	1009	1008	1021	1033	1042	1.02%	0.92%
Winter (50PoE)	729	808	823	838	850	863	877	890	892	908	924		1.66%	1.50%
Summer (10PoE)	988	859	1048	1059	1072	1083	1094	1109	1110	1119	1138	1145	1.13%	0.98%
Winter (10PoE)	729	827	843	857	869	883	896	910	913	927	945		1.63%	1.49%

*Maximum demand is forecast to grow over the forecast period largely driven by a projected return to trend GDP growth and a stabilisation of electricity prices. The projected growth is slightly slower than the 2014 forecast, due to a downward revision in the economic outlook. At the 50PoE level, the projection is for annual growth of 0.92 per cent compared to 1.35 per cent in previous year.*

**Figure 3–1: JEN Total Network Maximum Demand Forecast**



Despite the general slowing in demand growth at the network level, there are areas within the network where maximum demand growth is forecast well beyond the network average level while other parts of the network are forecast to experience reductions in maximum demand as a result of manufacturing closures (e.g, Ford Motors in Broadmeadows).

In general, areas where JEN expects a strong growth is in the northern half of the network. This is largely due to new developments associated with urban sprawl towards the edge of the Urban Growth Boundary. As a result of this urban sprawl and the recent extension of the Urban Growth Boundary, JEN expects to see continued strong growth in the areas currently supplied by Kalkallo (maximum demand forecast to grow at 8.8% per annum over the next five years), Somerton (4.0%), Sydenham (2.1%), Sunbury (3.0%), and Coolaroo (1.9%) zone substations. Some pockets within established inner suburbs are also experiencing strong growth as a result of amendments to the planning schemes to high density living. The high growth is predominately driven by the development of high rise residential and office buildings, and the expansion of community facilities and services, such as around Footscray Central Activities Area, Essendon Airport and Melbourne International Airport. As a result, JEN is forecasting high growth in maximum demand for areas currently supplied by [c-i-c] [c-i-c] per annum over the next five years), Tullamarine (5.5%), Fairfield (2.8%), Footscray East (2.3%), Airport West (2.1%), and Coburg South (1.7%) zone substations.

Other parts of the network, generally in the south, are expecting to experience low growth to reductions in maximum demand. Table 3–2: below summarises supply areas with different growth rates expected over the next five years.

## 3 — LOAD FORECAST HIGHLIGHTS

**Table 3–2: Supply area average annual growth over the next five years (2016-2021)**

Season	Supply Area Average Annual Growth (2016-2021)			
	Strong growth (> 5% pa)	High growth (3-5% pa)	Medium growth (1-3% pa)	Low growth or decline (<1% pa)
Summer	Kalkallo, Tullamarine, Watsonia	[c-i-c]  Somerton, Sunbury	Airport West, Coburg South, Coolaroo, Fairfield, Flemington, Footscray East, Sydenham, Yarraville	[c-i-c]  Braybrook, Broadmeadows, Broadmeadows South, Coburg North, East Preston (66/6.6kV), East Preston (66/22kV), Essendon, North Essendon, Footscray West, Heidelberg, North Heidelberg, [c-i-c] ]Newport, Pascoe Vale, Preston, St Albans. Thomastown, Tottenham, [c-i-c] [c-i-c]

### 3.1 MAJOR DEVELOPMENTS ANTICIPATED

New major developments anticipated over the forecast period in the northern part of the JEN supply area include:

- URD and industrial estates development in the Kalkallo, Craigieburn and Mickleham areas covered by the Northern Growth Corridor, currently supplied from Somerton and Kalkallo zone substations;
- [c-i-c]
- Continued URD and commercial estates developments within the Sunbury supply area; and
- Continued URD estates expansion within the Greenvale area, currently supplied from Coolaroo zone substation.

Areas within the established inner suburbs are also experiencing high growth, and these include:

- New commercial development within Melbourne Airport Business Park;
- New high rise residential and office buildings within the Footscray Central Activities Area, currently supplied by Footscray East zone substation;
- On-going commercial and industrial estates development within Airport West and Tullamarine supply areas;
- Redevelopment of the Amcor site in Fairfield to multiple high rise residential and office buildings, which will be supplied from Fairfield zone substation;
- Essendon Airport Development, currently supplied from Airport West zone substation;
- On-going URD and commercial developments within the Pentridge area, currently supplied from Coburg South zone substation;
- On-going developments at CSL site, currently supplied from Broadmeadows South zone substation.

In preparing the forecast, only loads associated with confirmed new developments or development proposals that have a high probability of proceeding are included.

### 4. LOAD FORECAST DATA

#### 4.1 NOTES ON USE OF LOAD FORECAST

The forecast data presented in this report has the following assumptions.

##### 4.1.1 EMBEDDED GENERATION

Table 4–1 shows the capacity and year of installation of the embedded generators inter-connected to the Jemena Electricity Network with a capacity of greater than 1 MW. In forecasting peak demand for zone substations and feeders with embedded generation, it was assumed that the generators are not running at peak load periods unless otherwise specified due to the absence of any contract requiring the generator to operate at particular times specified by JEN.

**Table 4–1:** Embedded generators inter-connected to the Jemena Electricity Network

Embedded Generator	Capacity (nominal)	Year Installed	Zone Substation
[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
[c-i-c]	3.8 MW	Installed in 1991 & decommissioned in late 2013	NH
[c-i-c]	1.5 MVA	2011	NH
[c-i-c]	6.4 MW	1993	BD
[c-i-c]	3.0 MW	1 <sup>st</sup> unit in 2002 2 <sup>nd</sup> unit in 2004 3 <sup>rd</sup> unit in 2007	TH
[c-i-c]	6.0 MW	Early 1990s	TT
[c-i-c]	2.0MW	2008	CN
Somerton Power Station	150 MW	2002	Somerton Switching Station
[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]

##### 4.1.2 CROSS BOUNDARY FLOWS

For zone substations Fairfield (FF) and North Essendon (NS) which provide supplies to customers of CitiPower Pty, the load forecasts shown are total station demand. For AusNet Services zone substations Kalkalo (KLO), Thomastown (TT) and Watsonia (WT), the load forecasts shown are JEN's demand only.

There are three 22kV feeders shared with Powercor, which are connected to Powercor's zone substation St Albans (SA). Load forecasts shown are an estimate of the JEN load supplied by these feeders.

#### 4.1.3 SUMMER AND WINTER PERIOD

Summer refers to months of October to March in the following year inclusive. For an example, October 2015 - March 2016 would be shown as "summer 2016".

Winter refers to months of April to September inclusive. For an example, April 2015 – September 2015 would be shown as "winter 2015".

#### 4.1.4 STATION & FEEDER RATINGS

##### **Station Ratings**

1. Zone substation capacitors are shown with their Mega-Volt-Ampere-reactive (MVAr) capacity at nominal voltage levels.
2. Station transformer load forecasts and station transformer (N-1) cyclic & 24-hour emergency ratings are shown in Mega-Volt-Amperes (MVA).

Station transformer (N-1) cyclic & 24-hour emergency summer ratings are calculated based on a maximum ambient temperature of 38°C, which is representing the 50% PoE ambient temperature. Ratings under 10% PoE ambient temperature have not been calculated and therefore not shown in this report.

Station transformer (N-1) cyclic rating is the permissible daily peak demand to which the transformer(s) may be subjected over summer or winter period following outage of a major plant item at the station.

Station transformer (N-1) 24-hour emergency rating (or N-1 limited cyclic rating) is the permissible peak demand to which the transformer(s) may be subjected over one daily load cycle, after which the transformer load must be reduced to its station transformer (N-1) cyclic rating following outage of a major plant item at the station.

For further information in relation to station (N-1) cyclic & 24hr emergency ratings, refer to "JEN MA 0010 Jemena Planning Manual" document<sup>11</sup>.

##### **Feeder Ratings**

All feeder summer ratings shown in this report are calculated based on a maximum ambient temperature of 35°C, which is lower than the 50% PoE ambient temperature. JEN is currently adopting this rating as the 50PoE summer rating, however this input assumption is currently under review. The summer rating under 10% PoE ambient temperature will be lower than what's presented in this report. JEN will be reviewing these ratings in the near future.

#### 4.1.5 PROJECT INFORMATION

Project details and dates where shown are tentative only. They are to be confirmed by Network Capacity Planning & Assessment Manager prior to committing expenditure.

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<sup>11</sup> Jemena, "JEN MA 0010 Jemena Planning Manual", February 2013

## 4 — LOAD FORECAST DATA

### 4.2 SYSTEM LEVEL FORECAST

The system level forecast has been developed by ACIL Allen Consulting using the system level (top-down) forecasting methodology described in section 2, above. The forecast shows that maximum demand for electricity supplied to customers through the Jemena Electricity Network is expected to grow at an average of 0.92% per annum over the next ten years. This growth is largely driven by a projected return to trend GDP growth and a stabilisation of electricity prices. The projected growth is slightly slower than the 2014 forecast, due to a downward revision in the economic outlook. At the 50PoE level, the projection is for annual growth of 0.92 per cent compared to 1.35 per cent in previous year.

Table 4–2 below shows the historical observed actual and 10-year forecasts (50PoE and 10PoE) of JEN total network (ie all JEN network customers' maximum coincident load demand aggregated at the system level).

**Table 4–2: JEN Total Network Maximum Demand Forecast**

Demand (MW)	Actual		Forecast										Average annual growth	
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2016- 21	2016- 25
Summer (50PoE)	988	859	960	968	979	987	1000	1009	1008	1021	1033	1042	1.02%	0.92%
Winter (50PoE)	729	808	823	838	850	863	877	890	892	908	924		1.66%	1.50%
Summer (10PoE)	988	859	1048	1059	1072	1083	1094	1109	1110	1119	1138	1145	1.13%	0.98%
Winter (10PoE)	729	827	843	857	869	883	896	910	913	927	945		1.63%	1.49%

*Maximum demand is forecast to grow over the forecast period largely driven by a projected return to trend GDP growth and a stabilisation of electricity prices. The projected growth is slightly slower than the 2014 forecast, due to a downward revision in the economic outlook. At the 50PoE level, the projection is for annual growth of 0.92 per cent compared to 1.35 per cent in previous year.*

## 4.3 TERMINAL STATION FORECASTS

Jemena Electricity Network is supplied by ten independent bus groups within seven terminal stations. 50PoE and 10PoE forecasts of JEN load supplied by each terminal station are provided in Table 4–3 and Table 4–4 below.

**Table 4–3:** Terminal Station Maximum Demand (MW, 50PoE forecasts, JEN load only)

Station	Season	Actual		50PoE Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BLTS22	Summer	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	Winter	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
BLTS66	Summer	127.0	105.3	113.9	113.2	112.0	110.2	108.2	106.6	103.8	102.4	101.1	99.4
	Winter	105.8	114.5	113.4	113.7	112.6	111.4	109.7	108.6	106.3	105.5	104.7	103.8
BTS	Summer	54.0	44.3	50.5	50.4	50.7	51.2	52.8	53.0	52.7	53.0	53.4	53.6
	Winter	39.7	42.6	42.9	43.2	43.7	44.5	46.2	46.7	46.6	47.1	47.7	48.3
KTS East	Summer	238.1	201.7	224.0	227.9	232.0	236.3	242.2	246.9	249.0	254.4	259.9	264.6
	Winter	160.9	176.7	178.7	184.1	188.6	194.0	199.9	204.9	207.6	213.3	219.1	225.1
KTS West	Summer	77.7	65.9	77.0	78.2	80.2	82.5	85.3	87.9	89.6	92.5	95.5	98.3
	Winter	55.2	59.4	60.6	62.2	64.3	66.8	69.4	71.9	73.7	76.5	79.4	82.5
SMTS	Summer	63.3	63.9	72.3	74.8	77.2	79.6	82.7	85.6	87.6	90.8	94.1	97.2
	Winter	61.2	67.1	71.4	74.4	76.9	79.7	83.0	86.3	88.7	92.5	96.4	100.5
TSTS	Summer	26.4	21.7	24.7	24.6	24.3	24.0	23.7	23.7	23.5	23.5	23.5	23.5
	Winter	17.5	18.8	19.1	19.1	19.0	18.8	18.7	18.8	18.7	18.8	18.9	19.1

## 4 — LOAD FORECAST DATA

Station	Season	Actual		50PoE Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
TTS B1B2	Summer	105.1	91.2	101.0	103.1	103.1	102.0	101.3	101.2	100.0	100.0	100.1	99.8
	Winter	76.9	84.1	87.3	90.1	90.5	90.1	89.8	90.2	89.5	90.0	90.6	91.2
TTS B3B4	Summer	250.8	223.5	251.5	250.9	253.2	254.0	254.8	255.2	252.9	253.8	254.7	254.8
	Winter	202.7	227.5	232.7	234.1	237.0	239.5	240.9	242.6	241.5	243.7	246.0	248.2
WMTS	Summer	68.4	55.8	62.5	63.3	64.3	65.6	67.6	68.6	68.8	70.0	71.1	72.1
	Winter	53.5	57.4	58.2	59.5	60.6	62.2	64.3	65.6	66.2	67.6	69.2	70.7

**Table 4–4:** Terminal Station Maximum Demand (MW, 10PoE forecasts, JEN load only)

Station	Season	Actual		10PoE Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BLTS22	Summer	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
	Winter	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
BLTS66	Summer	127.0	105.3	124.0	123.5	122.3	120.5	118.1	116.7	113.9	111.9	110.9	108.8
	Winter	105.8	116.9	115.9	115.9	114.8	113.7	111.8	110.8	108.5	107.5	106.8	106.1
BTS	Summer	54.0	44.3	56.6	56.5	57.0	57.6	59.2	59.7	59.5	59.6	60.3	60.3
	Winter	39.7	44.8	45.1	45.3	45.8	46.8	48.5	49.0	48.9	49.5	50.1	50.8
KTS East	Summer	238.1	201.7	247.5	252.1	257.0	262.2	268.1	274.3	277.1	282.0	289.3	293.8
	Winter	160.9	180.4	182.5	187.7	192.2	198.0	203.8	209.1	211.9	217.4	223.6	230.0
KTS West	Summer	77.7	65.9	87.0	88.5	90.9	93.6	96.6	99.9	102.0	104.9	108.8	111.7
	Winter	55.2	61.8	63.1	64.7	66.8	69.5	72.2	74.8	76.6	79.5	82.6	85.9

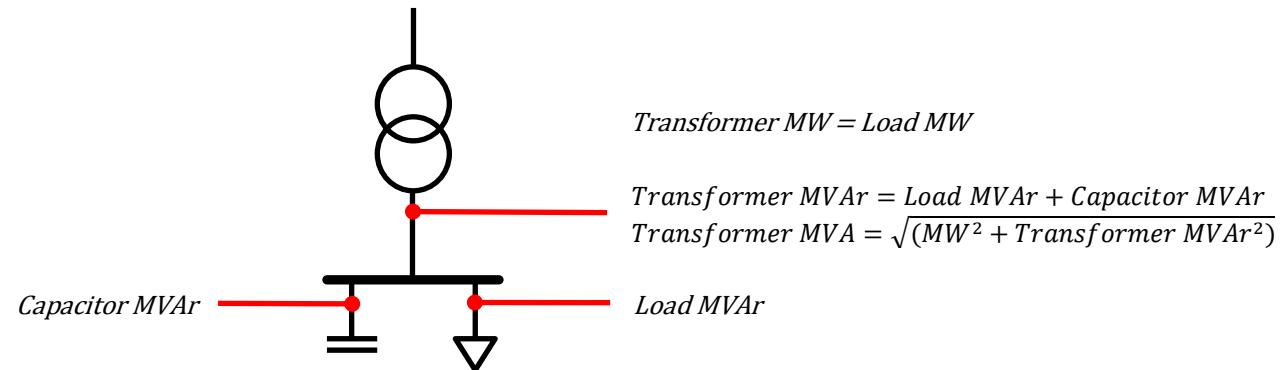
Station	Season	Actual		10PoE Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SMTS	Summer	63.3	63.9	77.1	79.9	82.6	85.3	88.4	91.7	94.0	97.1	101.1	104.1
	Winter	61.2	67.9	72.2	75.1	77.7	80.6	83.8	87.2	89.7	93.3	97.4	101.7
TSTS	Summer	26.4	21.7	27.4	27.2	27.0	26.7	26.3	26.4	26.2	26.1	26.3	26.1
	Winter	17.5	19.4	19.7	19.7	19.6	19.4	19.2	19.4	19.2	19.4	19.5	19.7
TTS B1B2	Summer	105.1	91.2	110.1	112.4	112.6	111.6	110.6	110.8	109.7	109.3	109.9	109.3
	Winter	76.9	86.7	90.0	92.8	93.2	92.9	92.5	92.9	92.2	92.7	93.4	94.1
TTS B3B4	Summer	250.8	223.5	269.8	269.5	272.2	273.7	273.8	275.3	273.2	273.2	275.3	274.6
	Winter	202.7	231.2	236.5	237.5	240.4	243.2	244.4	246.3	245.2	247.2	249.8	252.4
WMTS	Summer	68.4	55.8	68.4	69.4	70.5	72.1	74.1	75.5	75.9	76.9	78.5	79.3
	Winter	53.5	59.1	60.0	61.2	62.3	64.1	66.2	67.6	68.2	69.6	71.3	72.9

### 4.4 ZONE SUBSTATION AND FEEDER FORECASTS

50PoE and 10PoE forecasts of summer and winter maximum demand at the zone substation and feeder levels are presented in this section. The zone substation and feeder forecasts are grouped together on a zone substation basis and presented alphabetically.

Zone substation demand is presented as MW, load MVAr and transformer MVA, where load MVAr is the sum of MVAr at the feeder exits (i.e. does not account for the effect of any capacitor banks at the station), and transformer MVA is the demand measured at the secondary side of the station transformers (i.e. does account for the effect of cap banks). Where the station has cap banks, the capacitor MVAr (rating) has also been provided. Note that some capacitor banks may not be in service at the time of maximum demand.

**Figure 4–1:** Transformer MVAr and load MVAr



Feeder demand is presented in Amperes.

Point of Supply	[c-i-c]
Nominal Voltage	
Terminal Station	

Address	[c-i-c]
Melway Map Ref	

Station Loading		Actual			Forecast								
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
50PoE Summer	MW												[c-i-c]
	Load MVar												
	Tx MVA												
50PoE Winter	MW												
	Load MVar												
	Tx MVA												
10PoE Summer	MW												
	Load MVar												
	Tx MVA												
10PoE Winter	MW												
	Load MVar												
	Tx MVA												

Station Configuration		
Power Transformers	Number	[c-i-c]
	Nameplate (MVA)	
Capacitor (MVar)		
No. of Distribution Feeders		
Other		
Cogeneration		
Remarks	[c-i-c]	

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
(n-1)			[c-i-c]
24-hour			

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
HV 66 kV		[c-i-c]
LV 22 kV		

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Airport West (AW)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B1-B2	

<b>Address</b>	Moore Road, Airport West
<b>Melway Map Ref</b>	16 A5

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	105.1	91.2	76.1	75.6	77.7	79.9	82.7	84.6	85.7	87.9	90.2	92.2
	<b>Load MVar</b>	49.0	40.3	34.3	34.1	35.1	36.1	37.3	38.2	38.7	39.7	40.7	41.6
	<b>Tx MVA</b>	108.8	93.2	77.2	76.7	78.9	81.3	84.2	86.3	87.4	89.8	92.3	94.4
<b>50PoE Winter</b>	<b>MW</b>	79.2	85.9	65.2	65.3	67.5	70.1	72.9	75.0	76.3	78.7	81.2	83.7
	<b>Load MVar</b>	30.9	35.8	27.2	27.2	28.1	29.2	30.4	31.2	31.8	32.8	33.8	34.9
	<b>Tx MVA</b>	79.8	87.2	65.5	65.6	67.9	70.6	73.5	75.6	77.0	79.5	82.2	84.9
<b>10PoE Summer</b>	<b>MW</b>	105.1	91.2	82.6	82.2	84.5	87.1	89.9	92.3	93.7	95.8	98.7	100.6
	<b>Load MVar</b>	49.0	40.3	37.3	37.1	38.1	39.3	40.6	41.7	42.3	43.2	44.5	45.4
	<b>Tx MVA</b>	108.8	93.2	84.2	83.7	86.2	89.0	92.0	94.6	96.1	98.3	101.4	103.5
<b>10PoE Winter</b>	<b>MW</b>	79.2	87.9	66.8	66.8	69.0	71.7	74.5	76.7	78.0	80.4	83.0	85.8
	<b>Load MVar</b>	30.9	36.6	27.8	27.8	28.7	29.9	31.0	31.9	32.5	33.5	34.6	35.7
	<b>Tx MVA</b>	79.8	89.3	67.1	67.1	69.4	72.3	75.2	77.4	78.8	81.3	84.1	87.0

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	4
	<b>Nameplate (MVA)</b>	3-20/30 & 1-40
<b>Capacitor (MVar)</b>		22.0
<b>No. of Distribution Feeders</b>		12
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Fault levels indicated are for 3 transformers in parallel

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	100.5	120.7	
<b>24-hour</b>	110.5	132.8	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	13.7	9.6
<b>LV 22 kV</b>	12.4	2.5

Feeder Loading (Amps) - Airport West (AW)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
AW1	Summer	285	230	216	247	266	291	313	331	353	
	Winter	285	190	206	213	231	253	274	290	312	
AW2	Summer	425	340	271	206	205	206	206	209	214	
	Winter	425	213	231	173	174	175	177	179	184	
AW3	Summer	375	343	339	151	155	161	169	178	190	
	Winter	375	303	328	147	152	158	167	176	189	
AW4	Summer	740	386	354	133	139	146	148	150	154	
	Winter	795	317	344	122	130	136	139	141	145	
AW5	Summer	375	196	188	189	189	194	204	221	241	
	Winter	375	176	191	192	194	199	211	229	251	
AW6	Summer	375	344	282	323	324	331	344	359	379	
	Winter	375	199	216	217	220	225	236	247	261	
AW7	Summer	375	317	250	283	287	295	308	323	343	
	Winter	375	174	189	192	196	202	213	224	238	
AW8	Summer	375	286	253	76	91	105	110	112	114	
	Winter	375	226	246	71	85	99	104	106	109	
AW9	Summer	375	222	186	205	205	205	206	208	213	
	Winter	375	143	155	157	158	159	160	162	167	
AW11	Summer	375	217	196	206	217	243	271	298	332	
	Winter	375	211	229	240	254	286	320	353	395	
AW12	Summer	375	210	224	237	237	243	252	262	276	
	Winter	375	172	187	188	190	195	203	212	225	
AW14	Summer	375	238	181	226	183	184	185	187	191	
	Winter	375	181	196	236	193	195	197	199	205	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Airport West (AW)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
AW1	Summer	285	230	216	268	289	317	342	361	387	
	Winter	285	190	211	218	236	259	280	297	319	
AW2	Summer	425	340	271	218	218	218	219	221	227	
	Winter	425	213	236	177	178	179	181	183	189	
AW3	Summer	375	343	339	157	162	168	176	186	199	
	Winter	375	303	336	150	156	161	171	180	193	
AW4	Summer	740	386	354	142	150	157	160	161	166	
	Winter	795	317	352	125	132	139	142	144	148	
AW5	Summer	375	196	188	197	197	203	214	231	253	
	Winter	375	176	196	197	198	204	216	234	257	
AW6	Summer	375	344	282	360	361	369	384	401	424	
	Winter	375	199	221	223	225	230	241	252	267	
AW7	Summer	375	317	250	313	317	326	341	358	381	
	Winter	375	174	193	197	201	207	217	229	244	
AW8	Summer	375	286	253	80	97	112	118	119	122	
	Winter	375	226	251	72	87	101	107	108	111	
AW9	Summer	375	222	186	223	223	224	225	227	233	
	Winter	375	143	158	161	162	162	164	166	171	
AW11	Summer	375	217	196	215	226	254	283	311	348	
	Winter	375	211	234	246	260	292	327	361	404	
AW12	Summer	375	210	224	251	252	259	268	279	294	
	Winter	375	172	191	193	194	200	208	217	230	
AW14	Summer	375	238	181	238	193	194	195	197	203	
	Winter	375	181	201	242	197	199	201	204	210	

<b>Point of Supply</b>	Broadmeadows (BD)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	Cnr Maffra Street & Barry Road, Broadmeadows
<b>Melway Map Ref</b>	7 C3

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	101.7	94.1	86.8	84.1	83.8	82.9	82.1	81.7	80.5	80.3	80.2	79.7
	<b>Load MVar</b>	54.4	55.4	49.4	47.8	47.6	47.1	46.7	46.4	45.8	45.7	45.6	45.3
	<b>Tx MVA</b>	107.4	100.6	91.8	88.6	88.3	87.3	86.4	85.9	84.6	84.4	84.2	83.8
<b>50PoE Winter</b>	<b>MW</b>	88.8	99.3	84.8	82.8	82.7	82.4	81.7	81.8	80.9	81.2	81.5	81.8
	<b>Load MVar</b>	47.6	53.4	45.6	44.6	44.5	44.3	44.0	44.0	43.5	43.7	43.9	44.0
	<b>Tx MVA</b>	93.1	104.8	88.7	86.5	86.3	86.0	85.3	85.3	84.4	84.7	85.0	85.3
<b>10PoE Summer</b>	<b>MW</b>	101.7	94.1	93.5	90.7	90.4	89.7	88.6	88.5	87.4	86.9	87.1	86.4
	<b>Load MVar</b>	54.4	55.4	53.2	51.6	51.4	51.0	50.4	50.3	49.7	49.4	49.5	49.1
	<b>Tx MVA</b>	107.4	100.6	99.4	96.1	95.8	95.0	93.8	93.6	92.4	91.8	92.1	91.3
<b>10PoE Winter</b>	<b>MW</b>	88.8	101.6	86.8	84.6	84.5	84.3	83.5	83.6	82.8	83.0	83.4	83.8
	<b>Load MVar</b>	47.6	54.6	46.7	45.5	45.5	45.3	44.9	45.0	44.5	44.6	44.9	45.1
	<b>Tx MVA</b>	93.1	107.4	90.9	88.5	88.3	88.1	87.3	87.4	86.4	86.7	87.1	87.5

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	4
	<b>Nameplate (MVA)</b>	3-20/30 & 1-20/33
<b>Capacitor (MVar)</b>		22.9
<b>No. of Distribution Feeders</b>		14
<b>Other</b>		NER

<b>Cogeneration</b>	[c-i-c]	[BD4 - 6.4MW]
<b>Remarks</b>	Fault levels indicated are for 3 transformers in parallel	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	123.7	125.1	
<b>24-hour</b>	123.7	125.1	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	13.7	8.5
<b>LV 22 kV</b>	12.2	2.2

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Broadmeadows (BD)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BD1	Summer	375	254	233	171	256	252	247	243	242	
	Winter	375	230	248	182	274	270	267	263	263	
BD2	Summer	590	210	196	166	0	0	0	0	0	
	Winter	590	196	212	179	0	0	0	0	0	
BD3	Summer	375	282	298	242	254	265	275	271	269	
	Winter	375	257	278	225	238	249	259	256	256	
BD4	Summer	375	282	221	281	279	276	271	267	266	
	Winter	375	223	333	298	298	295	292	288	288	
BD6	Summer	590	192	178	148	18	0	0	0	0	
	Winter	590	180	195	162	19	0	0	0	0	
BD7	Summer	375	329	267	185	191	197	197	202	209	
	Winter	375	233	251	169	175	181	183	188	195	
BD8	Summer	375	202	265	277	283	284	280	279	281	
	Winter	375	220	280	293	301	303	301	300	304	
BD9	Summer	375	138	149	175	199	211	207	204	203	
	Winter	375	140	151	177	202	215	213	210	210	
BD10	Summer	375	307	295	250	249	246	242	238	237	
	Winter	375	233	251	197	197	196	194	191	191	
BD11	Summer	375	192	164	92	97	106	119	132	148	
	Winter	375	145	156	87	93	102	115	127	144	
BD13	Summer	315	299	236	253	266	271	272	270	271	
	Winter	315	308	268	286	304	309	313	311	314	
BD14	Summer	315	291	262	124	123	121	118	117	116	
	Winter	315	259	279	132	132	130	128	127	127	
BD15	Summer	590	281	275	303	322	322	316	311	310	
	Winter	590	258	278	305	327	328	324	320	320	
BD16	Summer	375	205	196	200	200	199	195	192	192	

Winter	375	194	209	212	214	214	212	209	209	
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## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BD1	Summer	375	254	233	178	266	263	258	254	253	
	Winter	375	230	254	186	280	276	273	269	269	
BD2	Summer	590	210	196	173	0	0	0	0	0	
	Winter	590	196	217	184	0	0	0	0	0	
BD3	Summer	375	282	298	252	265	277	287	282	282	
	Winter	375	257	284	230	243	254	265	262	262	
BD4	Summer	375	282	221	293	291	288	283	279	278	
	Winter	375	223	341	305	304	302	298	294	295	
BD6	Summer	590	192	178	154	18	0	0	0	0	
	Winter	590	180	199	165	20	0	0	0	0	
BD7	Summer	375	329	267	203	209	216	218	222	231	
	Winter	375	233	257	173	179	185	187	192	200	
BD8	Summer	375	202	265	289	295	296	293	291	294	
	Winter	375	220	287	300	308	310	307	307	311	
BD9	Summer	375	138	149	182	207	220	217	213	212	
	Winter	375	140	154	181	207	220	217	214	215	
BD10	Summer	375	307	295	267	266	264	259	255	254	
	Winter	375	233	257	201	202	200	198	195	196	
BD11	Summer	375	192	164	96	101	111	125	138	155	
	Winter	375	145	160	89	95	104	117	130	147	
BD13	Summer	315	299	236	264	278	282	284	282	284	
	Winter	315	308	274	293	310	316	320	318	321	
BD14	Summer	315	291	262	129	128	126	124	122	122	
	Winter	315	259	286	135	135	133	131	129	130	
BD15	Summer	590	281	275	315	335	336	331	325	324	
	Winter	590	258	285	312	334	335	332	327	327	
BD16	Summer	375	205	196	208	208	208	204	201	201	

Winter	375	194	214	218	219	219	217	214	214	
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## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Broadmeadows South (BMS)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	Maygar Blvd, Broadmeadows
<b>Melway Map Ref</b>	7 C9

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	0.0	0.0	23.2	23.6	24.1	24.2	24.1	24.0	23.6	23.6	23.5	23.4
	<b>Load MVar</b>	0.0	0.0	13.2	13.4	13.7	13.7	13.7	13.6	13.4	13.4	13.4	13.3
	<b>Tx MVA</b>	0.0	0.0	24.3	24.7	25.3	25.4	25.3	25.1	24.7	24.7	24.6	24.5
<b>50PoE Winter</b>	<b>MW</b>	0.0	0.0	22.4	23.0	23.6	23.8	23.8	23.8	23.5	23.6	23.7	23.8
	<b>Load MVar</b>	0.0	0.0	12.1	12.4	12.7	12.8	12.8	12.8	12.7	12.7	12.7	12.8
	<b>Tx MVA</b>	0.0	0.0	23.2	23.9	24.5	24.8	24.7	24.7	24.4	24.5	24.6	24.7
<b>10PoE Summer</b>	<b>MW</b>	0.0	0.0	25.0	25.4	26.0	26.2	26.0	26.0	25.6	25.5	25.5	25.3
	<b>Load MVar</b>	0.0	0.0	14.2	14.5	14.8	14.9	14.8	14.8	14.6	14.5	14.5	14.4
	<b>Tx MVA</b>	0.0	0.0	26.3	26.8	27.5	27.6	27.4	27.4	27.0	26.9	26.9	26.7
<b>10PoE Winter</b>	<b>MW</b>	0.0	0.0	23.0	23.5	24.1	24.3	24.3	24.3	24.1	24.1	24.2	24.3
	<b>Load MVar</b>	0.0	0.0	12.4	12.7	13.0	13.1	13.1	13.1	12.9	13.0	13.0	13.1
	<b>Tx MVA</b>	0.0	0.0	23.8	24.4	25.1	25.4	25.3	25.3	25.0	25.1	25.2	25.4

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		6
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	New zone substation commissioned June 2015

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	38.0	39.6	
<b>24-hour</b>	47.5	47.5	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	12.8	7.9
<b>LV 22 kV</b>	8.9	1.7

Feeder Loading (Amps) - Broadmeadows South (BMS)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BMS11	Summer				[c-i-c]						
	Winter										
BMS12	Summer	375	0	0	257	254	250	246	242	241	
	Winter	375	0	0	235	234	231	228	225	225	
BMS21	Summer	315	0	0	65	64	71	85	98	115	
	Winter	315	0	0	60	59	66	79	91	108	
BMS23	Summer	285	0	0	216	213	210	206	203	202	
	Winter	285	0	0	197	197	194	191	189	189	
BMS25	Summer	375	0	0	73	85	99	112	110	110	
	Winter	375	0	0	66	78	91	104	103	103	

Feeder Loading (Amps) - Broadmeadows South (BMS)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BMS11	Summer				[c-i-c]						
	Winter										
BMS12	Summer	375	0	0	268	265	261	257	252	252	
	Winter	375	0	0	241	239	236	234	230	231	
BMS21	Summer	315	0	0	68	67	74	89	102	120	
	Winter	315	0	0	61	61	67	80	93	110	
BMS23	Summer	285	0	0	225	222	219	215	212	211	
	Winter	285	0	0	202	201	198	196	193	193	
BMS25	Summer	375	0	0	76	88	103	117	115	115	
	Winter	375	0	0	68	80	93	106	105	105	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Braybrook (BY)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B1-B2	

<b>Address</b>	Cnr Basquet & Mitchell Streets, Braybrook
<b>Melway Map Ref</b>	27 H11

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	37.9	33.0	34.4	34.5	34.2	34.0	34.1	34.2	34.0	34.2	34.4	34.5
	<b>Load MVar</b>	17.3	12.7	14.3	14.4	14.3	14.2	14.2	14.2	14.1	14.2	14.3	14.3
	<b>Tx MVA</b>	41.7	35.4	37.2	37.4	37.1	36.9	36.9	37.1	36.8	37.0	37.3	37.3
<b>50PoE Winter</b>	<b>MW</b>	25.6	27.7	27.9	28.3	28.1	28.2	28.4	28.6	28.5	28.9	29.2	29.5
	<b>Load MVar</b>	10.4	10.5	10.5	10.7	10.6	10.6	10.7	10.8	10.8	10.9	11.0	11.2
	<b>Tx MVA</b>	27.7	29.6	29.8	30.3	30.1	30.1	30.3	30.6	30.5	30.9	31.2	31.6
<b>10PoE Summer</b>	<b>MW</b>	37.9	33.0	37.8	38.0	37.8	37.6	37.6	37.9	37.7	37.8	38.2	38.2
	<b>Load MVar</b>	17.3	12.7	15.7	15.8	15.7	15.6	15.6	15.8	15.7	15.7	15.9	15.9
	<b>Tx MVA</b>	41.7	35.4	41.0	41.2	40.9	40.7	40.7	41.0	40.8	40.9	41.3	41.3
<b>10PoE Winter</b>	<b>MW</b>	25.6	28.4	28.5	28.9	28.8	28.8	29.0	29.2	29.2	29.5	29.9	30.2
	<b>Load MVar</b>	10.4	10.7	10.8	10.9	10.9	10.9	10.9	11.0	11.0	11.1	11.3	11.4
	<b>Tx MVA</b>	27.7	30.3	30.5	30.9	30.7	30.8	31.0	31.3	31.2	31.5	31.9	32.3

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	1-20/30 & 1-20/33
<b>Capacitor (MVar)</b>		0
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	32.0	39.6	
<b>24-hour</b>	39.3	44.8	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	10.5	6.6
<b>LV 22 kV</b>	8.6	1.6

Feeder Loading (Amps) - Braybrook (BY)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BY11	Summer	445	262	229	239	240	238	238	241	246	
	Winter	445	173	187	192	194	193	194	196	202	
BY12	Summer	445	77	68	81	80	79	83	92	104	
	Winter	445	70	76	76	76	75	79	88	100	
BY13	Summer	445	366	338	339	352	348	344	341	342	
	Winter	445	253	273	274	286	284	282	280	283	
BY14	Summer	445	199	168	183	181	179	177	175	176	
	Winter	445	142	153	154	153	152	151	150	152	
BY15	Summer	445	209	176	178	181	183	184	184	187	
	Winter	445	174	188	190	195	197	199	200	204	

Feeder Loading (Amps) - Braybrook (BY)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
BY11	Summer	445	262	229	270	271	269	269	272	279	
	Winter	445	173	191	196	198	197	198	201	206	
BY12	Summer	445	77	68	88	87	87	91	101	114	
	Winter	445	70	77	77	77	77	81	90	102	
BY13	Summer	445	366	338	353	367	363	359	356	358	
	Winter	445	253	280	280	292	290	288	287	289	
BY14	Summer	445	199	168	199	198	196	194	192	193	
	Winter	445	142	157	157	157	155	155	154	155	
BY15	Summer	445	209	176	186	189	191	193	192	196	
	Winter	445	174	192	194	199	201	204	205	208	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Coburg North (CN)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	Newlands Road, North Coburg
<b>Melway Map Ref</b>	18 A6

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	62.5	56.8	58.3	59.5	59.5	58.9	58.7	58.4	57.5	57.4	57.3	57.0
	<b>Load MVar</b>	26.9	24.9	26.3	26.9	26.9	26.6	26.5	26.4	26.0	25.9	25.9	25.7
	<b>Tx MVA</b>	62.7	56.9	58.5	59.7	59.7	59.1	58.8	58.5	57.7	57.6	57.4	57.1
<b>50PoE Winter</b>	<b>MW</b>	51.2	56.1	51.8	53.5	53.6	53.5	53.4	53.4	52.9	53.1	53.3	53.5
	<b>Load MVar</b>	25.8	26.8	24.7	25.6	25.6	25.6	25.5	25.5	25.3	25.4	25.5	25.6
	<b>Tx MVA</b>	51.4	56.4	51.9	53.6	53.8	53.6	53.5	53.6	53.0	53.2	53.4	53.6
<b>10PoE Summer</b>	<b>MW</b>	62.5	56.8	64.2	65.7	65.7	65.2	64.8	64.7	63.9	63.5	63.7	63.1
	<b>Load MVar</b>	26.9	24.9	29.0	29.6	29.7	29.4	29.2	29.2	28.8	28.7	28.7	28.5
	<b>Tx MVA</b>	62.7	56.9	64.6	66.1	66.2	65.7	65.2	65.1	64.2	63.9	64.0	63.5
<b>10PoE Winter</b>	<b>MW</b>	51.2	57.4	53.0	54.6	54.8	54.7	54.6	54.6	54.1	54.2	54.5	54.7
	<b>Load MVar</b>	25.8	27.5	25.3	26.1	26.2	26.2	26.2	26.1	26.1	25.9	25.9	26.0
	<b>Tx MVA</b>	51.4	57.7	53.1	54.8	55.0	54.9	54.8	54.8	54.3	54.4	54.7	54.9

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	20/30
<b>Capacitor (MVar)</b>		21.9
<b>No. of Distribution Feeders</b>		11
<b>Other</b>		NER

<b>Cogeneration</b>	[c-i-c] (CN11 - 2MW)
<b>Remarks</b>	22kV bus 1-2 CB normally open. Fault levels indicated are for 3 transformers in parallel.

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	72.5	83.6	
<b>24-hour</b>	80.6	92.5	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	12.3	7.6
<b>LV 22 kV</b>	11.7	2.5

Feeder Loading (Amps) - Coburg North (CN)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
CN1	Summer	325	197	201	206	209	211	207	204	203	
	Winter	325	203	219	224	229	231	229	226	226	
CN2	Summer	590	219	213	213	210	207	203	200	199	
	Winter	590	210	227	227	226	223	220	217	217	
CN3	Summer	325	63	50	71	115	135	138	141	146	
	Winter	325	52	57	80	132	155	160	164	170	
CN4	Summer	375	290	267	142	140	138	136	133	133	
	Winter	375	223	241	121	121	119	117	116	116	
CN5	Summer	375	221	180	200	199	197	193	190	189	
	Winter	375	150	162	163	163	162	160	158	158	
CN6	Summer	375	200	180	193	191	188	184	182	181	
	Winter	375	176	189	191	190	187	185	183	183	
CN7	Summer	375	244	201	186	187	187	185	183	182	
	Winter	375	176	189	159	162	162	161	160	160	
CN8	Summer	375	170	145	204	246	260	276	297	323	
	Winter	375	139	150	196	239	253	270	291	318	
CN9	Summer	325	120	113	113	112	110	108	106	106	
	Winter	325	114	123	122	122	120	119	117	117	
CN10	Summer	375	195	163	172	170	167	164	162	161	
	Winter	375	142	154	153	153	151	149	147	147	
CN11	Summer	375	219	208	240	237	234	229	226	225	[c-i-c] Generation not included
	Winter	375	197	234	237	236	233	230	227	227	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Coburg North (CN)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
CN1	Summer	325	197	201	215	218	220	216	213	212	
	Winter	325	203	224	229	234	237	234	231	231	
CN2	Summer	590	219	213	222	219	216	213	209	209	
	Winter	590	210	232	232	231	228	225	222	222	
CN3	Summer	325	63	50	74	120	141	145	147	153	
	Winter	325	52	58	82	135	159	163	167	174	
CN4	Summer	375	290	267	152	150	148	146	143	143	
	Winter	375	223	246	124	123	122	120	118	119	
CN5	Summer	375	221	180	218	217	215	211	208	208	
	Winter	375	150	166	167	167	165	164	161	161	
CN6	Summer	375	200	180	209	207	204	200	197	196	
	Winter	375	176	194	195	194	191	189	187	187	
CN7	Summer	375	244	201	204	206	206	204	201	202	
	Winter	375	176	194	163	165	166	165	163	164	
CN8	Summer	375	170	145	223	269	284	302	324	354	
	Winter	375	139	153	201	245	258	276	298	326	
CN9	Summer	325	120	113	118	116	115	113	111	111	
	Winter	325	114	125	125	125	123	122	120	120	
CN10	Summer	375	195	163	185	183	181	177	174	174	
	Winter	375	142	157	157	156	154	152	150	150	
CN11	Summer	375	219	208	262	259	255	251	247	246	[c-i-c] Generation not included
	Winter	375	197	239	243	242	238	236	232	233	

<b>Point of Supply</b>	Coolaroo (COO)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	Cnr Somerton Road & Pascoe Vale Rd, Coolaroo
<b>Melway Map Ref</b>	179 K9

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	43.3	36.8	41.7	42.2	42.9	43.7	44.8	45.8	46.3	47.4	48.5	49.5
	<b>Load MVar</b>	11.2	8.8	10.8	10.9	11.1	11.3	11.6	11.9	12.0	12.3	12.6	12.8
	<b>Tx MVA</b>	43.4	36.9	41.8	42.3	43.0	43.8	45.0	45.9	46.4	47.6	48.7	49.7
<b>50PoE Winter</b>	<b>MW</b>	34.3	37.2	38.1	38.9	39.7	40.7	41.9	43.0	43.7	45.0	46.3	47.7
	<b>Load MVar</b>	4.4	5.7	5.8	5.9	6.0	6.2	6.4	6.6	6.7	6.9	7.1	7.3
	<b>Tx MVA</b>	34.3	37.2	38.1	38.9	39.7	40.8	41.9	43.0	43.7	45.0	46.3	47.7
<b>10PoE Summer</b>	<b>MW</b>	43.3	36.8	46.9	47.5	48.3	49.3	50.5	51.7	52.4	53.5	55.0	56.0
	<b>Load MVar</b>	11.2	8.8	12.1	12.3	12.5	12.8	13.1	13.4	13.6	13.9	14.3	14.5
	<b>Tx MVA</b>	43.4	36.9	47.0	47.7	48.5	49.6	50.8	52.0	52.7	53.8	55.3	56.3
<b>10PoE Winter</b>	<b>MW</b>	34.3	38.0	39.0	39.7	40.5	41.7	42.8	44.0	44.7	46.0	47.4	48.8
	<b>Load MVar</b>	4.4	5.8	5.9	6.1	6.2	6.4	6.5	6.7	6.8	7.0	7.2	7.4
	<b>Tx MVA</b>	34.3	38.1	39.0	39.8	40.6	41.7	42.9	44.0	44.7	46.0	47.4	48.8

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		8
<b>No. of Distribution Feeders</b>		6
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	38.0	39.6	
<b>24-hour</b>	38.0	39.6	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	12.4	7.3
<b>LV 22 kV</b>	8.8	1.7

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Coolaroo (COO)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
COO11	Summer	375	244	207	246	270	301	336	372	415	
	Winter	375	198	215	234	259	289	324	360	404	
COO12	Summer				[c-i-c]						
	Winter										
COO13	Summer	375	297	264	283	282	281	279	280	284	
	Winter	375	223	242	251	252	251	252	253	258	
COO14	Summer	375	180	162	171	172	173	175	179	185	
	Winter	375	126	137	139	141	142	145	148	154	
COO21	Summer	375	196	140	165	169	173	175	179	186	
	Winter	375	110	120	127	131	134	137	140	146	
COO22	Summer	375	242	216	222	223	226	232	240	251	
	Winter	375	174	189	191	193	197	203	211	221	

Feeder Loading (Amps) - Coolaroo (COO)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
COO11	Summer	375	244	207	269	296	331	370	408	458	
	Winter	375	198	220	239	264	295	332	367	413	
COO12	Summer				[c-i-c]						
	Winter										
COO13	Summer	375	297	264	305	304	303	302	302	308	
	Winter	375	223	247	257	258	257	258	259	264	
COO14	Summer	375	180	162	188	188	190	192	196	203	
	Winter	375	126	140	142	144	145	148	151	157	
COO21	Summer	375	196	140	181	185	190	193	197	205	
	Winter	375	110	122	130	134	137	140	143	149	
COO22	Summer	375	242	216	243	244	248	256	264	276	
	Winter	375	174	193	195	197	201	208	215	226	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Coburg South (CS)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	Cnr Hudson & Victoria Streets, Coburg
<b>Melway Map Ref</b>	17 G12

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	51.1	42.4	48.3	49.2	50.5	51.8	52.5	52.5	52.0	52.2	52.4	52.3
	<b>Load MVar</b>	17.0	13.8	16.2	16.5	16.9	17.3	17.6	17.6	17.4	17.5	17.5	17.5
	<b>Tx MVA</b>	52.6	43.4	49.7	50.6	52.0	53.3	54.1	54.1	53.5	53.7	53.9	53.9
<b>50PoE Winter</b>	<b>MW</b>	37.5	40.5	41.6	42.9	44.4	46.0	46.9	47.1	46.9	47.3	47.7	48.1
	<b>Load MVar</b>	8.4	9.6	9.9	10.2	10.5	10.9	11.1	11.1	11.1	11.2	11.3	11.4
	<b>Tx MVA</b>	37.7	40.8	41.9	43.3	44.7	46.4	47.3	47.5	47.3	47.7	48.1	48.5
<b>10PoE Summer</b>	<b>MW</b>	51.1	42.4	53.7	54.8	56.3	57.9	58.5	58.7	58.3	58.2	58.7	58.5
	<b>Load MVar</b>	17.0	13.8	18.0	18.3	18.8	19.4	19.6	19.6	19.5	19.5	19.6	19.6
	<b>Tx MVA</b>	52.6	43.4	55.3	56.4	58.0	59.7	60.3	60.6	60.1	60.1	60.5	60.3
<b>10PoE Winter</b>	<b>MW</b>	37.5	41.5	42.6	43.9	45.3	47.1	47.9	48.2	47.9	48.3	48.8	49.2
	<b>Load MVar</b>	8.4	9.8	10.1	10.4	10.7	11.1	11.3	11.4	11.3	11.4	11.5	11.7
	<b>Tx MVA</b>	37.7	41.8	43.0	44.2	45.7	47.5	48.3	48.6	48.4	48.7	49.2	49.7

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/30
<b>Capacitor (MVar)</b>		5.2
<b>No. of Distribution Feeders</b>		7
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>	42.2	47.3	
<b>24-hour</b>	46.5	47.3	Transformer thermal limit

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 66 kV</b>	11.2	6.7
<b>LV 22 kV</b>	8.5	1.6

Feeder Loading (Amps) - Coburg South (CS)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
CS2	Summer	375	293	235	267	267	268	268	268	270	
	Winter	375	184	199	200	201	203	204	204	207	
CS3	Summer	325	243	194	214	220	247	274	281	292	
	Winter	325	163	176	183	189	213	237	244	255	
CS5	Summer	325	243	191	226	248	258	255	252	252	
	Winter	325	169	183	192	212	222	221	219	220	
CS8	Summer	375	227	186	213	230	245	275	300	332	
	Winter	375	179	193	203	221	236	266	291	323	
CS9	Summer	325	125	97	97	96	95	94	93	93	
	Winter	325	86	93	93	93	92	91	90	91	
CS12	Summer	325	186	181	200	210	219	228	227	228	
	Winter	325	162	175	193	204	214	224	223	225	
CS13	Summer	325	90	68	74	74	85	101	115	133	
	Winter	325	75	81	86	87	100	119	136	158	

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
CS2	Summer	375	293	235	299	299	300	301	300	304	
	Winter	375	184	203	205	206	207	209	209	212	
CS3	Summer	325	243	194	230	236	265	294	302	315	
	Winter	325	163	180	187	193	217	243	250	261	
CS5	Summer	325	243	191	252	277	289	286	282	283	
	Winter	325	169	187	197	217	227	226	224	225	
CS8	Summer	375	227	186	231	249	266	299	326	361	
	Winter	375	179	198	208	226	241	272	298	331	
CS9	Summer	325	125	97	101	100	99	98	97	97	
	Winter	325	86	95	95	95	94	93	92	93	
CS12	Summer	325	186	181	208	218	229	239	237	238	
	Winter	325	162	179	197	208	218	229	228	230	
CS13	Summer	325	90	68	79	80	92	109	124	144	
	Winter	325	75	83	88	89	102	122	139	162	

<b>Point of Supply</b>	East Preston - Switch House A (EP A)		
<b>Nominal Voltage</b>	HV 66 kV	LV 6.6 kV	
<b>Terminal Station</b>	TTS (B12)		

<b>Address</b>	Cnr Quinn & Swanston Streets, Preston
<b>Melway Map Ref</b>	31 C1

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	17.7	17.3	16.4	16.4	16.5	16.2	15.9	15.8	15.6	15.5	15.5	15.4
	<b>Load MVar</b>	11.3	10.4	10.5	10.5	10.6	10.4	10.2	10.1	10.0	10.0	9.9	9.9
	<b>Tx MVA</b>	19.0	18.3	17.5	17.5	17.6	17.2	16.9	16.8	16.5	16.5	16.4	16.3
<b>50PoE Winter</b>	<b>MW</b>	14.3	15.4	14.5	14.7	14.8	14.6	14.4	14.4	14.2	14.3	14.3	14.3
	<b>Load MVar</b>	8.6	9.2	8.7	8.8	8.9	8.7	8.6	8.6	8.5	8.5	8.6	8.6
	<b>Tx MVA</b>	14.9	16.2	15.1	15.3	15.5	15.2	15.0	15.0	14.8	14.9	14.9	14.9
<b>10PoE Summer</b>	<b>MW</b>	17.7	17.3	17.0	17.1	17.2	16.9	16.6	16.6	16.3	16.2	16.2	16.1
	<b>Load MVar</b>	11.3	10.4	10.9	11.0	11.0	10.9	10.7	10.6	10.5	10.4	10.4	10.3
	<b>Tx MVA</b>	19.0	18.3	18.2	18.4	18.4	18.1	17.7	17.7	17.4	17.3	17.3	17.2
<b>10PoE Winter</b>	<b>MW</b>	14.3	15.8	14.8	15.0	15.1	14.9	14.7	14.7	14.6	14.6	14.6	14.7
	<b>Load MVar</b>	8.6	9.5	8.9	9.0	9.1	8.9	8.8	8.8	8.7	8.7	8.8	8.8
	<b>Tx MVA</b>	14.9	16.6	15.5	15.7	15.8	15.6	15.4	15.4	15.2	15.2	15.3	15.3

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	1-20/22.5 & 1-10/13.5
<b>Capacitor (MVar)</b>		4.4
<b>No. of Distribution Feeders</b>		10
<b>Other</b>		-
<b>Cogeneration</b>		
<b>Remarks</b>		

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	22.5	22.5	
<b>24-hour</b>	22.5	22.5	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	10.5	8.8
<b>LV 6.6 kV</b>	15.9	15.8

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - East Preston - Switch House A (EP A)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP2	Summer	445	247	243	243	240	236	232	228	227	
	Winter	445	206	222	222	221	218	215	212	212	
EP3	Summer	375	157	148	160	158	156	153	150	149	
	Winter	375	115	124	124	123	122	120	118	118	
EP4	Summer	375	91	83	83	90	104	102	100	99	
	Winter	375	82	88	88	96	111	110	108	108	
EP7	Summer	375	194	198	198	196	193	189	186	185	
	Winter	375	196	211	211	210	207	205	202	202	
EP9	Summer	450	247	250	250	264	276	271	266	265	
	Winter	450	248	268	267	284	298	294	290	289	
EP11	Summer	375	159	152	152	150	148	145	143	142	
	Winter	375	161	174	173	173	170	168	166	166	
EP16	Summer	375	243	252	252	275	296	290	286	284	
	Winter	375	231	249	249	274	295	291	287	287	
EP17	Summer	375	262	267	164	162	160	157	154	153	
	Winter	375	214	231	142	141	139	137	135	135	
EP18	Summer	375	137	121	125	123	121	119	117	116	
	Winter	375	105	113	113	113	111	110	108	108	
EP20	Summer	375	265	237	237	234	231	226	223	221	
	Winter	375	240	259	259	258	254	251	247	247	

Feeder Loading (Amps) - East Preston - Switch House A (EP A)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP2	Summer	445	247	243	254	251	247	243	238	238	
	Winter	445	206	227	227	226	223	220	217	217	
EP3	Summer	375	157	148	170	168	165	163	160	159	
	Winter	375	115	127	127	126	124	123	121	121	
EP4	Summer	375	91	83	87	94	108	106	104	104	
	Winter	375	82	91	90	98	114	112	111	111	
EP7	Summer	375	194	198	207	204	201	198	194	194	
	Winter	375	196	216	216	215	212	209	206	206	
EP9	Summer	450	247	250	261	275	288	283	278	277	
	Winter	450	248	274	274	290	304	300	296	296	
EP11	Summer	375	159	152	159	157	154	152	149	149	
	Winter	375	161	178	178	177	174	172	169	169	
EP16	Summer	375	243	252	263	287	309	304	298	298	
	Winter	375	231	255	255	280	302	298	294	294	
EP17	Summer	375	262	267	171	169	167	164	161	160	
	Winter	375	214	236	145	144	142	140	138	138	
EP18	Summer	375	137	121	132	130	128	126	124	123	
	Winter	375	105	116	116	115	114	112	110	110	
EP20	Summer	375	265	237	247	244	241	237	232	232	
	Winter	375	240	265	265	263	259	256	253	253	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	East Preston - Switch House B (EP B)	
<b>Nominal Voltage</b>	HV 66 kV	LV 6.6 kV
<b>Terminal Station</b>	TTS (B12)	

<b>Address</b>	Cnr Quinn & Swanston Streets, Preston
<b>Melway Map Ref</b>	31 C1

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	13.6	12.3	13.0	13.2	13.2	13.0	12.8	12.7	12.5	12.5	12.4	12.3
	<b>Load MVar</b>	7.1	6.6	7.2	7.3	7.3	7.2	7.1	7.0	6.9	6.9	6.9	6.9
	<b>Tx MVA</b>	14.0	12.5	13.4	13.6	13.6	13.4	13.1	13.0	12.8	12.8	12.7	12.7
<b>50PoE Winter</b>	<b>MW</b>	11.6	12.6	12.9	13.2	13.2	13.0	12.8	12.8	12.7	12.7	12.8	12.8
	<b>Load MVar</b>	5.3	6.3	6.5	6.6	6.6	6.5	6.4	6.4	6.4	6.4	6.4	6.4
	<b>Tx MVA</b>	11.7	12.8	13.1	13.4	13.4	13.3	13.1	13.1	12.9	12.9	13.0	13.0
<b>10PoE Summer</b>	<b>MW</b>	13.6	12.3	13.8	14.1	14.1	13.8	13.6	13.5	13.4	13.3	13.3	13.2
	<b>Load MVar</b>	7.1	6.6	7.7	7.8	7.8	7.7	7.5	7.5	7.4	7.4	7.4	7.3
	<b>Tx MVA</b>	14.0	12.5	14.3	14.6	14.6	14.3	14.0	14.0	13.8	13.7	13.7	13.6
<b>10PoE Winter</b>	<b>MW</b>	11.6	12.9	13.2	13.5	13.5	13.3	13.1	13.1	13.0	13.0	13.1	13.1
	<b>Load MVar</b>	5.3	6.4	6.6	6.7	6.7	6.7	6.6	6.6	6.5	6.5	6.5	6.6
	<b>Tx MVA</b>	11.7	13.1	13.4	13.7	13.7	13.6	13.4	13.4	13.2	13.2	13.3	13.3

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	1-20/27 & 1-10/13.5
<b>Capacitor (MVar)</b>		4.0
<b>No. of Distribution Feeders</b>		7
<b>Other</b>		-
<b>Cogeneration</b>		
<b>Remarks</b>		

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>	28.5	28.5	
<b>24-hour</b>	28.5	28.5	Transformer CB & cable limit

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 66 kV</b>	10.5	8.8
<b>LV 6.6 kV</b>	15.5	15.4

Feeder Loading (Amps) - East Preston - Switch House B (EP B)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP27	Summer	375	184	180	193	201	208	204	201	200	
	Winter	375	182	196	210	221	229	226	223	223	
EP34	Summer	285	278	194	219	216	213	209	205	204	
	Winter	285	187	202	201	201	198	195	193	192	
EP35	Summer	375	206	193	193	191	188	184	181	180	
	Winter	375	192	207	207	206	203	200	198	198	
EP36	Summer	375	198	158	211	256	269	268	264	262	
	Winter	375	151	163	195	239	252	253	249	249	
EP37	Summer	375	299	259	270	272	273	267	263	261	
	Winter	375	224	242	241	245	246	243	240	239	
EP41	Summer	375	265	279	280	276	272	266	262	260	
	Winter	375	262	283	282	281	277	274	270	270	
EP42	Summer	375	268	229	243	240	236	231	227	226	
	Winter	375	209	225	238	237	234	231	228	227	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - East Preston - Switch House B (EP B)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP27	Summer	375	184	180	201	210	217	214	210	209	
	Winter	375	182	201	215	226	234	231	228	228	
EP34	Summer	285	278	194	243	240	237	232	228	228	
	Winter	285	187	206	206	205	202	200	197	197	
EP35	Summer	375	206	193	201	199	196	193	189	189	
	Winter	375	192	212	212	211	208	205	202	202	
EP36	Summer	375	198	158	233	284	299	298	293	292	
	Winter	375	151	167	200	244	257	258	255	255	
EP37	Summer	375	299	259	288	291	292	287	281	281	
	Winter	375	224	247	247	250	252	249	245	245	
EP41	Summer	375	265	279	291	288	283	278	273	273	
	Winter	375	262	289	289	287	283	280	276	276	
EP42	Summer	375	268	229	253	250	246	242	237	237	
	Winter	375	209	231	244	242	239	236	233	233	

<b>Point of Supply</b>	East Preston (EPN)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B12)	

<b>Address</b>	Cnr Quinn & Swanston Streets, Preston
<b>Melway Map Ref</b>	31 C1

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	0.0	0.0	6.3	6.3	6.3	6.3	6.4	6.3	6.2	6.2	6.2	6.2
	<b>Load MVar</b>	0.0	0.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.4
	<b>Tx MVA</b>	0.0	0.0	6.4	6.3	6.3	6.3	6.4	6.3	6.3	6.2	6.2	6.2
<b>50PoE Winter</b>	<b>MW</b>	0.0	0.0	6.1	6.1	6.2	6.2	6.3	6.3	6.2	6.2	6.2	6.3
	<b>Load MVar</b>	0.0	0.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	<b>Tx MVA</b>	0.0	0.0	6.2	6.2	6.2	6.3	6.3	6.3	6.3	6.3	6.3	6.3
<b>10PoE Summer</b>	<b>MW</b>	0.0	0.0	6.6	6.5	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.4
	<b>Load MVar</b>	0.0	0.0	3.7	3.6	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6
	<b>Tx MVA</b>	0.0	0.0	6.6	6.5	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5
<b>10PoE Winter</b>	<b>MW</b>	0.0	0.0	6.3	6.2	6.3	6.4	6.4	6.4	6.3	6.4	6.4	6.4
	<b>Load MVar</b>	0.0	0.0	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
	<b>Tx MVA</b>	0.0	0.0	6.3	6.3	6.4	6.4	6.5	6.5	6.4	6.4	6.4	6.5

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	1
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		8
<b>No. of Distribution Feeders</b>		3
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	New zone substation commissioned November 2015

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	N/A	N/A	Currently this is a single transformer station
<b>24-hour</b>	N/A	N/A	

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	10.0	8.6
<b>LV 22 kV</b>	4.9	1.5

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP31	Summer	375	0	0	100	99	97	95	94	93	
	Winter	375	0	0	92	91	90	89	87	87	
EP33	Summer	375	0	0	50	49	56	63	69	77	
	Winter	375	0	0	46	46	52	58	64	72	
EP34	Summer	375	0	0	60	59	58	57	56	56	
	Winter	375	0	0	55	55	54	53	52	52	

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
EP31	Summer	375	0	0	104	103	102	100	98	98	
	Winter	375	0	0	94	93	92	91	89	89	
EP33	Summer	375	0	0	52	52	59	66	72	80	
	Winter	375	0	0	47	47	53	60	66	74	
EP34	Summer	375	0	0	63	62	61	60	59	59	
	Winter	375	0	0	56	56	55	54	54	54	

<b>Point of Supply</b>	Essendon (ES)	
<b>Nominal Voltage</b>	HV 66 kV	LV 11 kV
<b>Terminal Station</b>	KTS B1-B2	

<b>Address</b>	Cnr Buckley & Price Streets, Essendon
<b>Melway Map Ref</b>	28 B4

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	42.2	33.2	37.9	37.9	37.7	37.2	36.8	36.7	36.3	36.3	36.4	36.3
	<b>Load MVar</b>	15.3	12.9	14.4	14.4	14.3	14.1	13.9	13.9	13.8	13.8	13.8	13.7
	<b>Tx MVA</b>	43.2	33.9	38.8	38.8	38.6	38.0	37.6	37.5	37.1	37.1	37.2	37.1
<b>50PoE Winter</b>	<b>MW</b>	27.3	29.5	30.3	30.7	30.6	30.4	30.1	30.2	30.0	30.2	30.4	30.6
	<b>Load MVar</b>	7.0	7.7	7.9	8.0	8.0	7.9	7.9	7.9	7.8	7.9	8.0	8.0
	<b>Tx MVA</b>	27.3	29.5	30.4	30.7	30.7	30.4	30.2	30.3	30.0	30.2	30.5	30.7
<b>10PoE Summer</b>	<b>MW</b>	42.2	33.2	42.1	42.1	41.9	41.4	40.9	40.9	40.5	40.4	40.7	40.4
	<b>Load MVar</b>	15.3	12.9	15.9	16.0	15.9	15.7	15.5	15.5	15.4	15.3	15.4	15.3
	<b>Tx MVA</b>	43.2	33.9	43.2	43.3	43.1	42.5	41.9	42.0	41.6	41.5	41.7	41.5
<b>10PoE Winter</b>	<b>MW</b>	27.3	30.2	31.0	31.3	31.3	31.1	30.8	30.9	30.7	30.8	31.1	31.3
	<b>Load MVar</b>	7.0	7.9	8.1	8.2	8.2	8.1	8.0	8.1	8.0	8.1	8.1	8.2
	<b>Tx MVA</b>	27.3	30.2	31.1	31.4	31.3	31.1	30.8	31.0	30.7	30.9	31.2	31.4

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/27
<b>Capacitor (MVar)</b>		7.0
<b>No. of Distribution Feeders</b>		11
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	36.0	37.3	
<b>24-hour</b>	36.0	37.3	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	11.8	7.8
<b>LV 11 kV</b>	13.7	2.0

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Feeder Loading (Amps) - Essendon (ES)									Comments	
			Actual		50PoE Forecast								
			2014	2015	2016	2017	2018	2019	2020	2021			
ES11	Summer	375	273	236	248	251	253	251	249	250			
	Winter	375	212	229	231	236	238	238	237	239			
ES12	Summer	230	231	122	139	138	136	134	132	132		Transfer to ES23 in 2014	
	Winter	335	99	107	107	107	105	104	103	104			
ES13	Summer	375	386	291	195	198	200	200	199	200		Load transfer to ES22 Dec 2015	
	Winter	375	248	268	157	161	163	164	163	165			
ES15	Summer	375	291	242	271	269	266	262	259	259			
	Winter	375	192	207	208	208	206	204	202	203			
ES16	Summer	285	158	131	154	152	150	148	146	146			
	Winter	285	112	121	125	124	123	122	120	121			
ES21	Summer	375	262	212	233	230	227	223	220	220			
	Winter	375	158	171	171	170	168	166	165	165			
ES22	Summer	375	0	0	165	163	161	159	157	156		New feeder Dec 2015, load transferred from ES13	
	Winter	375	0	0	151	151	149	147	146	146			
ES23	Summer	375	0	59	62	61	61	60	59	59		New feeder 2014, load transferred from ES12	
	Winter	375	48	52	52	52	51	51	50	50			
ES24	Summer	375	308	255	290	294	299	295	293	293			
	Winter	375	203	219	224	229	233	232	231	232			
ES25	Summer	375	259	218	251	264	260	256	252	252			
	Winter	375	167	180	189	200	197	195	193	194			
ES26	Summer	375	270	226	267	275	282	277	274	273			
	Winter	375	210	227	241	250	256	254	251	252			

Feeder	Season	Rating	Feeder Loading (Amps) - Essendon (ES)									Comments	
			Actual		10PoE Forecast								
			2014	2015	2016	2017	2018	2019	2020	2021			
ES11	Summer	375	273	236	276	279	281	280	278	280			
	Winter	375	212	234	237	241	243	243	242	245			
ES12	Summer	230	231	122	157	155	153	151	149	149		Transfer to ES23 in 2014	
	Winter	335	99	109	109	109	108	107	106	106			
ES13	Summer	375	386	291	220	224	227	227	225	227		Load transfer to ES22 Dec 2015	
	Winter	375	248	274	161	164	167	168	167	169			
ES15	Summer	375	291	242	301	299	296	292	288	289			
	Winter	375	192	212	212	212	210	209	207	208			
ES16	Summer	285	158	131	173	171	169	167	164	164			
	Winter	285	112	124	127	127	125	124	123	123			
ES21	Summer	375	262	212	254	251	248	244	241	241			
	Winter	375	158	175	175	174	172	170	168	169			
ES22	Summer	375	0	0	187	185	183	180	177	178		New feeder Dec 2015, load transferred from ES13	
	Winter	375	0	0	155	154	152	151	149	150			
ES23	Summer	375	0	59	70	69	68	67	66	66		New feeder 2014, load transferred from ES12	
	Winter	375	48	53	53	53	52	52	51	51			
ES24	Summer	375	308	255	322	327	333	330	326	328			
	Winter	375	203	224	229	234	238	238	236	238			
ES25	Summer	375	259	218	275	288	285	280	276	277			
	Winter	375	167	185	193	204	202	200	198	198			
ES26	Summer	375	270	226	291	300	307	303	299	299			
	Winter	375	210	232	246	255	262	260	257	258			

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Footscray East (FE)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	WMTS	

<b>Address</b>	Somerville Road, Yarraville
<b>Melway Map Ref</b>	42 C8

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	32.2	27.1	31.3	31.6	32.1	33.0	34.3	35.1	35.5	36.5	37.4	38.2
	<b>Load MVar</b>	10.7	10.8	12.0	12.1	12.3	12.6	13.1	13.4	13.6	14.0	14.3	14.6
	<b>Tx MVA</b>	32.3	27.2	31.6	31.9	32.4	33.3	34.7	35.5	35.6	36.5	37.4	38.3
<b>50PoE Winter</b>	<b>MW</b>	25.2	27.4	28.8	29.4	29.9	30.9	32.3	33.2	33.8	34.9	36.0	37.1
	<b>Load MVar</b>	5.2	6.5	6.8	6.9	7.1	7.3	7.6	7.9	8.0	8.2	8.5	8.8
	<b>Tx MVA</b>	25.8	27.4	28.9	29.4	29.9	30.9	32.3	33.2	33.8	34.9	36.0	37.1
<b>10PoE Summer</b>	<b>MW</b>	32.2	27.1	34.6	35.0	35.5	36.6	38.0	39.0	39.6	40.5	41.7	42.5
	<b>Load MVar</b>	10.7	10.8	13.3	13.4	13.6	14.0	14.5	14.9	15.2	15.5	16.0	16.3
	<b>Tx MVA</b>	32.3	27.2	35.0	35.5	35.6	36.6	38.0	39.0	39.6	40.5	41.7	42.5
<b>10PoE Winter</b>	<b>MW</b>	25.2	28.0	29.5	30.0	30.5	31.7	33.0	34.0	34.6	35.6	36.8	38.0
	<b>Load MVar</b>	5.2	6.6	7.0	7.1	7.2	7.5	7.8	8.0	8.2	8.4	8.7	9.0
	<b>Tx MVA</b>	25.8	28.0	29.5	30.0	30.5	31.7	33.0	34.0	34.6	35.6	36.8	38.0

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	1-20/30 & 1-20/33
<b>Capacitor (MVar)</b>		16.1
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Fault levels indicated are with NER in service

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	32.0	39.6	
<b>24-hour</b>	32.0	39.6	Transformer CB & cable limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	14.7	10.4
<b>LV 22 kV</b>	9.3	2.2

Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FE2	Summer	445	0	62	118	118	118	118	119	122	Feeder commissioned 2014
	Winter	445	43	47	88	89	89	90	91	94	
FE5	Summer	325	231	163	185	185	185	185	188	192	
	Winter	325	145	157	158	159	160	161	164	168	
FE6	Summer	445	346	239	262	269	285	320	367	426	
	Winter	445	222	241	248	256	272	307	353	411	
FE8	Summer	445	217	219	236	245	250	254	258	265	
	Winter	445	175	190	195	204	208	213	217	224	
FE9	Summer	445	179	139	153	153	153	153	155	159	[c-i-c]
	Winter	445	166	180	182	183	184	185	188	193	

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FE2	Summer	445	0	62	123	123	123	123	125	128	Feeder commissioned 2014
	Winter	445	43	48	90	91	91	92	93	96	
FE5	Summer	325	231	163	209	209	209	211	213	218	
	Winter	325	145	161	162	163	163	165	167	172	
FE6	Summer	445	346	239	286	294	311	351	402	467	
	Winter	445	222	247	254	262	278	314	361	421	
FE8	Summer	445	217	219	253	263	268	273	277	285	
	Winter	445	175	194	200	209	213	218	222	229	
FE9	Summer	445	179	139	168	168	168	169	171	175	[c-i-c]
	Winter	445	166	184	186	187	188	190	192	198	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Fairfield (FF)	
<b>Nominal Voltage</b>	HV 22 kV	LV 6.6 kV
<b>Terminal Station</b>	BTS	

<b>Address</b>	Cnr Station & McGregor Streets, Fairfield
<b>Melway Map Ref</b>	30 K8

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	22.1	18.8	20.6	20.5	20.8	21.0	22.1	23.7	23.5	23.7	23.8	23.9
	<b>Load MVar</b>	8.9	7.5	8.5	8.4	8.5	8.6	9.1	9.7	9.7	9.7	9.8	9.8
	<b>Tx MVA</b>	22.6	19.1	21.0	20.9	21.2	21.4	22.6	24.3	24.1	24.3	24.4	24.5
<b>50PoE Winter</b>	<b>MW</b>	17.1	18.5	18.7	18.7	19.1	19.4	20.6	22.2	22.1	22.4	22.7	22.9
	<b>Load MVar</b>	5.5	6.6	6.7	6.7	6.8	6.9	7.3	7.9	7.9	8.0	8.1	8.2
	<b>Tx MVA</b>	17.2	18.7	18.8	18.9	19.2	19.6	20.8	22.5	22.4	22.7	22.9	23.2
<b>10PoE Summer</b>	<b>MW</b>	22.1	18.8	22.5	22.4	22.8	23.0	24.2	26.0	25.9	25.9	26.2	26.2
	<b>Load MVar</b>	8.9	7.5	9.3	9.2	9.3	9.5	9.9	10.7	10.6	10.7	10.8	10.8
	<b>Tx MVA</b>	22.6	19.1	23.0	22.9	23.3	23.6	24.8	26.8	26.6	26.7	27.0	27.0
<b>10PoE Winter</b>	<b>MW</b>	17.1	19.0	19.1	19.2	19.5	19.8	21.0	22.7	22.6	22.9	23.2	23.5
	<b>Load MVar</b>	5.5	6.8	6.8	6.8	6.9	7.1	7.5	8.1	8.1	8.1	8.3	8.4
	<b>Tx MVA</b>	17.2	19.1	19.3	19.3	19.6	20.0	21.3	23.0	22.9	23.2	23.5	23.8

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	10 / 13.5
<b>Capacitor (MVar)</b>		4.9
<b>No. of Distribution Feeders</b>		6
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Supplies CitiPower also. Fault levels indicated are with NER in service.

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>	25.7	31.7	
<b>24-hour</b>	25.7	31.7	Transformer HV/OV limit

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 22 kV</b>	7.6	4.2
<b>LV 6.6 kV</b>	17.8	2.1

Feeder Loading (Amps) - Fairfield (FF)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FF12	Summer	375	0	0	0	0	77	151	223	334	
	Winter	375	0	0	0	0	71	140	208	313	
FF13	Summer	375	0	0	0	0	0	0	147	148	
	Winter	375	0	0	0	0	0	0	137	138	
FF87	Summer	285	173	153	169	176	184	187	190	194	
	Winter	285	149	161	165	173	180	185	188	194	
FF88	Summer	285	189	155	184	183	181	178	177	178	
	Winter	285	167	180	194	194	192	191	190	192	
FF89	Summer	285	200	191	207	211	209	206	205	205	
	Winter	285	164	178	183	188	187	186	185	186	
FF90	Summer	375	238	198	218	216	214	211	210	210	
	Winter	375	157	170	170	170	169	168	167	168	
FF95	Summer	285	284	229	260	257	254	251	249	250	
	Winter	285	208	225	226	226	224	223	222	224	
FF96	Summer	285	214	169	190	189	186	184	183	183	
	Winter	285	153	165	165	165	164	163	162	163	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Fairfield (FF)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FF12	Summer	375	0	0	0	0	80	157	233	350	
	Winter	375	0	0	0	0	72	143	213	320	
FF13	Summer	375	0	0	0	0	0	0	154	155	
	Winter	375	0	0	0	0	0	0	140	142	
FF87	Summer	285	173	153	185	192	201	205	207	213	
	Winter	285	149	165	169	176	184	190	192	198	
FF88	Summer	285	189	155	202	200	198	196	194	196	
	Winter	285	167	184	199	198	196	195	194	196	
FF89	Summer	285	200	191	220	225	223	220	218	220	
	Winter	285	164	182	188	193	191	190	189	191	
FF90	Summer	375	238	198	240	238	236	233	231	232	
	Winter	375	157	174	174	174	172	171	170	172	
FF95	Summer	285	284	229	295	293	290	287	284	286	
	Winter	285	208	231	232	231	229	228	227	229	
FF96	Summer	285	214	169	211	209	207	205	203	204	
	Winter	285	153	169	169	169	167	166	165	167	

<b>Point of Supply</b>	Flemington (FT)	
<b>Nominal Voltage</b>	HV 66 kV	LV 11 kV
<b>Terminal Station</b>	WMTS	

<b>Address</b>	Cnr Smith Street & Rankins Road, Flemington
<b>Melway Map Ref</b>	2A A3

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	35.2	32.1	34.2	34.7	35.3	35.8	36.6	36.8	36.8	37.2	37.6	37.9
	<b>Load MVar</b>	11.8	10.7	11.7	11.9	12.1	12.2	12.5	12.6	12.6	12.7	12.9	13.0
	<b>Tx MVA</b>	35.2	32.1	34.2	34.7	35.3	35.8	36.6	36.9	36.8	37.2	37.6	37.9
<b>50PoE Winter</b>	<b>MW</b>	29.6	32.0	31.5	32.3	33.0	33.7	34.5	35.0	35.1	35.7	36.3	36.9
	<b>Load MVar</b>	7.1	8.3	8.2	8.4	8.6	8.7	9.0	9.1	9.1	9.3	9.4	9.6
	<b>Tx MVA</b>	29.6	32.1	31.6	32.4	33.1	33.8	34.7	35.1	35.2	35.8	36.4	36.9
<b>10PoE Summer</b>	<b>MW</b>	35.2	32.1	37.2	37.8	38.5	39.1	39.9	40.4	40.4	40.7	41.3	41.5
	<b>Load MVar</b>	11.8	10.7	12.7	12.9	13.2	13.4	13.7	13.8	13.8	13.9	14.1	14.2
	<b>Tx MVA</b>	35.2	32.1	37.2	37.8	38.6	39.2	40.0	40.4	40.4	40.7	41.4	41.6
<b>10PoE Winter</b>	<b>MW</b>	29.6	32.8	32.3	33.0	33.7	34.4	35.3	35.8	35.9	36.4	37.1	37.8
	<b>Load MVar</b>	7.1	8.5	8.4	8.6	8.8	8.9	9.2	9.3	9.3	9.5	9.6	9.8
	<b>Tx MVA</b>	29.6	32.9	32.4	33.1	33.8	34.6	35.4	36.0	36.1	36.6	37.1	37.8

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/30
<b>Capacitor (MVar)</b>		13.3
<b>No. of Distribution Feeders</b>		10
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Supplies CitiPower Lynches Bridge. NER commissioned in 2008.

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	23.9	26.3	
<b>24-hour</b>	23.9	26.3	Transformer HV cable limit

	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	16.5	13.1
<b>LV 11 kV</b>	14.5	2.7

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Feeder Loading (Amps) - Flemington (FT)									Comments	
			Actual		50PoE Forecast								
			2014	2015	2016	2017	2018	2019	2020	2021			
FT1	Summer	375	349	283	313	312	309	307	306	308			
	Winter	375	311	336	338	339	337	337	337	341			
FT2	Summer	260	207	190	194	241	292	325	391	474			
	Winter	295	208	225	229	287	348	390	470	573			
FT4	Summer	590	211	227	245	252	258	265	272	283			
	Winter	590	233	252	252	262	269	277	286	299			
FT5	Summer	345	235	173	191	192	193	195	196	199			
	Winter	375	205	222	222	224	227	230	231	236			
FT6	Summer	180	114	103	111	110	109	108	108	109			
	Winter	255	93	101	101	101	100	100	100	101			
FT9	Summer	300	296	229	223	228	246	264	263	265			
	Winter	300	232	251	225	232	251	270	270	274			
FT10	Summer	375	226	396	373	370	367	364	363	366			
	Winter	375	181	390	366	367	364	364	364	368			
FT13	Summer	375	301	331	340	344	348	357	368	383			
	Winter	375	214	232	237	242	245	253	261	274			
FT14	Summer	375	253	207	218	216	214	213	212	214			
	Winter	375	202	219	219	219	218	217	217	220			
FT15	Summer	345	165	163	164	163	161	160	160	161			
	Winter	385	159	172	172	173	172	171	171	173			

Feeder Loading (Amps) - Flemington (FT)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FT1	Summer	375	349	283	347	346	344	342	340	344	
	Winter	375	311	344	346	347	345	344	344	349	
FT2	Summer	260	207	190	202	252	305	340	408	497	
	Winter	295	208	230	235	294	355	399	480	586	
FT4	Summer	590	211	227	264	272	279	286	294	307	
	Winter	590	233	258	258	268	275	284	292	306	
FT5	Summer	345	235	173	212	212	214	216	217	221	
	Winter	375	205	227	227	229	232	235	237	242	
FT6	Summer	180	114	103	119	118	118	117	116	118	
	Winter	255	93	103	103	103	103	102	102	104	
FT9	Summer	300	296	229	241	247	267	287	285	289	
	Winter	300	232	257	230	237	256	277	276	280	
FT10	Summer	375	226	396	388	386	383	381	379	384	
	Winter	375	181	399	375	375	372	372	372	377	
FT13	Summer	375	301	331	354	359	363	373	384	401	
	Winter	375	214	237	243	247	250	259	267	280	
FT14	Summer	375	253	207	232	231	229	228	227	230	
	Winter	375	202	224	224	224	223	222	222	225	
FT15	Summer	345	165	163	171	170	168	167	167	168	
	Winter	385	159	176	176	176	175	175	175	177	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Footscray West (FW)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	BLTS	

<b>Address</b>	Sanderson Street, West Footscray
<b>Melway Map Ref</b>	41 G8

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	46.2	41.0	41.5	40.6	39.6	38.4	37.5	36.6	35.5	34.8	34.2	33.4
	<b>Load MVar</b>	18.7	15.3	17.2	16.9	16.4	15.9	15.5	15.2	14.7	14.5	14.2	13.9
	<b>Tx MVA</b>	46.2	41.0	41.5	40.6	39.6	38.4	37.5	36.6	35.5	34.8	34.2	33.4
<b>50PoE Winter</b>	<b>MW</b>	38.7	41.1	41.0	40.4	39.5	38.6	37.7	37.1	36.1	35.6	35.1	34.6
	<b>Load MVar</b>	13.0	16.4	16.4	16.1	15.7	15.4	15.0	14.8	14.4	14.2	14.0	13.8
	<b>Tx MVA</b>	38.7	41.1	41.0	40.4	39.5	38.6	37.7	37.1	36.1	35.6	35.1	34.6
<b>10PoE Summer</b>	<b>MW</b>	46.2	41.0	44.6	43.7	42.6	41.5	40.3	39.6	38.4	37.6	37.0	36.1
	<b>Load MVar</b>	18.7	15.3	18.5	18.1	17.7	17.2	16.7	16.4	15.9	15.6	15.4	15.0
	<b>Tx MVA</b>	46.2	41.0	44.6	43.7	42.6	41.5	40.3	39.6	38.4	37.6	37.0	36.1
<b>10PoE Winter</b>	<b>MW</b>	38.7	42.1	42.0	41.3	40.3	39.5	38.5	37.9	36.9	36.3	35.9	35.5
	<b>Load MVar</b>	13.0	16.8	16.7	16.5	16.1	15.7	15.4	15.1	14.7	14.5	14.3	14.1
	<b>Tx MVA</b>	38.7	42.1	42.0	41.3	40.3	39.5	38.5	37.9	36.9	36.3	35.9	35.5

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	20/30
<b>Capacitor (MVar)</b>		34.2
<b>No. of Distribution Feeders</b>		8
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	70.3	77.2	
<b>24-hour</b>	77.2	77.2	Transformer HV/OV, LDC & met limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	17.9	14.8
<b>LV 22 kV</b>	12.7	3.5

Feeder Loading (Amps) - Footscray West (FW)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FW4	Summer	445	216	194	197	193	187	181	175	171	[c-i-c]
	Winter	445	168	178	178	176	171	166	161	158	
FW5	Summer	270	115	94	94	92	96	106	115	127	
	Winter	395	90	96	94	92	96	107	118	131	
FW6	Summer	445	134	102	113	110	107	103	100	98	
	Winter	445	113	120	118	116	112	109	106	104	
FW8	Summer	445	179	148	160	156	151	145	141	138	
	Winter	445	160	170	180	177	171	166	162	159	
FW9	Summer	445	220	182	192	189	183	176	171	167	
	Winter	445	181	192	191	190	184	179	174	171	
FW13	Summer	445	306	299	295	287	278	268	260	254	
	Winter	445	299	318	312	306	297	289	280	276	
FW16	Summer	445	262	234	189	184	178	172	167	163	
	Winter	445	251	267	211	207	201	195	190	187	
FW17	Summer	445	117	95	156	161	160	155	150	147	
	Winter	445	90	96	152	158	158	154	149	147	

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
FW4	Summer	445	216	194	212	208	202	195	189	185	[c-i-c]
	Winter	445	168	183	182	180	174	170	164	162	
FW5	Summer	270	115	94	101	98	102	113	123	137	
	Winter	395	90	98	96	94	99	110	120	134	
FW6	Summer	445	134	102	123	119	116	112	108	106	
	Winter	445	113	123	121	118	115	112	108	107	
FW8	Summer	445	179	148	173	169	164	158	153	150	
	Winter	445	160	174	184	180	175	170	165	162	
FW9	Summer	445	220	182	205	202	196	189	183	180	
	Winter	445	181	197	196	194	188	183	178	175	
FW13	Summer	445	306	299	307	299	290	280	271	266	
	Winter	445	299	325	320	313	304	295	286	282	
FW16	Summer	445	262	234	199	194	188	182	176	173	
	Winter	445	251	273	216	212	206	200	194	191	
FW17	Summer	445	117	95	171	177	176	171	165	162	
	Winter	445	90	98	156	162	162	157	152	150	

<b>Point of Supply</b>	Heidelberg (HB)	
<b>Nominal Voltage</b>	HV 66 kV	LV 11 kV
<b>Terminal Station</b>	TSTS	

<b>Address</b>	Yarra Street, Heidelberg
<b>Melway Map Ref</b>	32 B5

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	26.4	22.0	24.6	24.5	24.2	23.9	23.6	23.6	23.3	23.3	23.3	23.3
	<b>Load MVar</b>	9.3	7.5	8.8	8.7	8.6	8.5	8.4	8.4	8.3	8.3	8.3	8.3
	<b>Tx MVA</b>	28.0	23.2	26.2	26.0	25.7	25.3	25.1	25.0	24.7	24.8	24.8	24.7
<b>50PoE Winter</b>	<b>MW</b>	17.9	19.3	19.6	19.7	19.6	19.4	19.2	19.3	19.2	19.3	19.4	19.5
	<b>Load MVar</b>	4.6	5.2	5.3	5.3	5.3	5.2	5.2	5.2	5.2	5.2	5.2	5.3
	<b>Tx MVA</b>	18.5	20.0	20.3	20.4	20.2	20.1	19.9	20.0	19.8	20.0	20.1	20.2
<b>10PoE Summer</b>	<b>MW</b>	26.4	22.0	27.1	26.9	26.7	26.3	26.0	26.0	25.8	25.7	25.9	25.7
	<b>Load MVar</b>	9.3	7.5	9.6	9.6	9.5	9.4	9.2	9.3	9.2	9.1	9.2	9.1
	<b>Tx MVA</b>	28.0	23.2	28.7	28.6	28.3	28.0	27.6	27.6	27.4	27.3	27.4	27.3
<b>10PoE Winter</b>	<b>MW</b>	17.9	19.7	20.1	20.1	20.0	19.8	19.7	19.7	19.6	19.7	19.9	20.0
	<b>Load MVar</b>	4.6	5.3	5.4	5.4	5.4	5.3	5.3	5.3	5.3	5.3	5.3	5.4
	<b>Tx MVA</b>	18.5	20.4	20.8	20.8	20.7	20.6	20.4	20.4	20.3	20.4	20.6	20.7

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/27
<b>Capacitor (MVar)</b>		0
<b>No. of Distribution Feeders</b>		7
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Fault levels indicated are with NER in service

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	29.2	35.6	
<b>24-hour</b>	29.2	35.6	Overvoltage limit (S & W)

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	8.3	5.6
<b>LV 11 kV</b>	12.0	1.6

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Heidelberg (HB)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
HB14	Summer	375	274	216	242	239	236	232	229	228	
	Winter	375	179	193	193	193	190	189	187	187	
HB15	Summer	375	322	249	224	226	228	226	225	226	
	Winter	375	225	243	192	195	197	197	197	199	
HB22	Summer	285	209	167	185	183	180	177	175	175	
	Winter	285	129	139	139	139	137	136	135	135	
HB23	Summer	285	206	160	208	206	203	200	197	197	
	Winter	285	125	135	153	153	151	150	148	149	
HB24	Summer	285	196	146	233	231	227	224	221	221	
	Winter	285	111	120	169	168	166	165	163	164	
HB31	Summer	285	202	172	196	198	200	199	198	199	
	Winter	285	145	157	158	162	163	164	163	165	
HB32	Summer	180	160	148	156	154	152	149	147	147	
	Winter	255	110	119	119	118	117	116	115	115	

Feeder Loading (Amps) - Heidelberg (HB)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
HB14	Summer	375	274	216	269	267	263	259	256	256	
	Winter	375	179	198	198	197	195	193	191	192	
HB15	Summer	375	322	249	252	255	257	256	254	256	
	Winter	375	225	249	196	200	202	202	201	203	
HB22	Summer	285	209	167	204	202	199	196	193	194	
	Winter	285	129	143	143	142	140	139	137	138	
HB23	Summer	285	206	160	234	232	229	226	222	223	
	Winter	285	125	138	157	156	155	153	152	152	
HB24	Summer	285	196	146	259	257	254	250	246	247	
	Winter	285	111	123	173	172	170	169	167	167	
HB31	Summer	285	202	172	210	213	215	214	213	214	
	Winter	285	145	160	162	165	167	167	167	168	
HB32	Summer	180	160	148	165	164	162	159	157	157	
	Winter	255	110	122	122	121	120	119	117	118	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Kalkalo (KLO)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	SMTS	

<b>Address</b>	Cnr Donnybrook Rd & Hume Hwy
<b>Melway Map Ref</b>	367 C5

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	4.2	4.7	7.0	7.7	8.3	9.2	10.1	10.7	11.1	11.7	12.4	13.0
	<b>Load MVar</b>	0.3	0.7	3.4	3.7	4.0	4.5	4.9	5.2	5.4	5.7	6.0	6.3
	<b>Tx MVA</b>	4.2	4.8	7.8	8.5	9.2	10.2	11.2	11.8	12.3	13.0	13.8	14.5
<b>50PoE Winter</b>	<b>MW</b>	3.3	4.4	6.5	7.2	7.8	8.8	9.7	10.2	10.7	11.4	12.1	12.8
	<b>Load MVar</b>	0.0	2.1	3.1	3.5	3.8	4.2	4.7	5.0	5.2	5.5	5.9	6.2
	<b>Tx MVA</b>	3.3	4.9	7.2	8.0	8.7	9.7	10.7	11.4	11.9	12.6	13.4	14.3
<b>10PoE Summer</b>	<b>MW</b>	4.2	4.7	7.4	8.2	8.9	9.9	10.8	11.4	11.9	12.6	13.3	14.0
	<b>Load MVar</b>	0.3	0.7	3.6	4.0	4.3	4.8	5.2	5.5	5.8	6.1	6.5	6.8
	<b>Tx MVA</b>	4.2	4.8	8.3	9.1	9.9	11.0	12.0	12.7	13.3	14.0	14.8	15.5
<b>10PoE Winter</b>	<b>MW</b>	3.3	4.5	6.6	7.4	8.0	9.0	9.9	10.5	11.0	11.6	12.4	13.1
	<b>Load MVar</b>	0.0	2.2	3.2	3.6	3.9	4.3	4.8	5.1	5.3	5.6	6.0	6.4
	<b>Tx MVA</b>	3.3	5.0	7.4	8.2	8.9	9.9	11.0	11.6	12.2	12.9	13.7	14.6

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		0
<b>No. of Distribution Feeders</b>		3
<b>Other</b>		-

<b>Cogeneration</b>	
<b>Remarks</b>	AusNet Services substation. Forecast maximum demand is JEN only.

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>			
<b>24-hour</b>			

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 66 kV</b>		
<b>LV 22 kV</b>		

Feeder Loading (Amps) - Kalkalo (KLO)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
KLO13	Summer	375	0	7	19	37	57	78	110	157	
	Winter	375	0	8	18	36	55	76	108	155	
KLO21	Summer	375	0	13	67	77	84	102	107	112	
	Winter	375	0	14	64	75	81	100	104	110	
KLO22	Summer	375	110	119	159	166	171	177	184	194	
	Winter	375	84	92	117	123	127	132	138	146	

Feeder Loading (Amps) - Kalkalo (KLO)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
KLO13	Summer	375	0	7	21	41	64	87	123	176	
	Winter	375	0	8	19	37	57	78	110	158	
KLO21	Summer	375	0	13	74	86	94	114	119	126	
	Winter	375	0	14	65	77	83	102	107	113	
KLO22	Summer	375	110	119	177	185	191	198	206	217	
	Winter	375	84	94	120	126	130	135	141	149	

## 4 — LOAD FORECAST DATA

Point of Supply	[c-i-c]
Nominal Voltage	
Terminal Station	

Address	[c-i-c]
Melway Map Ref	

Station Loading		Actual			Forecast								
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
50PoE Summer	MW												[c-i-c]
	Load MVar												
	Tx MVA												
50PoE Winter	MW												
	Load MVar												
	Tx MVA												
10PoE Summer	MW												
	Load MVar												
	Tx MVA												
10PoE Winter	MW												
	Load MVar												
	Tx MVA												

Station Configuration		
Power Transformers	Number	[c-i-c]
	Nameplate (MVA)	
Capacitor (MVar)		
No. of Distribution Feeders		
Other		

Cogeneration	
Remarks	Customer owned substation [c-i-c]

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
(n-1)			
24-hour			

	3 Phase	1 Phase to Ground
HV 66 kV		[c-i-c]
LV 22 kV		

Point of Supply	
Nominal Voltage	
Terminal Station	

[c-i-c]

Address	
Melway Map Ref	

[c-i-c]

Station Loading		Actual			Forecast								
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
50PoE Summer	MW												[c-i-c]
	Load MVar												
	Tx MVA												
50PoE Winter	MW												
	Load MVar												
	Tx MVA												
10PoE Summer	MW												
	Load MVar												
	Tx MVA												
10PoE Winter	MW												
	Load MVar												
	Tx MVA												

Station Configuration		
Power Transformers	Number	
	Nameplate (MVA)	
Capacitor (MVar)		
No. of Distribution Feeders		
Other		
Cogeneration		
Remarks	Customer owned substation	

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
(n-1)			
24-hour			

	3 Phase	1 Phase to Ground
HV 22 kV		[c-i-c]
LV 6.6 kV		

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	North Heidelberg (NH)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B12)	

<b>Address</b>	Cnr McNamara & Ruthven Streets, Macleod
<b>Melway Map Ref</b>	20 A9

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	63.1	52.6	54.3	56.2	56.4	56.2	56.3	56.6	56.3	56.8	57.3	57.6
	<b>Load MVar</b>	24.5	21.3	22.0	22.8	22.8	22.8	22.8	22.9	22.8	23.0	23.2	23.3
	<b>Tx MVA</b>	64.1	53.3	55.0	57.0	57.3	57.0	57.1	57.4	57.2	57.7	58.2	58.5
<b>50PoE Winter</b>	<b>MW</b>	43.7	47.3	45.2	47.5	47.9	48.1	48.3	48.8	48.8	49.5	50.2	50.9
	<b>Load MVar</b>	15.0	14.2	13.6	14.3	14.4	14.5	14.5	14.7	14.7	14.9	15.1	15.3
	<b>Tx MVA</b>	43.7	47.3	45.2	47.5	47.9	48.1	48.3	48.8	48.8	49.5	50.3	51.0
<b>10PoE Summer</b>	<b>MW</b>	63.1	52.6	59.7	61.9	62.2	62.1	62.1	62.6	62.5	62.8	63.6	63.7
	<b>Load MVar</b>	24.5	21.3	24.2	25.1	25.2	25.1	25.1	25.4	25.3	25.4	25.7	25.8
	<b>Tx MVA</b>	64.1	53.3	60.8	63.1	63.4	63.3	63.2	63.8	63.7	64.0	64.9	65.0
<b>10PoE Winter</b>	<b>MW</b>	43.7	48.4	46.3	48.5	48.9	49.2	49.3	49.9	49.9	50.6	51.4	52.1
	<b>Load MVar</b>	15.0	14.6	13.9	14.6	14.7	14.8	14.8	15.0	15.0	15.2	15.5	15.7
	<b>Tx MVA</b>	43.7	48.4	46.3	48.6	49.0	49.2	49.4	49.9	50.0	50.6	51.4	52.2

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	2-20/30 & 1-20/33
<b>Capacitor (MVar)</b>		13.5
<b>No. of Distribution Feeders</b>		10
<b>Other</b>		NER

<b>Cogeneration</b>	[c-i-c]	(NH12, 1.5MVA)
<b>Remarks</b>	Fault levels indicated are for 3 transformers in parallel	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	75.2	76.0	
<b>24-hour</b>	76.0	76.0	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	11.3	6.1
<b>LV 22 kV</b>	11.1	2.0

Feeder Loading (Amps) - North Heidelberg (NH)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NH2	Summer	375	254	203	239	246	247	248	250	255	
	Winter	375	164	177	188	195	196	198	200	205	
NH3	Summer	285	205	179	198	197	195	193	192	193	
	Winter	285	170	184	186	187	185	184	184	186	
NH5	Summer	285	190	146	117	120	122	122	123	124	[c-i-c]
	Winter	285	143	155	110	113	115	116	117	119	
NH8	Summer	215	151	108	150	149	148	146	145	146	
	Winter	215	94	102	102	102	101	101	100	101	
NH9	Summer	375	247	222	170	169	167	165	165	165	
	Winter	375	240	260	198	198	197	196	196	198	
NH12	Summer	375	117	118	126	165	167	181	195	212	
	Winter	375	88	95	95	126	128	139	150	164	
NH13	Summer	[c-i-c]								[c-i-c]	
	Winter										
NH16	Summer	375	215	178	189	208	220	218	217	218	
	Winter	375	130	141	141	156	165	165	164	166	
NH17	Summer	285	188	140	214	216	217	214	213	214	
	Winter	285	136	147	195	198	200	199	198	200	
NH20	Summer	590	190	198	221	220	218	216	215	216	[c-i-c]
	Winter	590	124	134	139	139	139	138	138	140	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - North Heidelberg (NH)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NH2	Summer	375	254	203	263	271	273	274	276	283	
	Winter	375	164	181	192	199	200	202	205	210	
NH3	Summer	285	205	179	211	210	208	206	205	207	
	Winter	285	170	188	191	191	189	189	188	190	
NH5	Summer	285	190	146	131	134	137	138	138	140	[c-i-c]
	Winter	285	143	158	112	115	118	119	120	122	
NH8	Summer	215	151	108	168	167	166	164	163	165	
	Winter	215	94	104	104	104	103	103	103	104	
NH9	Summer	375	247	222	177	176	174	173	172	173	
	Winter	375	240	266	203	203	201	201	200	202	
NH12	Summer	375	117	118	136	180	182	197	212	231	
	Winter	375	88	97	98	129	131	143	154	168	
NH13	Summer	[c-i-c]								[c-i-c]	
	Winter										
NH16	Summer	375	215	178	206	226	239	237	236	238	
	Winter	375	130	144	144	159	169	168	168	170	
NH17	Summer	285	188	140	233	234	236	234	232	234	
	Winter	285	136	151	200	203	204	203	203	205	
NH20	Summer	590	190	198	239	239	237	236	234	236	[c-i-c]
	Winter	590	124	137	142	142	142	142	141	143	

<b>Point of Supply</b>	North Essendon (NS)	
<b>Nominal Voltage</b>	HV 22 kV	LV 11 kV
<b>Terminal Station</b>	BTS	

<b>Address</b>	Cnr Johnson Street & Moreland Road, North Essendon
<b>Melway Map Ref</b>	28 K3

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	31.3	25.5	29.3	29.2	29.3	29.6	29.9	30.0	29.8	30.0	30.2	30.3
	<b>Load MVar</b>	9.8	9.2	10.4	10.3	10.4	10.5	10.6	10.6	10.6	10.6	10.7	10.7
	<b>Tx MVA</b>	32.8	27.1	31.0	31.0	31.1	31.4	31.8	31.9	31.6	31.8	32.0	32.1
<b>50PoE Winter</b>	<b>MW</b>	22.5	24.4	24.6	24.8	25.0	25.4	25.9	26.1	26.1	26.4	26.7	27.0
	<b>Load MVar</b>	5.3	6.4	6.4	6.5	6.5	6.7	6.8	6.8	6.8	6.9	7.0	7.1
	<b>Tx MVA</b>	23.2	25.2	25.4	25.6	25.8	26.3	26.8	27.0	26.9	27.3	27.6	27.9
<b>10PoE Summer</b>	<b>MW</b>	31.3	25.5	33.9	33.9	34.0	34.4	34.8	35.0	34.9	34.9	35.3	35.3
	<b>Load MVar</b>	9.8	9.2	12.0	12.0	12.0	12.2	12.3	12.4	12.3	12.4	12.5	12.5
	<b>Tx MVA</b>	32.8	27.1	36.0	36.0	36.1	36.5	36.9	37.2	37.0	37.1	37.5	37.5
<b>10PoE Winter</b>	<b>MW</b>	22.5	24.9	25.2	25.3	25.5	26.0	26.5	26.7	26.7	26.9	27.3	27.6
	<b>Load MVar</b>	5.3	6.5	6.6	6.6	6.7	6.8	6.9	7.0	7.0	7.1	7.1	7.2
	<b>Tx MVA</b>	23.2	25.8	26.0	26.2	26.4	26.9	27.4	27.6	27.6	27.8	28.2	28.6

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	10/13.5
<b>Capacitor (MVar)</b>		0
<b>No. of Distribution Feeders</b>		10
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Station also supplies CitiPower.

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	29.6	29.6	Transformer thermal limit (summer), Overvoltage limit (winter)
<b>24-hour</b>	29.6	29.6	

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 22 kV</b>	5.6	2.5
<b>LV 11 kV</b>	9.7	1.6

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - North Essendon (NS)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NS7	Summer	345	239	192	231	235	233	230	228	229	
	Winter	375	179	193	202	208	206	205	204	205	
NS8	Summer	375	154	116	132	139	148	152	152	154	
	Winter	375	110	119	123	131	140	144	145	147	
NS9	Summer	375	241	277	300	298	294	291	289	290	
	Winter	375	231	250	250	250	247	246	245	247	
NS11	Summer	285	0	0	0	0	0	0	0	0	No load, but can be used for NS12 load transfer
	Winter	285	0	0	0	0	0	0	0	0	
NS12	Summer	285	161	166	170	168	166	198	230	269	
	Winter	285	103	111	111	111	110	132	153	181	
NS14	Summer	375	269	209	237	238	237	235	234	235	
	Winter	375	160	173	175	177	177	176	176	178	
NS15	Summer	285	237	194	216	218	218	217	217	218	
	Winter	285	167	181	182	185	186	187	186	189	
NS16	Summer	180	101	74	85	85	84	83	82	82	
	Winter	255	69	75	75	75	74	74	74	74	
NS17	Summer	375	139	106	121	120	118	117	116	116	
	Winter	375	92	100	100	100	99	98	98	99	
NS18	Summer	375	253	208	229	227	250	273	296	324	
	Winter	375	186	201	204	204	226	248	269	297	

Feeder Loading (Amps) - North Essendon (NS)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NS7	Summer	345	239	192	250	255	253	250	248	249	
	Winter	375	179	198	207	212	210	209	208	210	
NS8	Summer	375	154	116	144	152	162	166	166	169	
	Winter	375	110	121	126	134	143	148	148	151	
NS9	Summer	375	241	277	328	325	322	319	316	318	
	Winter	375	231	256	256	255	253	252	250	252	
NS11	Summer	285	0	0	0	0	0	0	0	0	No load, but can be used for NS12 load transfer
	Winter	285	0	0	0	0	0	0	0	0	
NS12	Summer	285	161	166	200	198	196	234	271	319	
	Winter	285	103	114	114	114	113	135	157	185	
NS14	Summer	375	269	209	263	264	264	262	260	262	
	Winter	375	160	177	179	181	181	181	180	182	
NS15	Summer	285	237	194	235	237	238	237	236	239	
	Winter	285	167	185	187	189	190	191	190	193	
NS16	Summer	180	101	74	97	96	95	94	93	94	
	Winter	255	69	77	77	77	76	76	75	76	
NS17	Summer	375	139	106	137	136	135	134	132	133	
	Winter	375	92	102	102	102	101	101	100	101	
NS18	Summer	375	253	208	250	248	274	299	324	356	
	Winter	375	186	205	209	209	231	253	275	303	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Newport (NT)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	BLTS	

<b>Address</b>	Douglas Pde - In Front Of Newport Power Station, Newport
<b>Melway Map Ref</b>	56 B4

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	39.6	33.7	36.5	35.9	35.2	34.3	33.6	33.2	32.5	32.2	31.9	31.5
	<b>Load MVar</b>	11.6	10.6	13.1	12.9	12.6	12.3	12.0	11.9	11.6	11.5	11.4	11.3
	<b>Tx MVA</b>	39.6	33.7	36.5	35.9	35.2	34.3	33.6	33.2	32.5	32.2	31.9	31.5
<b>50PoE Winter</b>	<b>MW</b>	33.2	35.6	34.9	34.7	34.0	33.4	32.8	32.5	32.0	31.9	31.8	31.6
	<b>Load MVar</b>	8.0	11.2	11.0	10.9	10.7	10.5	10.3	10.3	10.1	10.1	10.0	10.0
	<b>Tx MVA</b>	33.2	35.6	34.9	34.7	34.0	33.4	32.8	32.6	32.0	31.9	31.8	31.9
<b>10PoE Summer</b>	<b>MW</b>	39.6	33.7	40.1	39.6	38.8	37.9	37.0	36.7	36.0	35.5	35.4	34.8
	<b>Load MVar</b>	11.6	10.6	14.4	14.2	13.9	13.6	13.2	13.1	12.9	12.7	12.6	12.5
	<b>Tx MVA</b>	39.6	33.7	40.2	39.6	38.8	37.9	37.0	36.7	36.0	35.5	35.4	34.8
<b>10PoE Winter</b>	<b>MW</b>	33.2	36.4	35.7	35.4	34.8	34.2	33.5	33.3	32.7	32.6	32.5	32.4
	<b>Load MVar</b>	8.0	11.5	11.3	11.2	11.0	10.8	10.6	10.5	10.3	10.3	10.3	10.2
	<b>Tx MVA</b>	33.2	36.4	35.7	35.4	34.8	34.2	33.5	33.3	32.8	32.6	32.5	32.5

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	35/38
<b>Capacitor (MVar)</b>		12
<b>No. of Distribution Feeders</b>		9
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>	41.5	41.5	
<b>24-hour</b>	41.5	41.5	Transformer thermal limit

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 66 kV</b>	14.4	13.5
<b>LV 22 kV</b>	12.2	2.0

Feeder Loading (Amps) - Newport (NT)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NT1	Summer	290	92	0	0	0	0	0	0	0	Transferred to YVE025 in 2014
	Winter	290	0	0	0	0	0	0	0	0	
NT3	Summer	290	256	189	210	206	202	197	192	190	
	Winter	290	204	202	200	198	195	191	187	186	
NT4	Summer	290	214	189	210	208	204	199	194	192	[c-i-c]
	Winter	290	213	229	231	231	227	222	218	216	
NT8	Summer										Supplies station service transformer only
	Winter										
NT10	Summer	290	44	52	52	51	50	49	47	47	
	Winter	290	54	58	58	57	56	55	54	53	
NT11	Summer	290	269	179	196	194	191	187	184	182	[c-i-c]
	Winter	290	211	215	214	214	212	209	205	204	
NT15	Summer	375	144	168	139	136	133	130	127	126	[c-i-c]
	Winter	375	118	127	104	103	101	99	97	97	
NT16	Summer	290	144	142	142	139	136	133	130	128	
	Winter	290	142	152	151	150	147	144	141	140	
NT17	Summer	290	266	181	219	216	211	206	201	199	
	Winter	290	223	239	239	237	232	228	224	222	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Newport (NT)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
NT1	Summer	290	92	0	0	0	0	0	0	0	Transferred to YVE025 in 2014
	Winter	290	0	0	0	0	0	0	0	0	
NT3	Summer	290	256	189	229	225	220	215	210	208	
	Winter	290	204	206	205	203	199	195	191	190	
NT4	Summer	290	214	189	232	231	226	221	215	214	[c-i-c]
	Winter	290	213	234	236	236	231	227	223	221	
NT8	Summer										Supplies station service transformer only
	Winter										
NT10	Summer	290	44	52	54	53	52	51	50	49	
	Winter	290	54	59	59	58	57	56	55	55	
NT11	Summer	290	269	179	212	210	207	203	199	198	[c-i-c]
	Winter	290	211	220	219	219	216	213	210	209	
NT15	Summer	375	144	168	145	142	139	136	133	132	[c-i-c]
	Winter	375	118	130	107	106	103	102	100	99	
NT16	Summer	290	144	142	147	145	142	139	135	134	
	Winter	290	142	156	155	153	150	148	145	144	
NT17	Summer	290	266	181	242	239	234	228	223	221	
	Winter	290	223	245	244	242	238	233	228	227	

<b>Point of Supply</b>	Preston (P)	
<b>Nominal Voltage</b>	HV 66 kV	LV 6.6 kV
<b>Terminal Station</b>	TTS (B12)	

<b>Address</b>	Murray Road, Preston
<b>Melway Map Ref</b>	18 F11

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	11.4	9.7	10.8	10.8	10.8	10.7	10.7	10.7	10.5	10.6	10.6	10.5
	<b>Load MVar</b>	4.7	4.7	4.8	4.8	4.8	4.7	4.7	4.7	4.7	4.7	4.7	4.7
	<b>Tx MVA</b>	11.4	9.7	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.6	10.6
<b>50PoE Winter</b>	<b>MW</b>	8.9	9.6	9.6	9.7	9.7	9.8	9.8	9.8	9.7	9.8	9.9	9.9
	<b>Load MVar</b>	2.5	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
	<b>Tx MVA</b>	9.0	9.7	9.7	9.8	9.8	9.8	9.8	9.9	9.8	9.9	9.9	10.0
<b>10PoE Summer</b>	<b>MW</b>	11.4	9.7	11.8	11.8	11.8	11.8	11.7	11.8	11.7	11.6	11.7	11.6
	<b>Load MVar</b>	4.7	4.7	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	<b>Tx MVA</b>	11.4	9.7	11.9	11.9	11.9	11.9	11.8	11.8	11.7	11.7	11.7	11.7
<b>10PoE Winter</b>	<b>MW</b>	8.9	9.8	9.9	9.9	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.2
	<b>Load MVar</b>	2.5	3.1	3.1	3.1	3.1	3.2	3.1	3.2	3.1	3.2	3.2	3.2
	<b>Tx MVA</b>	9.0	9.9	9.9	10.0	10.0	10.0	10.0	10.1	10.0	10.1	10.1	10.2

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20
<b>Capacitor (MVar)</b>		4.7
<b>No. of Distribution Feeders</b>		9
<b>Other</b>		-

<b>Cogeneration</b>	
<b>Remarks</b>	Fault levels indicated are for single transformer in service, with the other transformer operated on "hot standby" mode

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	20.3	25.3	
<b>24-hour</b>	20.3	25.3	Transformer HV cable limit

	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	11.1	8.4
<b>LV 6.6 kV</b>	12.1	12.2

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
P56	Summer										[c-i-c]
	Winter										
P57	Summer	285	27	27	27	26	26	26	25	25	
	Winter	285	26	28	28	28	27	27	27	27	
P58	Summer										Supplies station service transformer only
	Winter										
P59	Summer	345	101	81	90	89	88	87	86	85	
	Winter	375	76	82	82	82	81	80	80	80	
P61	Summer	375	26	22	22	21	21	21	21	20	
	Winter	375	18	19	19	19	19	19	18	18	
P62	Summer	375	262	255	256	253	249	245	242	242	
	Winter	375	264	285	285	284	281	278	276	276	
P63	Summer	285	216	182	206	203	200	197	195	194	
	Winter	285	137	148	152	152	150	149	147	148	
P65	Summer	375	86	81	85	101	123	143	158	177	
	Winter	375	59	63	63	76	92	108	120	135	
P66	Summer	375	288	229	256	254	250	246	243	243	
	Winter	375	171	185	185	184	182	180	179	179	

Feeder Loading (Amps) - Preston (P)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
P56	Summer										[C-i-C]
	Winter										
P57	Summer	285	27	27	28	28	27	27	26	26	
	Winter	285	26	28	28	28	28	28	27	27	
P58	Summer										Supplies station service transformer only
	Winter										
P59	Summer	345	101	81	102	101	100	99	97	97	
	Winter	375	76	84	84	84	83	82	81	82	
P61	Summer	375	26	22	23	22	22	22	21	21	
	Winter	375	18	19	19	19	19	19	19	19	
P62	Summer	375	262	255	266	264	260	257	253	253	
	Winter	375	264	292	292	291	287	285	282	283	
P63	Summer	285	216	182	226	224	221	218	215	215	
	Winter	285	137	152	156	155	153	152	150	151	
P65	Summer	375	86	81	91	109	132	154	170	191	
	Winter	375	59	65	65	78	94	110	122	138	
P66	Summer	375	288	229	282	279	275	271	268	268	
	Winter	375	171	189	189	188	186	184	182	183	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Pascoe Vale (PV)	
<b>Nominal Voltage</b>	HV 66 kV	LV 11 kV
<b>Terminal Station</b>	KTS B1-B2	

<b>Address</b>	Cnr Northumberland Road & Arnold Crt, Pascoe Vale
<b>Melway Map Ref</b>	17 A7

Station Loading		Actual		Forecast									
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>50PoE Summer</b>	<b>MW</b>	37.9	29.0	33.5	33.3	33.3	33.1	33.2	33.1	32.8	32.8	32.8	32.7
	<b>Load MVar</b>	13.9	9.4	12.0	12.0	12.0	11.9	11.9	11.9	11.8	11.8	11.8	11.8
	<b>Tx MVA</b>	37.9	29.3	33.5	33.3	33.3	33.1	33.2	33.1	32.8	32.8	32.8	32.7
<b>50PoE Winter</b>	<b>MW</b>	23.5	25.4	25.6	25.7	25.8	26.0	26.2	26.3	26.1	26.2	26.4	26.6
	<b>Load MVar</b>	6.4	7.4	7.4	7.5	7.5	7.6	7.6	7.6	7.6	7.6	7.7	7.7
	<b>Tx MVA</b>	23.5	25.4	25.6	25.8	25.9	26.0	26.2	26.3	26.1	26.3	26.5	26.6
<b>10PoE Summer</b>	<b>MW</b>	37.9	29.0	38.4	38.4	38.3	38.3	38.2	38.3	37.9	37.8	38.0	37.8
	<b>Load MVar</b>	13.9	9.4	13.8	13.8	13.8	13.8	13.7	13.8	13.6	13.6	13.7	13.6
	<b>Tx MVA</b>	37.9	29.3	38.5	38.4	38.4	38.3	38.3	38.3	38.0	37.9	38.1	37.9
<b>10PoE Winter</b>	<b>MW</b>	23.5	26.0	26.2	26.3	26.4	26.6	26.7	26.9	26.7	26.8	27.0	27.2
	<b>Load MVar</b>	6.4	7.6	7.6	7.6	7.7	7.7	7.8	7.8	7.8	7.8	7.9	7.9
	<b>Tx MVA</b>	23.5	26.0	26.2	26.3	26.4	26.6	26.8	26.9	26.7	26.9	27.1	27.3

Station Configuration		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	2-20/27 & 1-10/11
<b>Capacitor (MVar)</b>		12
<b>No. of Distribution Feeders</b>		9
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Fault levels indicated are for two 20/27MVA

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
<b>(n-1)</b>	45.6	45.6	
<b>24-hour</b>	53.7	53.7	Transformer thermal limit

Fault Levels (kA)		
	3 Phase	1 Phase to Ground
<b>HV 66 kV</b>	11.1	7.1
<b>LV 11 kV</b>	12.5	1.6

Feeder Loading (Amps) - Pascoe Vale (PV)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
PV12	Summer	345	122	116	130	138	147	149	162	178	
	Winter	375	97	105	105	113	120	123	134	148	
PV13	Summer	375	295	234	268	265	262	257	254	254	
	Winter	375	206	222	226	225	223	220	218	219	
PV14	Summer	375	319	246	275	272	268	263	260	260	
	Winter	375	192	207	207	207	204	202	200	201	
PV15	Summer	345	205	165	195	198	200	200	198	199	
	Winter	375	129	139	142	145	147	148	147	148	
PV21	Summer	285	147	111	124	122	127	138	148	161	
	Winter	285	102	110	110	110	114	124	134	147	
PV22	Summer	375	324	259	300	299	297	292	288	288	
	Winter	375	198	214	218	219	218	216	213	214	
PV23	Summer	375	282	233	267	264	260	256	253	252	
	Winter	375	160	173	173	172	170	169	167	167	
PV24	Summer	345	267	147	236	239	244	248	249	252	
	Winter	375	181	195	196	200	205	209	211	215	
PV31	Summer	285	257	208	235	232	235	244	253	266	
	Winter	285	176	190	193	192	196	204	212	224	

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Pascoe Vale (PV)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
PV12	Summer	345	122	116	145	155	164	168	182	200	
	Winter	375	97	107	107	115	122	126	137	151	
PV13	Summer	375	295	234	298	295	291	287	283	283	
	Winter	375	206	228	231	230	228	225	223	224	
PV14	Summer	375	319	246	307	304	300	296	291	292	
	Winter	375	192	212	212	211	209	207	205	205	
PV15	Summer	345	205	165	221	225	228	229	226	227	
	Winter	375	129	143	145	148	150	151	150	151	
PV21	Summer	285	147	111	137	135	141	152	164	179	
	Winter	285	102	113	113	112	117	127	137	150	
PV22	Summer	375	324	259	332	332	330	325	320	321	
	Winter	375	198	219	223	224	223	220	218	219	
PV23	Summer	375	282	233	299	296	292	288	284	284	
	Winter	375	160	177	177	176	174	172	171	171	
PV24	Summer	345	267	147	264	267	274	278	278	283	
	Winter	375	181	200	201	205	210	214	215	219	
PV31	Summer	285	257	208	260	257	261	271	281	296	
	Winter	285	176	194	198	197	200	209	217	229	

<b>Point of Supply</b>	St Albans (SA)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B3-B4	

<b>Address</b>	Cnr Sunshine Avenue & Stenson Road, St Albans
<b>Melway Map Ref</b>	14 F2

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	3.6	3.6	4.0	3.9	3.9	3.8	3.8	3.8	3.7	3.7	3.7	3.7
	<b>Load MVar</b>	2.6	2.7	2.9	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.8	2.7
	<b>Tx MVA</b>	4.5	4.5	5.0	4.9	4.8	4.8	4.7	4.7	4.6	4.6	4.6	4.6
<b>50PoE Winter</b>	<b>MW</b>	2.8	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	3.0	3.0
	<b>Load MVar</b>	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.2	2.1	2.2	2.2	2.2
	<b>Tx MVA</b>	3.5	3.8	3.8	3.8	3.7	3.7	3.6	3.7	3.6	3.7	3.7	3.7
<b>10PoE Summer</b>	<b>MW</b>	3.6	3.6	4.4	4.3	4.3	4.2	4.1	4.1	4.1	4.1	4.1	4.1
	<b>Load MVar</b>	2.6	2.7	3.2	3.2	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0
	<b>Tx MVA</b>	4.5	4.5	5.4	5.4	5.3	5.2	5.1	5.1	5.1	5.1	5.1	5.1
<b>10PoE Winter</b>	<b>MW</b>	2.8	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.1
	<b>Load MVar</b>	2.1	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
	<b>Tx MVA</b>	3.5	3.9	3.9	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.8	3.8

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	20/30
<b>Capacitor (MVar)</b>		
<b>No. of Distribution Feeders</b>		3
<b>Other</b>		-
<b>Cogeneration</b>		
<b>Remarks</b>	Powercor zone substation. JEN load only.	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>			
<b>24-hour</b>			

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>		
<b>LV 22 kV</b>		

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - St Albans (SA)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SA2	Summer	138	12	23	24	24	24	23	23	23	Shared feeder with Powercor. JEN Share of Load
	Winter	195	18	19	19	19	19	19	18	18	
SA6	Summer	315	12	11	11	11	11	11	11	11	Shared feeder with Powercor. JEN Share of Load
	Winter	337	8	9	9	9	9	8	8	8	
SA12	Summer	230	0	84	88	87	86	85	84	83	Shared feeder with Powercor. JEN Share of Load
	Winter	335	66	71	71	71	70	70	69	69	

Feeder Loading (Amps) - St Albans (SA)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SA2	Summer	138	12	23	27	26	26	26	25	25	Shared feeder with Powercor. JEN Share of Load
	Winter	195	18	19	19	19	19	19	19	19	
SA6	Summer	315	12	11	13	13	12	12	12	12	Shared feeder with Powercor. JEN Share of Load
	Winter	337	8	9	9	9	9	9	9	9	
SA12	Summer	230	0	84	97	96	95	94	92	92	Shared feeder with Powercor. JEN Share of Load
	Winter	335	66	73	73	73	72	71	70	71	

<b>Point of Supply</b>	Sunbury (SBY)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B3-B4	

<b>Address</b>	Horne Street - Opp.Mitchells Lne, Sunbury
<b>Melway Map Ref</b>	113 A11

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	36.4	36.4	38.5	39.2	40.4	41.7	43.2	44.6	45.6	47.3	49.0	50.5
	<b>Load MVar</b>	9.8	8.0	11.5	11.7	12.1	12.4	12.9	13.3	13.6	14.1	14.6	15.1
	<b>Tx MVA</b>	36.6	36.5	38.9	39.6	40.9	42.2	43.7	45.2	46.2	48.0	49.7	51.3
<b>50PoE Winter</b>	<b>MW</b>	30.5	33.1	33.7	34.7	36.0	37.4	38.9	40.3	41.5	43.2	45.0	46.9
	<b>Load MVar</b>	4.3	5.9	6.0	6.2	6.4	6.6	6.9	7.1	7.3	7.6	8.0	8.3
	<b>Tx MVA</b>	30.5	33.1	33.7	34.7	36.0	37.4	38.9	40.4	41.5	43.2	45.0	46.9
<b>10PoE Summer</b>	<b>MW</b>	36.4	36.4	42.3	43.2	44.5	46.0	47.5	49.3	50.5	52.1	54.2	55.8
	<b>Load MVar</b>	9.8	8.0	12.6	12.9	13.3	13.7	14.2	14.7	15.1	15.5	16.2	16.6
	<b>Tx MVA</b>	36.6	36.5	42.8	43.7	45.1	46.7	48.2	50.0	51.3	53.0	55.2	56.9
<b>10PoE Winter</b>	<b>MW</b>	30.5	33.9	34.5	35.5	36.7	38.3	39.7	41.3	42.4	44.1	46.0	48.0
	<b>Load MVar</b>	4.3	6.0	6.1	6.3	6.5	6.8	7.0	7.3	7.5	7.8	8.2	8.5
	<b>Tx MVA</b>	30.5	33.9	34.5	35.5	36.7	38.3	39.7	41.3	42.4	44.2	46.1	48.1

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	10, 16 & 16
<b>Capacitor (MVar)</b>		5.3
<b>No. of Distribution Feeders</b>		6
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Fault level indicated are for 3 transformers in parallel

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	32.3	36.9	
<b>24-hour</b>	34.4	37.6	Transformer thermal limit

	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	6.9	3.8
<b>LV 22 kV</b>	6.3	1.6

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Sunbury (SBY)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SBY11	Summer	330	174	165	174	175	181	192	205	222	
	Winter	370	148	160	162	164	170	181	194	211	
SBY13	Summer				[c-i-c]						
	Winter										
SBY14	Summer	375	333	253	282	283	288	295	306	321	
	Winter	375	207	226	229	232	236	244	254	267	
SBY31	Summer	375	202	179	189	201	220	236	248	264	
	Winter	375	143	155	158	170	186	201	212	226	
SBY32	Summer	330	169	146	156	163	174	185	194	205	
	Winter	370	134	146	150	158	169	180	189	201	
SBY33	Summer	375	198	163	180	190	200	203	208	216	
	Winter	375	128	139	148	157	166	170	174	181	

Feeder Loading (Amps) - Sunbury (SBY)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SBY11	Summer	330	174	165	194	195	202	215	229	248	
	Winter	370	148	164	166	168	174	186	198	215	
SBY13	Summer				[c-i-c]						
	Winter										
SBY14	Summer	375	333	253	305	307	312	321	333	350	
	Winter	375	207	231	234	237	241	250	259	273	
SBY31	Summer	375	202	179	206	219	239	258	271	289	
	Winter	375	143	159	162	174	190	206	217	232	
SBY32	Summer	330	169	146	173	181	193	206	215	228	
	Winter	370	134	150	153	161	172	184	193	205	
SBY33	Summer	375	198	163	197	208	219	223	228	237	
	Winter	375	128	142	151	161	170	173	178	185	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Sydenham (SHM)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B3-B4	

<b>Address</b>	Victoria Rd, Hillside
<b>Melway Map Ref</b>	354 K6

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	41.4	33.3	37.3	37.7	38.4	39.4	40.5	41.4	42.0	43.1	44.2	45.2
	<b>Load MVar</b>	9.5	7.1	12.4	12.5	12.8	13.1	13.5	13.8	14.0	14.3	14.7	15.0
	<b>Tx MVA</b>	41.4	33.3	37.6	38.0	38.7	39.7	40.9	41.8	42.4	43.5	44.7	45.7
<b>50PoE Winter</b>	<b>MW</b>	25.9	28.1	28.8	29.4	30.2	31.3	32.4	33.3	33.9	35.0	36.1	37.2
	<b>Load MVar</b>	2.6	4.2	4.3	4.4	4.5	4.7	4.9	5.0	5.1	5.2	5.4	5.6
	<b>Tx MVA</b>	25.9	28.1	28.8	29.4	30.2	31.3	32.4	33.4	33.9	35.0	36.1	37.3
<b>10PoE Summer</b>	<b>MW</b>	41.4	33.3	40.7	41.2	42.0	43.1	44.3	45.4	46.1	47.2	48.6	49.5
	<b>Load MVar</b>	9.5	7.1	13.5	13.7	14.0	14.3	14.7	15.1	15.3	15.7	16.2	16.5
	<b>Tx MVA</b>	41.4	33.3	41.1	41.5	42.4	43.6	44.8	46.0	46.7	47.8	49.3	50.3
<b>10PoE Winter</b>	<b>MW</b>	25.9	28.7	29.5	30.1	30.9	32.0	33.1	34.1	34.7	35.8	36.9	38.1
	<b>Load MVar</b>	2.6	4.3	4.4	4.5	4.6	4.8	5.0	5.1	5.2	5.4	5.5	5.7
	<b>Tx MVA</b>	25.9	28.7	29.5	30.1	30.9	32.0	33.1	34.1	34.7	35.8	37.0	38.2

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		8
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	38.0	39.6	
<b>24-hour</b>	45.0	45.0	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	7.1	4.0
<b>LV 22 kV</b>	7.5	1.7

Feeder Loading (Amps) - Sydenham (SHM)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SHM11	Summer	375	65	82	102	116	140	161	179	201	
	Winter	375	71	77	87	100	120	140	156	176	
SHM12	Summer	375	220	187	211	210	210	211	214	219	
	Winter	375	141	153	155	156	156	158	160	165	
SHM14	Summer	375	290	242	286	293	302	319	337	359	
	Winter	375	185	201	209	216	224	237	251	269	
SHM21	Summer	375	289	307	332	332	335	341	350	362	
	Winter	375	190	206	213	215	217	223	229	238	
SHM24	Summer		[c-i-c]							[c-i-c]	
	Winter										

Feeder Loading (Amps) - Sydenham (SHM)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
SHM11	Summer	375	65	82	112	127	153	177	196	221	
	Winter	375	71	79	89	102	123	143	159	180	
SHM12	Summer	375	220	187	231	231	231	232	235	241	
	Winter	375	141	157	159	159	160	162	164	169	
SHM14	Summer	375	290	242	314	323	334	353	372	398	
	Winter	375	185	205	214	221	229	243	257	275	
SHM21	Summer	375	289	307	368	369	373	380	389	404	
	Winter	375	190	211	218	220	222	228	234	244	
SHM24	Summer		[c-i-c]							[c-i-c]	
	Winter										

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Somerton (ST)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	SMTS	

<b>Address</b>	Hume Hwy Opposite Patullos Lane, Somerton
<b>Melway Map Ref</b>	180 D4

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	64.8	65.2	71.0	73.6	76.7	79.6	83.6	86.4	88.3	91.5	94.8	97.9
	<b>Load MVar</b>	31.7	28.9	32.6	33.8	35.2	36.6	38.4	39.7	40.6	42.0	43.6	45.0
	<b>Tx MVA</b>	67.1	66.9	73.4	76.2	79.6	82.7	87.1	90.1	92.2	95.7	99.3	102.6
<b>50PoE Winter</b>	<b>MW</b>	59.9	65.1	67.7	70.8	74.0	77.3	81.5	84.6	86.9	90.5	94.3	98.2
	<b>Load MVar</b>	22.7	25.2	26.2	27.5	28.7	30.0	31.6	32.8	33.7	35.1	36.6	38.1
	<b>Tx MVA</b>	60.5	66.0	68.8	72.1	75.5	79.0	83.4	86.7	89.1	93.0	97.0	101.1
<b>10PoE Summer</b>	<b>MW</b>	64.8	65.2	75.7	78.6	82.0	85.3	89.4	92.7	95.0	98.0	102.0	105.0
	<b>Load MVar</b>	31.7	28.9	34.8	36.1	37.7	39.2	41.1	42.6	43.6	45.0	46.9	48.3
	<b>Tx MVA</b>	67.1	66.9	78.5	81.7	85.4	88.9	93.4	97.0	99.5	102.8	107.2	110.5
<b>10PoE Winter</b>	<b>MW</b>	59.9	66.6	69.3	72.4	75.6	79.1	83.3	86.5	88.9	92.5	96.5	100.6
	<b>Load MVar</b>	22.7	25.8	26.9	28.1	29.3	30.7	32.3	33.5	34.5	35.8	37.4	39.0
	<b>Tx MVA</b>	60.5	67.6	70.5	73.7	77.2	80.8	85.3	88.7	91.2	95.0	99.3	103.7

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		15.4
<b>No. of Distribution Feeders</b>		12
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	79.7	89.3	
<b>24-hour</b>	87.6	91.3	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	12.3	10.6
<b>LV 22 kV</b>	12.0	2.1

Feeder Loading (Amps) - Somerton (ST)												
Feeder	Season	Rating	Actual		50PoE Forecast						Comments	
			2014	2015	2016	2017	2018	2019	2020	2021		
ST11	Summer	590	205	160	178	179	173	173	183	196		
	Winter	590	163	177	195	198	193	194	206	221		
ST12	Summer	375	192	199	202	201	200	199	209	222		
	Winter	375	203	220	222	223	222	223	235	251		
ST13	Summer	375	167	161	175	187	197	199	200	203		
	Winter	375	167	181	196	212	223	227	228	232		
ST14	Summer	425	196	182	193	201	206	205	205	208		
	Winter	425	179	194	204	215	220	221	222	226		
ST21	Summer	425	10	8	10	13	25	36	58	96		
	Winter	425	13	14	19	23	44	65	106	175		
ST22	Summer	590	333	318	362	387	444	506	574	659		
	Winter	590	285	311	339	364	418	479	545	628		
ST23	Summer	590	280	271	275	275	273	272	273	276	[c-i-c]	
	Winter	590	258	279	283	285	284	285	286	291		
ST24	Summer	[c-i-c]										
	Winter											
ST31	Summer											
	Winter											
ST32	Summer	375	320	290	338	400	463	517	571	636		
	Winter	375	235	257	286	341	395	444	491	550		
ST33	Summer	375	240	202	238	251	260	267	279	293		
	Winter	375	167	182	194	206	214	221	231	245		
ST34	Summer	375	209	212	236	246	250	250	251	254	[c-i-c]	
	Winter	375	216	234	260	273	278	280	282	287		

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Somerton (ST)												
Feeder	Season	Rating	Actual		10PoE Forecast						Comments	
			2014	2015	2016	2017	2018	2019	2020	2021		
ST11	Summer	590	205	160	185	186	181	181	191	206		
	Winter	590	163	181	200	203	197	198	210	226		
ST12	Summer	375	192	199	210	209	208	208	218	233		
	Winter	375	203	225	227	228	227	228	240	256		
ST13	Summer	375	167	161	182	195	205	209	209	212		
	Winter	375	167	185	200	216	227	232	233	238		
ST14	Summer	425	196	182	201	210	215	214	214	218		
	Winter	425	179	198	209	220	225	226	227	231		
ST21	Summer	425	10	8	11	14	26	38	61	100		
	Winter	425	13	14	19	24	45	67	108	179		
ST22	Summer	590	333	318	387	413	475	542	614	707		
	Winter	590	285	318	347	372	427	490	557	642		
ST23	Summer	590	280	271	286	287	285	285	285	290	[c-i-c]	
	Winter	590	258	286	289	291	290	291	292	298		
ST24	Summer	[c-i-c]										
	Winter											
ST31	Summer											
	Winter											
ST32	Summer	375	320	290	376	445	517	578	636	712		
	Winter	375	235	263	293	348	404	454	501	562		
ST33	Summer	375	240	202	263	278	289	297	309	326		
	Winter	375	167	187	198	211	219	227	236	250		
ST34	Summer	375	209	212	246	257	261	262	262	266	[c-i-c]	
	Winter	375	216	240	266	279	284	287	288	293		

<b>Point of Supply</b>	Tottenham (TH)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	BLTS	

<b>Address</b>	Somerville Road Opp Mcdonald Road, Tottenham
<b>Melway Map Ref</b>	41 B6

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	27.3	22.7	24.2	23.7	23.1	22.5	21.9	21.4	20.8	20.4	20.0	19.6
	<b>Load MVar</b>	19.3	17.9	17.2	16.8	16.4	15.9	15.5	15.2	14.7	14.4	14.2	13.9
	<b>Tx MVA</b>	28.3	23.5	24.8	24.2	23.6	22.8	22.2	21.7	21.0	20.5	20.1	19.6
<b>50PoE Winter</b>	<b>MW</b>	22.9	26.6	26.3	26.0	25.4	24.8	24.2	23.8	23.2	22.9	22.6	22.3
	<b>Load MVar</b>	19.0	19.0	18.8	18.5	18.1	17.7	17.3	17.0	16.5	16.3	16.1	15.9
	<b>Tx MVA</b>	24.0	27.5	27.2	26.8	26.1	25.4	24.8	24.3	23.6	23.3	22.9	22.6
<b>10PoE Summer</b>	<b>MW</b>	27.3	22.7	25.2	24.7	24.2	23.5	22.9	22.5	21.8	21.3	21.0	20.5
	<b>Load MVar</b>	19.3	17.9	17.9	17.5	17.1	16.6	16.2	15.9	15.4	15.1	14.9	14.5
	<b>Tx MVA</b>	28.3	23.5	25.9	25.3	24.7	24.0	23.3	22.8	22.1	21.5	21.2	20.6
<b>10PoE Winter</b>	<b>MW</b>	22.9	27.2	27.0	26.5	25.9	25.4	24.8	24.4	23.7	23.4	23.1	22.8
	<b>Load MVar</b>	19.0	19.4	19.2	18.9	18.5	18.1	17.6	17.4	16.9	16.7	16.4	16.2
	<b>Tx MVA</b>	24.0	28.2	27.9	27.4	26.7	26.1	25.4	24.9	24.2	23.8	23.5	23.2

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	30/45
<b>Capacitor (MVar)</b>		12.9
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	[c-i-c]	(TH21- 3.0MW)
<b>Remarks</b>		

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	49.5	50.1	
<b>24-hour</b>	49.5	50.1	Cable limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	16.4	13.0
<b>LV 22 kV</b>	9.3	2.0

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Tottenham (TH)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TH11	Summer	445	97	105	103	101	97	94	91	89	
	Winter	445	100	107	105	103	100	97	94	93	
TH12	Summer	445	137	69	108	105	102	98	95	93	
	Winter	445	118	126	124	121	118	114	111	109	
TH13	Summer	445	89	80	82	84	85	82	79	77	
	Winter	445	90	96	99	102	103	100	97	95	
TH21	Summer	445	505	471	523	512	497	479	464	454	[c-i-c]
	Winter	445	486	577	572	564	548	532	517	508	
TH22	Summer	445	157	146	146	145	147	150	155	162	
	Winter	445	153	163	161	162	164	169	175	184	

Feeder Loading (Amps) - Tottenham (TH)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TH11	Summer	445	97	105	108	105	102	98	95	93	
	Winter	445	100	109	107	105	102	99	96	95	
TH12	Summer	445	137	69	113	110	106	103	99	98	
	Winter	445	118	129	126	124	120	117	113	111	
TH13	Summer	445	89	80	86	88	88	85	82	81	
	Winter	445	90	98	101	104	105	102	99	97	
TH21	Summer	445	505	471	545	533	518	501	484	475	[c-i-c]
	Winter	445	486	591	585	576	560	545	528	520	
TH22	Summer	445	157	146	152	151	153	157	162	169	
	Winter	445	153	166	165	165	168	173	179	188	

<b>Point of Supply</b>	Tullamarine (TMA)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	KTS B1-B2	

<b>Address</b>	77 Keilor Park Drive, Tullamarine
<b>Melway Map Ref</b>	15 D4

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	0.0	0.0	21.5	24.1	25.1	26.2	27.2	28.1	28.7	29.7	30.8	31.8
	<b>Load MVar</b>	0.0	0.0	9.7	10.9	11.3	11.8	12.3	12.7	12.9	13.4	13.9	14.3
	<b>Tx MVA</b>	0.0	0.0	21.8	24.6	25.7	26.8	27.9	28.8	29.5	30.6	31.8	32.9
<b>50PoE Winter</b>	<b>MW</b>	0.0	0.0	20.8	23.6	24.6	25.8	26.8	27.8	28.6	29.8	31.0	32.3
	<b>Load MVar</b>	0.0	0.0	8.7	9.8	10.2	10.7	11.2	11.6	11.9	12.4	12.9	13.5
	<b>Tx MVA</b>	0.0	0.0	21.0	23.9	24.9	26.2	27.3	28.4	29.2	30.5	31.8	33.2
<b>10PoE Summer</b>	<b>MW</b>	0.0	0.0	23.3	26.2	27.3	28.5	29.5	30.6	31.4	32.4	33.7	34.7
	<b>Load MVar</b>	0.0	0.0	10.5	11.8	12.3	12.9	13.3	13.8	14.2	14.6	15.2	15.7
	<b>Tx MVA</b>	0.0	0.0	23.8	26.9	28.1	29.4	30.4	31.6	32.4	33.5	34.9	36.0
<b>10PoE Winter</b>	<b>MW</b>	0.0	0.0	21.3	24.1	25.1	26.4	27.4	28.5	29.2	30.4	31.7	33.1
	<b>Load MVar</b>	0.0	0.0	8.9	10.0	10.5	11.0	11.4	11.9	12.2	12.7	13.2	13.8
	<b>Tx MVA</b>	0.0	0.0	21.5	24.4	25.5	26.8	27.9	29.1	29.9	31.1	32.5	34.0

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		6
<b>No. of Distribution Feeders</b>		5
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	New zone substation commissioned October 2015

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	38.0	39.6	
<b>24-hour</b>	47.5	47.5	Transformer thermal limit

	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	12.8	8.6
<b>LV 22 kV</b>	8.7	1.6

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TMA11	Summer	375	0	0	100	110	124	138	154	174	
	Winter	375	0	0	92	101	114	128	144	163	
TMA14	Summer	375	0	0	250	256	266	276	290	307	
	Winter	375	0	0	229	236	245	257	270	288	
TMA21	Summer	375	0	0	100	100	101	102	105	108	
	Winter	375	0	0	92	93	93	95	97	101	
TMA22	Summer	375	0	0	21	101	122	144	147	152	
	Winter	375	0	0	19	93	113	134	137	142	
TMA25	Summer	375	0	0	200	201	202	204	209	216	
	Winter	375	0	0	183	185	187	190	195	202	

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TMA11	Summer	375	0	0	104	114	129	144	161	182	
	Winter	375	0	0	94	103	117	131	147	166	
TMA14	Summer	375	0	0	261	267	277	289	302	322	
	Winter	375	0	0	234	241	251	263	276	294	
TMA21	Summer	375	0	0	104	105	106	107	109	113	
	Winter	375	0	0	94	95	95	97	100	103	
TMA22	Summer	375	0	0	22	105	128	150	153	159	
	Winter	375	0	0	20	95	115	137	140	145	
TMA25	Summer	375	0	0	209	209	211	214	218	226	
	Winter	375	0	0	187	189	191	194	199	207	

<b>Point of Supply</b>	Thomastown (TT)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B34)	

<b>Address</b>	High Street, In Terminal Station Area, Thomastown
<b>Melway Map Ref</b>	8 H11

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	34.0	27.4	31.9	31.5	31.6	31.3	31.1	31.0	30.7	30.7	30.7	30.7
	<b>Load MVar</b>	12.9	10.9	12.9	12.7	12.7	12.6	12.5	12.5	12.4	12.4	12.4	12.4
	<b>Tx MVA</b>	36.3	29.5	34.4	33.9	34.1	33.8	33.5	33.5	33.1	33.1	33.2	33.1
<b>50PoE Winter</b>	<b>MW</b>	23.0	24.8	25.9	25.7	26.0	26.0	25.9	25.9	25.8	25.9	26.1	26.3
	<b>Load MVar</b>	7.3	8.1	8.4	8.4	8.5	8.5	8.4	8.5	8.4	8.5	8.5	8.6
	<b>Tx MVA</b>	24.1	26.1	27.2	27.1	27.3	27.3	27.2	27.3	27.1	27.3	27.5	27.6
<b>10PoE Summer</b>	<b>MW</b>	34.0	27.4	35.6	35.2	35.4	35.1	34.8	34.8	34.5	34.4	34.6	34.4
	<b>Load MVar</b>	12.9	10.9	14.3	14.2	14.2	14.1	14.0	14.0	13.9	13.9	13.9	13.9
	<b>Tx MVA</b>	36.3	29.5	38.4	37.9	38.1	37.9	37.5	37.6	37.2	37.1	37.3	37.1
<b>10PoE Winter</b>	<b>MW</b>	23.0	25.4	26.5	26.3	26.6	26.6	26.4	26.5	26.3	26.5	26.7	26.9
	<b>Load MVar</b>	7.3	8.3	8.6	8.6	8.7	8.7	8.6	8.7	8.6	8.6	8.7	8.8
	<b>Tx MVA</b>	24.1	26.7	27.9	27.7	27.9	27.9	27.8	27.9	27.7	27.9	28.1	28.3

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	20/27
<b>Capacitor (MVar)</b>		
<b>No. of Distribution Feeders</b>		4
<b>Other</b>		NER

<b>Cogeneration</b>	[c-i-c] (TT3 - 6MW)
<b>Remarks</b>	AusNet Services substation. Forecast maximum demand is JEN only and does not include [c-i-c] cogeneration.

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>			
<b>24-hour</b>			

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>		
<b>LV 22 kV</b>		

## 4 — LOAD FORECAST DATA

Feeder Loading (Amps) - Thomastown (TT)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TT3	Summer	375	320	282	335	276	273	268	265	265	[c-i-c] Co-gen not included
	Winter	375	231	250	264	220	218	216	213	214	
TT8	Summer	325	197	229	252	256	258	255	252	252	
	Winter	325	166	179	180	184	186	185	184	184	
TT10	Summer	325	233	161	202	217	215	211	209	208	
	Winter	325	157	170	190	206	205	203	201	201	
TT11	Summer	325	265	124	149	198	216	222	227	234	
	Winter	325	118	127	137	184	201	208	213	220	

Feeder Loading (Amps) - Thomastown (TT)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
TT3	Summer	375	320	282	375	310	306	302	298	298	[c-i-c] Co-gen not included
	Winter	375	231	255	271	225	223	221	218	219	
TT8	Summer	325	197	229	278	283	285	283	279	279	
	Winter	325	166	183	184	188	190	190	188	188	
TT10	Summer	325	233	161	224	241	239	236	233	233	
	Winter	325	157	174	195	211	209	207	205	206	
TT11	Summer	325	265	124	167	222	243	250	255	264	
	Winter	325	118	130	141	188	205	213	217	225	

Point of Supply	[c-i-c]
Nominal Voltage	
Terminal Station	

Address	[c-i-c]
Melway Map Ref	

Station Loading		Actual			Forecast								
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
50PoE Summer	MW												
	Load MVar												
	Tx MVA												
50PoE Winter	MW												
	Load MVar												
	Tx MVA												
10PoE Summer	MW												
	Load MVar												
	Tx MVA												
10PoE Winter	MW												
	Load MVar												
	Tx MVA												

Station Configuration		
Power Transformers	Number	[c-i-c]
	Nameplate (MVA)	
Capacitor (MVar)		
No. of Distribution Feeders		
Other		-

Cogeneration	[c-i-c]
Remarks	Customer owned substation

Station Transformer Cyclic Rating (MVA)			
	Summer	Winter	Limitations
(n-1)			
24-hour			

	3 Phase	1 Phase to Ground
HV 66 kV	[c-i-c]	[c-i-c]
LV 22 kV		

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Watsonia (WT)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	TTS (B12)	

<b>Address</b>	Frensham Road, Watsonia
<b>Melway Map Ref</b>	20 E4

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	2.0	1.8	2.0	2.3	2.6	2.9	3.3	3.5	3.7	3.9	4.2	4.4
	<b>Load MVar</b>	0.9	0.8	1.0	1.1	1.2	1.4	1.6	1.6	1.7	1.8	2.0	2.1
	<b>Tx MVA</b>	2.2	2.0	2.2	2.6	2.9	3.2	3.6	3.8	4.0	4.3	4.6	4.9
<b>50PoE Winter</b>	<b>MW</b>	1.5	1.6	1.7	2.0	2.3	2.6	3.0	3.2	3.4	3.6	3.8	4.1
	<b>Load MVar</b>	0.5	0.7	0.7	0.8	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
	<b>Tx MVA</b>	1.6	1.8	1.9	2.2	2.5	2.8	3.2	3.4	3.6	3.9	4.2	4.5
<b>10PoE Summer</b>	<b>MW</b>	2.0	1.8	2.2	2.5	2.8	3.1	3.5	3.7	3.9	4.2	4.5	4.7
	<b>Load MVar</b>	0.9	0.8	1.0	1.2	1.3	1.5	1.7	1.8	1.9	2.0	2.1	2.2
	<b>Tx MVA</b>	2.2	2.0	2.4	2.7	3.1	3.5	3.9	4.1	4.3	4.6	4.9	5.2
<b>10PoE Winter</b>	<b>MW</b>	1.5	1.7	1.8	2.1	2.4	2.7	3.0	3.2	3.4	3.7	3.9	4.2
	<b>Load MVar</b>	0.5	0.7	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
	<b>Tx MVA</b>	1.6	1.8	1.9	2.2	2.6	2.9	3.3	3.5	3.7	4.0	4.3	4.6

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	3
	<b>Nameplate (MVA)</b>	2-35/38 & 1-20/33
<b>Capacitor (MVar)</b>		
<b>No. of Distribution Feeders</b>		1
<b>Other</b>		-

<b>Cogeneration</b>	
<b>Remarks</b>	AusNet Services substation. Forecast maximum demand is JEN only

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>			
<b>24-hour</b>			

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>		
<b>LV 22 kV</b>		

Feeder Loading (Amps) - Watsonia (WT)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
WT4	Summer	215	56	52	59	67	76	85	95	107	
	Winter	215	42	46	48	56	63	71	79	90	

Feeder Loading (Amps) - Watsonia (WT)											
Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
WT4	Summer	215	56	52	62	72	81	90	101	115	
	Winter	215	42	47	49	57	64	72	81	92	

## 4 — LOAD FORECAST DATA

<b>Point of Supply</b>	Yarraville (YVE)	
<b>Nominal Voltage</b>	HV 66 kV	LV 22 kV
<b>Terminal Station</b>	BLTS	

<b>Address</b>	Hyde Street, Yarraville
<b>Melway Map Ref</b>	42 B-10

<b>Station Loading</b>		<b>Actual</b>		<b>Forecast</b>									
		<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>
<b>50PoE Summer</b>	<b>MW</b>	29.5	25.1	26.9	27.7	28.5	28.9	28.8	28.4	27.8	27.6	27.3	27.0
	<b>Load MVar</b>	12.2	9.2	10.7	11.1	11.4	11.5	11.5	11.4	11.1	11.0	10.9	10.8
	<b>Tx MVA</b>	32.0	26.7	28.9	29.9	30.7	31.1	31.0	30.6	30.0	29.7	29.4	29.1
<b>50PoE Winter</b>	<b>MW</b>	23.3	25.0	25.1	26.2	27.0	27.6	27.6	27.4	26.9	26.9	26.8	26.7
	<b>Load MVar</b>	7.1	9.3	9.3	9.7	10.0	10.3	10.3	10.2	10.0	10.0	9.9	9.9
	<b>Tx MVA</b>	24.3	26.6	26.8	28.0	28.8	29.5	29.4	29.2	28.7	28.6	28.6	28.4
<b>10PoE Summer</b>	<b>MW</b>	29.5	25.1	29.2	30.2	31.0	31.5	31.3	31.1	30.5	30.1	29.9	29.5
	<b>Load MVar</b>	12.2	9.2	11.7	12.1	12.4	12.6	12.5	12.4	12.2	12.0	12.0	11.8
	<b>Tx MVA</b>	32.0	26.7	31.4	32.5	33.4	34.0	33.7	33.5	32.8	32.4	32.2	31.8
<b>10PoE Winter</b>	<b>MW</b>	23.3	25.6	25.7	26.8	27.6	28.3	28.2	28.0	27.6	27.4	27.4	27.3
	<b>Load MVar</b>	7.1	9.5	9.6	10.0	10.3	10.5	10.5	10.4	10.2	10.2	10.2	10.1
	<b>Tx MVA</b>	24.3	27.3	27.4	28.6	29.4	30.2	30.1	29.9	29.4	29.3	29.2	29.1

<b>Station Configuration</b>		
<b>Power Transformers</b>	<b>Number</b>	2
	<b>Nameplate (MVA)</b>	20/33
<b>Capacitor (MVar)</b>		0
<b>No. of Distribution Feeders</b>		9
<b>Other</b>		NER

<b>Cogeneration</b>	
<b>Remarks</b>	Previously named YTS

<b>Station Transformer Cyclic Rating (MVA)</b>			
	<b>Summer</b>	<b>Winter</b>	<b>Limitations</b>
<b>(n-1)</b>	38.0	39.6	
<b>24-hour</b>	38.0	39.6	Transformer thermal limit

<b>Fault Levels (kA)</b>		
	<b>3 Phase</b>	<b>1 Phase to Ground</b>
<b>HV 66 kV</b>	14.3	12.3
<b>LV 22 kV</b>	9.3	1.6

Feeder Loading (Amps) - Yarraville (YVE)											
Feeder	Season	Rating	Actual		50PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
YVE11	Summer				[c-i-c]						
	Winter										
YVE12	Summer	285	82	82	84	92	106	123	139	158	
	Winter	285	90	97	99	109	126	147	166	190	
YVE14	Summer	260	121	123	123	141	169	184	180	178	
	Winter	295	124	133	132	154	184	203	199	197	
YVE15	Summer	300	107	96	104	107	107	104	102	101	
	Winter	340	92	99	107	111	111	109	107	106	
YVE21	Summer	260	162	127	127	150	155	166	167	170	
	Winter	295	121	130	129	155	160	172	174	178	
YVE22	Summer	215	160	130	149	157	165	168	171	175	
	Winter	245	138	148	153	163	172	176	179	185	
YVE23	Summer	260	42	39	43	47	51	53	51	51	
	Winter	295	35	38	40	44	48	50	49	48	
YVE24	Summer	445	92	95	95	96	96	96	94	93	
	Winter	445	97	104	103	105	106	107	105	104	
YVE25	Summer	290	0	98	98	96	94	91	89	88	
	Winter	290	97	104	103	102	100	99	97	96	Transferred from NT1 in 2014

## 4 — LOAD FORECAST DATA

Feeder	Season	Rating	Actual		10PoE Forecast						Comments
			2014	2015	2016	2017	2018	2019	2020	2021	
YVE11	Summer		[c-i-c]								
	Winter										
YVE12	Summer	285	82	82	87	96	110	129	145	165	
	Winter	285	90	99	101	111	128	151	170	195	
YVE14	Summer	260	121	123	128	147	176	193	188	187	
	Winter	295	124	136	135	157	188	207	203	202	
YVE15	Summer	300	107	96	109	111	112	109	107	106	
	Winter	340	92	101	110	113	113	111	109	108	
YVE21	Summer	260	162	127	132	157	162	174	175	178	
	Winter	295	121	133	132	158	163	176	178	182	
YVE22	Summer	215	160	130	162	171	181	184	186	192	
	Winter	245	138	152	157	166	176	180	183	189	
YVE23	Summer	260	42	39	46	50	55	56	55	54	
	Winter	295	35	38	41	45	49	51	50	49	
YVE24	Summer	445	92	95	99	100	100	101	98	97	
	Winter	445	97	107	106	108	108	109	107	106	
YVE25	Summer	290	0	98	102	100	98	96	93	93	
	Winter	290	97	107	106	105	103	101	99	98	Transferred from NT1 in 2014

## 5. REFERENCES

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6. APPENDIX A:

[c-i-c]

[c-i-c]